

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

December 2012

AURPO NEWSLETTER

Editor T.J.Moseley

CONTENTS

Page No.

1	Editor's Introduction	1
2	President's Report	2
3	Membership News	2
4	SRP Announcement - UK Rising Radiation Protection Professionals Awards	3
5	AURPO Scientific Meeting Preston 4th & 5th September –Meeting Report	5
6	HSE News	11
7	EA, DEFRA & DECC Matters –SULG Report	12
8	Peter Cole's Balls!	15
9	Transport matters	16
10	NEWS from HPA –Radiation Protection Division	17
11	News from Affiliates	19
12	Radon – Have you tried a Canary?	20
13	Books and Publications	22
14	SRP Training Course on Source Security	27
15	RWA Update from SEPA	27
16	Subscription reminder from Treasurer	28

(NB one form for members another for affiliates)

Officers of the Association

President

Mrs S Nuttall
Consultant RPA
16 Wendy's Close
Leicester LE5 2HY
Tel: 07785571138
email: somchairuk1@hotmail.co.uk

Secretary

Mr J Makepeace
Radiation Protection Adviser
Corporate Assurance Team
National Physical Laboratory
Teddington
Middx TW11 0LW
Tel: 0208943 6480
Email: john.makepeace@npl.co.uk

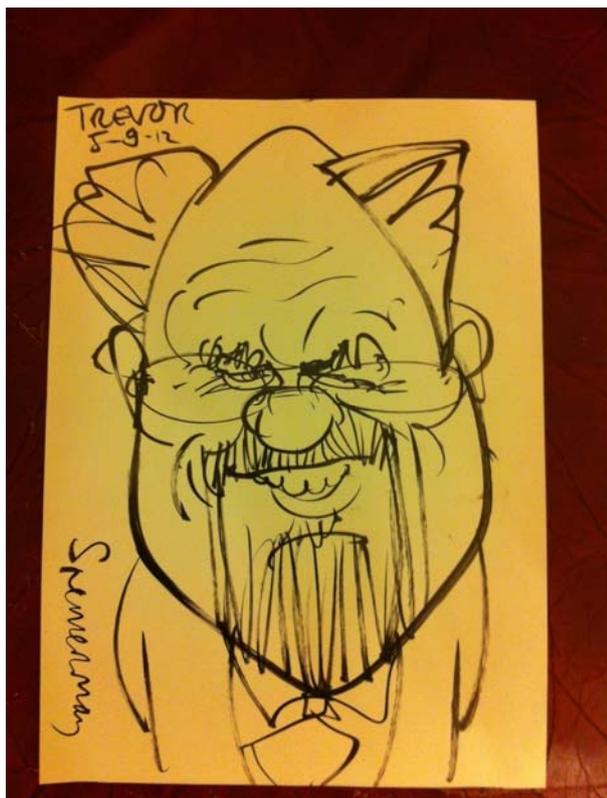
Treasurer

Mrs G C Glazier
21, Viewland Rd
Plumstead
LONDON
SE18 1PE
Tel: 020 8331 8320
Email: g.c.glazier@greenwich.ac.uk

EDITOR'S INTRODUCTION

Welcome to the December edition of the Newsletter and a Happy Christmas and New Year to all our readers.

For those of you that didn't make it – you missed a great conference at Preston excellently organised by Christine Edwards. As you can see below we had fireworks at the conference dinner and an artist doing caricatures of the guests – and as promised I include one of the drawings for your amusement!!



Editor starring as the mad scientist!



Fireworks at Preston

WEBSITE - Some members are still experiencing problems accessing documents on the web. NB you can't just go to the members section and expect to see things! Firstly you need to log in as a member on the left hand side (get the site/PC to remember you) and only then can you go to the far right-hand side and click on the members section and see all the documents and be able to open them up. Everything should now be available for viewing.

PS Don't forget to renew your subscription –see reminder from Treasurer from page 27

Expect Spring edition of newsletter for end of March just before Easter.

T.J.Moseley
RPA University of Sheffield
Tel: 0114 222 6190
Fax 0114 222 9010

E-mail: t.j.moseley@sheffield.ac.uk

PRESIDENT'S REPORT

I am sure you would all agree that once again we had another splendid conference at Preston in September. It will be hard to beat the magnificent fireworks display after the dinner as it was a night to remember for all who attended. The conference ran smoothly and I have many excellent feedbacks. The Springfield visit was also a success. My special thanks go to Christine and her team at UCLan for their hard work in organising this event for us.

I would like to convey my thanks to all of our members who attended the conference and also my appreciation to those members who 'volunteered' to do the valuable conference reports in this Newsletter. The scientific programme was again full of many interesting issues and I am certain that all delegates took home with them some useful information and knowledge.

Also my thanks go to the Exhibitors who gave AURPO support this year despite IRPA 13 in Glasgow having used up big portion of some of their marketing budgets. We hope to see you all again in Edinburgh.

The AGM was very well attended and we welcome new members on Executive Committee, Brian Heaton as the STC Chairman and Michael Lockyer as Executive member. Thank you both for volunteering your services for the Association. If the Association is to continue to be at the forefront of its field, this will require the assistance of all members in the running of Association businesses. Any ideas or kind offers of help in any way will be very much appreciated. Please remember, after all, the Association belongs to all of you, its members.

And so looking forward to 2013, Colin Farmery and Mark Green are finalising the next conference in Edinburgh to ensure that we have a comfortable and enjoyable stay. Our STC is also busily working on the theme and details of the Scientific Programme.

I can confirm that the 2014 AURPO Conference will be at East Midland Conference Centre in Nottingham on Monday the 1st and Tuesday the 2nd of September 2014. It will be the first year we have to use commercial venue for the conference without the local organiser. I will personally take charge with the help of all Executive members. The use of a commercial venue supported by the Executive may be the trend for the future if we are unable to obtain suitable offers of support from within our membership - if you think that you could offer help in organising an annual conference in the year 2015 and beyond please do not hesitate to let us know. The executive would be very happy to hear from you!

I am sure you always find the newsletter very useful and agree that it is highly regarded by many outside AURPO. Please help the Editor of the Newsletter by regularly submitting items - it does need the input from you, the members. Please contact Trevor if you wish to help in any way.

With my best wishes for a successful 2013

Sonia Nuttall
11th December 2012

Membership News

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

Mark Earthrowl	Cambridge Research Institute
Michaela Moore	Freeman Hospital, Newcastle
Dr Paul Jijo	Institute of Radiology, Frankfurt
Roy Sheppard	Sheppard Instruments



ANNOUNCEMENT

UK Rising Radiation Protection Professionals Award

The Society for Radiological Protection announces the launch of the UK Rising Radiation Protection Professionals Award.

This competition will be held for the first time at the SRP's 50th Anniversary Conference in Harrogate (21-23 May 2013).

Entrants are welcome from the SRP membership plus members of all SRP's UK Partner Societies (IPEM, BIR, AURPO, BNMS, RCR, and SCoR).

Entrants will typically be within the first 10 years of their radiation protection career but the judging panel will have the ultimate decision as to the eligibility of any entrant.

Entrants must present an 8-minute oral presentation of their research and/or development work in the field of (operational) radiation protection at the SRP's 50th Anniversary Conference in Harrogate in May 2013.

The prize for the winner will be:

- £500
- A framed certificate
- A chance to be chosen to represent the UK in the next IRPA Young Professionals Award at the IRPA European Congress in Geneva – with travel, accommodation and registration fees paid

The deadline for submitting an entry is Friday 19th April 2013.

For further information and an entry form please contact:

Tessa Harris – admin@srp-uk.org or Tel: 01803 866743

The UK Rising Radiation Protection Professionals Awards: Rules

Scope:

The UK RPP Award is for the best 8-minute oral presentation of a 'qualifying' entrant's research and/or development work in the field of (operational) radiation protection at the SRP Annual Conference.

Entry:

Entrants will typically be within the first 10 years of their radiation protection career.

They must complete the application form and return it to the SRP Administrative Office before the deadline. For the 2013 award this is 19th April 2013. The deadline will ordinarily be one calendar month before the SRP Annual Conference.

Part of the entry form requires entrants to submit an 'abstract' summary of their proposed submission and successful applicants will be notified by 26th April 2013 as to whether or not their entry has been accepted.

PowerPoint slides to be used in the presentation and an updated summary (as appropriate) must be provided no later than one week before the meeting at which the presentation is to be given.

Conditions:

Entrants must give consent to allow their name and photograph in relation to the UK RPP Award to be used for SRP publications as well as publication of presentation slides and/or presentation summary.

Eligibility & exclusions:

Entrants must have some form of SRP membership or corresponding membership of one of the SRP's Partner Societies. These are: IPEM, AURPO, BNMS, BIR, RCR and SCoR.

A panel of judges will be convened that includes members of SRP Partner Societies.

The judges' decision on eligibility and acceptability of an abstract for presentation as part of the UK RPP Award will be final.

Each SRP Annual Conference will only be able to accept up to 10 UK RPP Award presentations. If more entries are received than slots available at the event, the judges shall decide which presentations shall be given. The decision will be made on the basis of the abstract of the presentation provided on the entry form.

Award:

This will be: Part 1 – £500 and a prize certificate.

Part 2 – the winner may be chosen to represent the UK in the next IRPA Young Professionals Award at the IRPA European Congress in Geneva – with travel, accommodation and registration fees paid by SRP.

Payment:

Part 1 of the prize will normally be presented as a cheque from the SRP at the Annual Conference Dinner or at some other convenient opportunity during the event.

Criteria:

Best presentation will be determined by a scoring scheme based on the IRPA Young Professionals Award. All the judges will attend every presentation at the annual event and their individual scores will be tallied by the head judge.

The membership of the judging panel and the scoring scheme will be available to entrants prior to the event upon request.

Final decision: The judges' decision as to the winner of the UK RPP Award will be final.

Association of University Radiation Protection Officers
51st Annual Conference at Preston 4th – 5th September 2012
Meeting Report

‘Professional Update’ Tuesday PM.

Developing a Good Safety Culture by Dr Peter Cole (Liverpool Univ)

Good safety culture is vital to ensuring the safety of all and requires everyone to take personal responsibility, a demonstration of commitment and trust across an organisation where a questioning attitude is cultivated and open reporting of problems without fear of blame. The three main areas utilising radiation are medical, nuclear and higher education and all have to consider the activities involving radiation and how the risks could be reduced. In the medical sector any reduction in unnecessary dose could lead to significant benefits but the trend is to conduct routine CT scans accounting for 70% of all X-ray doses. The nuclear sector needs to consider ‘cradle to grave’ – new build, potential accidents and decommissioning and its effects on people, workers and the environment. Higher education tends to have a varied approach to some aspects of radiation safety in that some processes are seen as interfering with the day job and the ‘not my job’ syndrome. The SRP formed a group of experienced RP professionals to make recommendations to the IRPA13 to improve safety culture in relation to radiation protection across all sectors to include increase knowledge, understanding and awareness of radiation risks, effective training and training methods, effective support by RPA’s and RPS’s and an understanding of their roles within organisations. Regulatory bodies are critical in ensuring a consistent approach to enforcement and to work with the professional bodies such as AURPO, SRP, IPEM to provide support and encouragement for developing an effective RP culture across all sectors. The results of ‘incidents’ need to be communicated to the highest levels within organisations to ensure due consideration, support and appropriate actions are taken including potential additional resources and the impact or potential impact to the organisation, environment and/or public. Ultimately the key to a good safety culture is increased understanding, knowledge, awareness, communication and training to encourage ‘buy in’ at all levels across the work sectors and between all stakeholders.

BSc in Radiation Protection at the University of Cumbria by Mr Alan Marsh

The BSc in Radiation Protection course being offered by University of Cumbria started in 2011 by the faculty of Health and Wellbeing. The course covers the academic requirements for legal recognition by the UK regulators as a Radiation Protection Adviser and as a Radioactive Waste Adviser and has been developed with experts from nuclear and non nuclear sectors including industry, regulatory, medical and other academic partners. The syllabus consists of modules (all related to radiation protection) covering overview, maths and computing, physics, biological basis, health and safety, environmental, legislation, protection for employees, control of exposure, communication of risk, detection and a research project each taking approximately 6 weeks. To complete the FdSc you have to complete six modules at level 4 and six modules at level 5, for the BSc you need to complete a further six modules at level 6 covering waste legislation, protection of the general public, waste management, medical and industrial applications, nuclear reactors and security. The course can be undertaken as individual credited modules and requires part time attendance in Workington resulting in a Bachelors Honour Degree. Further details are available on the university web site.

RWA requirements, syllabus, accreditation by Ms Angela Wright (SEPA)

The Basic Safety Standards Directive (BSSD) requires qualified experts but its implementation varies across the UK resulting in the Environment Agencies developing a UK wide scheme for the

recognition of qualified experts in radioactive waste management and environmental radiation protection known as Radiation Waste Advisors (RWA). An RWA will be required to consider environmental monitoring, security of radioactive materials, radioactive waste disposal, optimisation techniques, radioactive waste assay, radioactive waste management and relative legislation and regulations. The RWA will need to complete an application to the Assessing Bodies providing evidence of competence and experience and will be granted a Certificate of recognition from 1st January 2013. The Assessing Bodies will ensure the evidence provided supports an individual's ability to comply with EPR2010 and RSA93 in relation to radioactive waste management and environmental radiation protection. Further guidance has been issued to support this process.

Nuclear sites have the option to appoint 'Corporate RWAs' these will be several individuals who collectively cover the required duties of the RWA.

Laser Safety training Update by Mr Simon Hall (NPL)

This presentation was to provide information on the training regime used by the National Physical Laboratory (NPL) on laser safety. The NPL training regime used an internally produced introduction training which is repeated biannually and includes testing to ensure understanding. The original video used for this training was produced in 1986 and needed updating NPL had also identified the need for additional training material. The NPL decide to produce modular laser and non laser safety calculation software and an Optical radiation safety training framework and has now produced four second life environment 'avatar' type presentations which have used this latest technology to demonstrate effects of unsafe behaviours and activities for the user as well as interactive systems required to ensure full assessment and control in laser and non laser safety. The four videos cover Laser Controlled Areas, Laser Alignment, Laser Eyewear and Filters and Laser Classification this software is available to higher education from the NPL website www.npl.co.uk/optical-radiation-photonics/laser-safety-videos

'When the Inspector Calls!' Wednesday AM

Overview by Stephen Molyneux – Principle CTSA

An overview on why the National Counter Terrorism Security Office (NaCTSO) requires risk assessments and the implementation of security measures for sealed sources. There is a fine balance between adequate security and drawing unnecessary attention to buildings and therefore inviting crime. Emphasis was given to check that you have the most up to date current NaCTSO guidance booklet (Security Requirements for Radioactive Sources – April 2011) and if not to contact your local CTSA. Three main important points of the guidance are to ensure you are fully compliant with the regulations, ability to upgrade in the event of a specific threat (quite often overlooked) and thirdly have confidence in your relationship with CTSA. It was pointed out that students are not vetted and only foreign students (non EU/Commonwealth) are required to register with local police force when enrolling on a new course. However even that system breaks can down, as there is no requirement to notify the same police force if the students leaves or moves to a different University. This led on to how can organisations adopt a challenge culture? Main points to consider were to identify insider threats focusing on your departments and impact of each threat. Who has the opportunity and capability to carry out these threats and then to assess sufficiency to existing countermeasures – Risk Management Cycle. The talk also went into detail about deaths or criminal damage or accidents caused by removal or misuse of sources.

How to survive a Euratom inspection by Lawrence Johnson ONR - Safeguards

A detailed description of what the International/National Safeguards are, what the regulations were and who was responsible for regulating them was given. There was a reminder that the overarching

reason for the regulations are to control the use and security of nuclear material. The two basic components of the safeguards measures were explained; reporting (declarations) and assessments/inspections. The former also now includes the additional protocol (declaration of work/research involved with the wider nuclear fuel cycle-related activities). The focus of the talk then moved on to the Euratom Treaty Safeguards and the obligations for the UK on Safeguards. The ONR safeguards role was further explained. For Small Holders of Nuclear Material (SHNM) the Regulation 302/2005 recognises that safeguards need to be less onerous. Article 19 Derogation was introduced to allow SHNM's to report easily and less frequently. The latter part of the talk was about Euratom inspections and how to be prepared for one. To survive an Euratom inspection operators should ensure reports are correct and complete, have an accountancy system that captures all materials, physical inventory agrees with accounts and available for verification. Both ONR and Euratom recognise that safeguards at SHNM needs to be proportionate and might need to be revisited. Discussions are underway how to simplify the regulations by use of MBA's and exemptions. In the questions at the end of talk, Lawrence was asked what should be included in the inventory and the answer to this was everything – no lower limits. This includes shields, compounds and salts. Also through the questions Lawrence informed everyone that there are indeed problems with SHNM's getting derogations and the process was currently on hold

Environmental Permitting Regulations – An Inspector calls by Amber Bannon (EA Radioactive Substances Regulation Technical Specialist)

The scope and objectives of the talk were to help organisations prepare for an EA audit, gauge understanding and help organisations avoid costly fines. The purpose of the Environmental Permitting Regulations was explained and how the control of radioactive substances are broken down into 7 key areas; Permit conditions, Management systems, Security, Infrastructure, Radionuclide management, Records and Waste Management. The talk emphasised the need to understand your permit inside out and to ensure that the permit is available to anyone who uses radioactive material or generates waste. It was advised that the use of a compliance matrix really helps organisation to keep to the permit conditions and identify any potential gaps or weak areas. Management systems should be detailed in an organisation's Radiation Management Policy document or Local rules. Ensure that this document is reviewed regularly and implemented thoroughly. Security areas of the permit also include items like deliveries and accepting of radioactive parcels, so ensure these all have policies and working operating procedures. The use of Best Available Techniques needs to be demonstrated across most areas of the permit and was a reoccurring point in the talk. Good infrastructure and lab design was demonstrated through photographs and helped to show what was expected of a good working laboratory. Emphasis was given to knowing where your organisation drains go to and do not just rely on old drainage maps. Drains must discharge into sewer and not to a surface water drain. Under radionuclide management organisations need to be able to demonstrate that they are using the minimum quantities needed for successful completion of work. This can be accomplished by using BAT. There was also great emphasis on carrying out muster checks on a regular basis. Radioisotope records do not need to be over complicated or computerised as long as they are accurate and clear. Under waste management the use of BAT was discussed again and having suitable waste storage areas. The final part of the talk was regarding the RASCAR1 forms which have now replaced the old inspection forms. These forms provide more transparency. They also now allow inspectors to record good practise as well as bad.

When the RMT inspector calls! by David Rowe (HM Inspector RMT from ONR)

The main emphasis of the talk was to explain what the Radioactive Material Transport (RMT) section in the Office of Nuclear Regulation do, what legal powers they have and their inspection process. The inspectors were in the Dept of Transport Dangerous Goods Division but transferred last year to ONR under the HSE. Their purpose is to regulate the transport of radioactive material

within GB by road or rail (not air). The Health and Safety at Work Act 1974 gives the RMT inspector legal powers to act. The inspector can enter premises, examine processes, packages, stop processes, take photos, issue notices or prosecute. The next focus of the talk related to Transport Regulations. Carriage of Dangerous Goods and use of Transportable Pressure Equipment (Amendment) Regulations 2011 and ADR 2011 are available to buy or view online. There is also a copy of Approved Derogations which can be purchased which lists exemptions to the ADR 2011. When the inspector contacts an organisation to arrange an inspection it is important that a response is sent back immediately. The organisation should have evidence of compliance which will include documentation such as management systems, training records, emergency arrangements and package integrity. Can you for example prove the packages you are using to send radioactive material meets the requirements? The speaker then moved onto what the different stages were after the initial inspection, such as summary of findings, agreed timescale for corrective action, formal letter and follow up.

The top non-compliances found within organisations are things like; emergency response procedures inadequate, bad security arrangements or training, no DGSA, incorrect labelling of packages or no driver certificate of radiation awareness. Lastly the Emergency number for the HSE should be within your emergency procedures and management system.

Presentations Wednesday PM

Recent Developments in Internal Dosimetry and the Use of Effective Dose (George Ethirington, HPA)

George referred us to ICRP Publications where we should be able to access the latest information. Although you need a subscription to view published documents, current draft documents and consultations can be viewed at -

http://www.icrp.org/consultation_page.asp

The most relevant documents are 'Occupational Intakes of Radionuclides Parts 1, 2 and 3'. All of these are currently available for viewing. NB Parts 4 and 5 to follow.

We were taken through the various exposure and intake pathways and the differences between internal and external dosimetry. George took us through the revisions of the Respiratory Tract and GI Tract models. He looked at the phantoms and models used to estimate doses and the calculation of equivalent, effective and committed effective doses.

(Committed) effective dose is used for regulatory purposes for comparison with dose limits etc but should not be used for assessment of doses to individuals in practice. For these purposes should use absorbed dose in organs/tissues; data on relative biological effectiveness; and, specific risk estimates for the individual.

For monitoring workers exposed to internal contamination he referred us to 3 important reference documents:-

- ISO 20553(2006) –Monitoring of workers occupationally exposed to a risk of internal contamination with radioactive material
- ISO 27048 (2011) – Dose assessment for the monitoring of workers for internal radiation
- IDEAS Guidelines – Doerfel. Et al General guidelines for the estimation of committed effective dose from incorporation monitoring data. Project IDEAS-EU Contract No. FIKR-CT2001-00160. Report FZKA 7243, June 2006

(This last document is available in full online - <http://bibliothek.fzk.de/zb/berichte/FZKA7243.pdf>)

Radiosensitivity of the lens – Proposed changes to lens dose limit (Liz Ainsbury, HPA)

Liz started off by looking at how we get cataracts and pointed out that even if you have had cataracts removed that they tend to come back within 4 years. ICRP 2007 suggested that the lens of the eye may be more sensitive to radiation than previously thought and she went through the literature upon which this view was based. The overall conclusions from the studies were that there was a strong genetic component for cataract development and probably a stochastic as well as a deterministic mechanism. The threshold for deterministic effects has been coming down. More studies are required to investigate low dose effects and verify biological implications of stochastic model – work is in hand – [DOREMI project](#).

Latest deliberations of ICRP have settled on a threshold dose of 0.5Gy (absolute dose) for possible long term development of cataracts and have therefore recommended an occupational exposure limit of 20 mSv/y averaged over 5 years with no single year exceeding 50mSv. These recommendations have now been accepted by HPA (see - http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317136165812)

Liz then went on to look at eye dosimetry and the need for a new eye dosimeter based upon Hp(3) because Hp(0.07) for skin overestimates effects and Hp(10) for depth dose underestimates effects. The EU ORAMED program is looking into this see - <http://www.oramed-fp7.eu/en/Presentations>

Modern Methods of Dosimetry, Derek Bingham (AWE)

Derek recommended that we look up EU report RP160 for recommendations for monitoring individuals. - http://ec.europa.eu/energy/nuclear/radiation_protection/doc/publication/160.pdf
He looked at newer more sensitive TLD materials, OSL dosimeters, direct ion storage devices and EPDs. EPDs must be used with caution in pulsed fields and overestimate effective dose considerably at energies between 15-30kV.

Dosemeter intercomparisons for whole body and extremity dosimeters can be found on the EURADOS website - <http://www.eurados.org/en/Events/Intercomparisons>
EU recommendation for wearing badges with lead aprons is to wear 2 badges – one under apron and one over. Derek discussed neutron dosimetry and pointed out that most dosimeters used PADC materials (poly-allyl-diglycol-carbonate – CR39) that were most sensitive to intermediate/fast neutrons. He noted that the Landauer dosimeter had a boron loaded Teflon layer in addition to the PADC and that this allowed them to assess the thermal dose as well. Attempts to produce an active neutron dosimeter have so far been unsuccessful. Lowest detection level so far for neutrons is 0.2mSv. Derek also looked briefly at internal dose assessments and recommended IMBA Professional Plus software for calculating internal doses - <http://www.imbaprofessional.com/>

Online Training using Moodle, Peter Jewell (Univ of Bath)

The final presentation of the day was provided by Peter Jewell who enlightened us on the potential for using ‘moodle’ derived online training. ‘Moodle’ is an acronym derived from ‘modular object-orientated dynamic learning environment’. He recommended it as a good way to get started if you are tasked with implementing a ‘virtual learning environment’ (VLE). Moodle is open source software that you can use yourself or more likely use a software package based on it that your university uses already. Moodle was specifically developed to help education throughout the world and has grown dramatically since its introduction in 2002. The Open University is the biggest user of Moodle in the UK (2nd largest in the world) with over 7000 courses and 840,000 users. Peter suggested several uses that you may wish to use Moodle for:-

- Awareness training
 - Basic appreciation for support workers

- Baseline knowledge for students
- Detailed understanding for IR workers
- RPS training
- Refresher training for RPS and IR workers
- Roles, responsibilities and duties of managers
- Documenting permit compliance

You can complete your training package with a variety of differently structured questions, e.g. multi-choice answers, calculations, true or false etc.

Peter then went through examples of what he has done in Bath. This is a fast developing area where online training is being looked for in many institutions and is probably something we will all have to address in our own training in the near future – if we have not already started.

NB most of the presentations can be found in full on the aurpo website (www.aurpo.org)

Many thanks to Julie Turner (Univ of Loughborough) and Helen Odams (Open University) for their help in producing this report.

Trevor Moseley (Univ of Sheffield)



HSE News

E-Bulletins Subscribe to free news and e-bulletins from HSE -

<http://www.hse.gov.uk/news/subscribe/index.htm>

News releases can be obtained from <http://www.hse.gov.uk/news/index.htm>

HSE Information and press releases can be accessed on the Internet:

<http://www.hse.gov.uk/press/press.htm>

HSE's Research Reports are available free on the HSE website at: <http://www.hse.gov.uk/research/rrhtm/>

HSE priced and free publications - direct at HSE Books, PO Box 1999, Sudbury, Suffolk, CO10 6FS, Tel (01787 881165) and other good booksellers. HSE Books has its own website: www.hsebooks.co.uk

HSE Notifications can be made by email to irrnnot@hse.gsi.gov.uk

Report an accident/incident

Telephone 0845 300 99 23 or download the appropriate form from:

<https://www.hse.gov.uk/forms/incident/index.htm>

email it to: <http://www.hse.gov.uk/riddor/report.htm>

Safety Alert – Portable Dental X-ray machines

Dentists have been warned against using a cheap imported hand-held x-ray machine, known as the Tianjie Dental Falcon as it exposes users and patients to 10 times the normal level of radiation, increasing their risks of cancer and organ damage.

The Medicines and Healthcare Regulatory Agency (MHRA) is asking NHS and private dentists to dispose of these devices. It is not known how many patients may have been put at risk.

So far, 13 of the machines - sold on internet sites including eBay by a Chinese manufacturer - have been seized at a distribution centre. At least one dental surgery has been found using the device.

Emergency testing of the product by the HPA and scientists at King's College Hospital in London revealed that it has insufficient lead shielding inside it to protect dentists and patients from excessive radiation. The machine's X-ray beam is also too wide, which means a patient's whole skull and brain is exposed to radiation rather than just their mouth.

And the device poses an electrical hazard because it comes with a European plug and a travel adapter that are not earthed or fused for the UK mains supply. As well as being a fire hazard, it could cause a serious electric shock (50,000 volts) to the dentist or patients.

The Tianjie Dental Falcon was priced at about £200, a fraction of the cost of other dental hand-held X-ray sets available for sale in the UK, which can be over £4,000. Anyone who has bought one of these machines should the MHRA's hotline on 020 3080 6701 or at counterfeit@mhra.gsi.gov.uk.

Further information on BBC news bulletin at <http://www.bbc.co.uk/news/health-20579318>

EA, DEFRA & DECC MATTERS

SULG -39 Meeting Report

SULG met on 4th December for another useful meeting with our regulators. As well as the usual EA contingent from policy and technical services we had a SEPA representative and representatives from ONR (Safeguards) and ONR(Radioactive Material Transport). Our regulators are working hard to help us comply with regulations, but we also need to do our bit and make sure that we try and do what can be reasonably expected of us.

Dealing with U and Th wastes

Many members will have experienced difficulties in trying to dispose of U and Th wastes as exempt material under EPR. It now looks as if the EA is going to reintroduce the application of the Hazardous Waste Regs to all U and Th disposals irrespective of the exemption order limits. This will mean that if the activity concentration of U or Th in your waste is >0.1% of U or Th by weight then the material has to be treated as Hazardous Waste and disposed of accordingly. This still leaves us with the problem of disposing of U and Th wastes where the activity concentration is less than the Hazardous Waste levels. Ordinary landfill sites will probably not want to deal with this type of waste because of the requirements of the Landfill Regulations for the testing of 'Mirror Wastes' (wastes which would be hazardous if the concentration of the hazardous material was greater). David Nicholson (EA) said that he would look into this further.

Safeguards Reporting

Lawrence Johnson (ONR Safeguards) attended the meeting and he was reporting back on the UK Safeguards Office plans to simplify reporting for the UK Small Holders of Nuclear Material (SHNM). His initial soundings with Euratom have not been too hopeful as they think there is substantial under-reporting that they are not happy with. However, Lawrence is pressing ahead and as there have been precedents in Poland and France there is still some grounds for optimism. He has identified 4 groups of SHNM:-

1. About 20 organisations who are happy with full reporting to Euratom – would continue unchanged.
2. A group of 80-90 companies who could be covered by one national MBA (material balance area) and only hold depU used for shielding, counterweights or tritium getter beds. They would only have to report changes in holdings to ONR Safeguards.
3. Potential for exemption. In addition to those items already exempted under Regulation 9 of 302/2005, he would look to see if we could get exemption parallel to EPR 2010 (i.e. 5kg holdings U & Th). If this proves unacceptable fallback position may be French exemption which is up to 1g of enriched U or Pu and 1kg of U and Th. If this was agreed reporting would be just to report changes in holdings to ONR Safeguards. Affects 20-30 university and research centres only 3 would be outside this provision (holdings in excess of 5kg).
4. Existing informal exemption for schools, colleges and hospitals to remain in place.

It is assumed that all current holders of nuclear materials have good accounting systems to conform with EPR2010 exemption provisions. If spot checks by ONR Safeguards found organisations with very poor records they would not be given a derogation or exemption and would be put on to full reporting until they could demonstrate good management control.

Irradiator Security

There is now a second round of irradiator visits underway. Original sites visited in Phase 1 are being revisited after training of EA staff in order to implement a general improvement in security (20% of original premises visited were found not to be complying with general security requirements over and above any deficiencies in their irradiator). Although there is funding help for any 'hardening' of irradiator security required under Phase 1, there is no funding for general security requirements deemed necessary under Phase 2. All irradiators are due to be visited under Phase 2.

There was concern that people may be asked for additional security measures not previously deemed necessary. It was stated by David Nicholson (EA) that if you are in compliance with the standards in place at the time your permit/registration was issued there should only be an upgrade to the latest standards if there was a substantial change in the site e.g. move of irradiator to a new location/new build – the new location should then meet the latest standards. Anecdotal evidence has suggested that some inspectors are asking for a lot more than this and members should be aware of what the Agency official position is.

In the operations update David Nicholson warned members to be careful about following advice/instructions from CTSA if not with an EA Inspector. It is the EA Inspector who has the final say and you need to check with them before implementing any changes suggested by CTSA.

Radioactive Waste Advisors

Members will want to note that access to RWA 'grandfather rights' closes after applications received on 31 December 2012. Extant permits referring to "a suitable RPA or other such Qualified Expert as may be approved in writing" will remain in force after 01 January 2013. And there is no formal requirement for premises to have an RWA until this appears in their permit to accumulate and dispose of radioactive waste. However, where a premises has already appointed an RWA, their grandfather rights certificate will be accepted as "approved in writing" if requested by the operator. The Agency will now develop proposals to manage the transition of its permit stock and the introduction of an appropriate condition referencing RWA.

Identifying and delivering guidance

Peter Merrill is actively looking into this and has drawn up a list of possible topics or some that were already being developed. Of particular interest was one on the design and construction of non-nuclear facilities. It was pointed out that SRP were already working on guidance in this area and SULG and the partner societies asked to be involved in so that it could get widespread support and hopefully provide a 'best practice guide' for the sector.

Website development

It looks like EA website will go and be part of 'government gateway' – 'Direct Gov' . Efforts have been made to make the radioactive substances pages more user friendly and make it easier for the user to find their way around. Just remember to bookmark - <http://www.environment-agency.gov.uk/business/sectors/32481.aspx> so you start off at the right point. Having a new 'gateway' should not be a problem so long as you have the link to the right starting page. Further information will be made available to stakeholders asap. Our previous requests for a FAQs page has fallen on stony ground and it was suggested that perhaps we should have our own FAQs page on the AURPO website.

Updated Sector Plan –Inspections

There should be something on this on the website – but I'm not sure anybody knows where! Inspection themes should now roll on for 2 years (inline with proposed inspection schedule). As this has not been publicised, and a full program of inspections is not yet underway, the current theme is being extended to 2015. The current theme is to do with 'emergency preparedness'.

NORM Strategy and Guidance

This is being developed by Adam Stackhouse with input from Peter Brember and Bob Russ. This is taking time to materialise – so don't hold your breath!

National Resources Wales (NRW)

Environment Agency Wales (EAW) will separate from the Environment Agency on the 1 April 2013. The NRW will bring together the functions of the Countryside Council for Wales, Environment Agency Wales, and the Forestry Commission Wales. Some EAW staff will transfer to NRW, and considerable effort is being invested in 'teasing apart' the functions and services of the two bodies. Formally and legally, the regulation of radioactive substances will transfer to NRW on the 1st April. Transitional arrangements are being finalised between Welsh Government and the two organisations in relation to delivery of nuclear and non-nuclear regulation under EPR. It is expected that EA will provide NRW with a nuclear regulation service, and that EA will provide some support on non-nuclear RSR.

Reducing Risks from Radioactive Sources (RRRS) Project

In September, the project business case was approved for collection of orphan sources and lightning preventers and a scrapyards inventory. Tenders for three contracts: for lightning preventer removal; orphan source collection and disposal; and characterization of sources at 60 major scrapyards have now been evaluated. Costs for removal of lightning preventers from 25 sites are higher than anticipated, and EA will have discussions with the building owners with the aim of agreeing a reasonable division of costs.

ONR Update

Only a few inspections have taken place in the last 6 months (only 2 inspectors currently involved in this activity). This may change in 2013 as 4 new inspectors are being recruited. Three issues previously highlighted as being of general concern are:-

- Lack of awareness on transport security
- Lack of emergency arrangements
- Lack of checking on knowledge and competency of staff

The proposed EU directive on carriers and couriers has not materialised as more countries other than just UK have raised objections.

Results from questionnaire sent out to EA permit holders will be kept on a 'confidential' database on a stand alone PC. Approximately 1600 questionnaires issued when results have been analysed inspection will be carried out on a priority basis - following up non reporters and those with the largest transport operations.

ONR and HPA are working together on bringing alignment of Transport and EPR in respect of treatment of exempt wastes. Either a derogation or an authorisation will be put forward.

There are still issues with scrap and contaminated consumer products, particularly items coming from India.

Information provided to Fire Services

I had previously asked David Nicholson about meetings with the Fire Service regarding information provision and security of information. There is no central guidance on this other than avoid divulging any information on the whereabouts of sealed sources except obviously when in an emergency situation. Permit holders should make their own local arrangements keeping their EA inspector and CTSA involved. Modern information systems such as MICAD and use of QR Codes mean that it is possible to store and retrieve information electronically very quickly enabling people to find hazard information specific to a given area at the touch of a button or scan of a QR Code. I am looking at how this can be used in a way for providing the Fire Service with information without compromising the information security required by the CTSA.

Establishing Geographical Limits of a Permit

Concerns have been expressed by some users that they are being asked to have more permits than strictly necessary, so clarification was asked on what constituted premises and what the green line could include. There is guidance as to what constitutes premises/a site in the framework guidance for EPR: premises can be in reasonable proximity (can be dissected by a public road); a site can extend for several hundred metres; should be part of the same operational unit and covered by the same management system. Nobody was in favour of having more prescriptive descriptions for a site as the flexibility in the current descriptions had been favourably interpreted by many. No sites were mentioned, but one EA inspector knew of difficulties with some universities where colleges/schools were keen to emphasise their independence and that this was probably the root cause of the difficulties.

If people have problems with their inspectors decision on what can and can not be include within a site permit they should ask for the matter to be referred to the EAs technical specialist group.

Next meeting of SULG is scheduled for 13th June 2013

Trevor Moseley
RPA University of Sheffield

Peter Cole's Balls!



He plays with them in the bath! To be serious, Peter brought these to my attention. Don't know if it's legal to sell them in this country, I should have asked at SULG. They are 'Radium Bath Balls' manufactured in China and available over the internet – see - <http://www.root-cn.com/FAQ-of-Radium-Ball.htm>
- ceramic balls containing various minerals including 490Bq/kg of Ra-226 !!

Transport Matters

Re-certifying Type A packages.

Chris Green (Kent & Canterbury Hospital) has been looking into this problem having had difficulties with getting recertification for some of his containers. He got the following advice from David Rowe (ONR-RMT)

'If Gravatom / ONET will not re-certify them or offer a maintenance service for them, and you have no evidence of the Type A verification tests, then you don't have a lot of choice, apart from trying to re-certify them yourselves. This would mean using one of them for all of the regulatory tests (9m drop, puncture, stacking etc), keeping the evidence to prove that it met the test requirements and being able to maintain them to the design standard afterwards.

They can be used (without recertification) for storage, of course, as well as for internal transport, providing that they don't actually go into the public domain. You could also consider using them as Excepted Packages, as the test requirements are less onerous than for Type A.'

Chris has now found out that ONET Technologies appear to be offering re-testing and updating of existing Type A packages – see extract below from article that was in UK Radiopharmacy Newsletter.

New Type A Transport Container for shipping pre-filled syringes

ONET Technologies UK Ltd has been selling the GP3708 & GP3400C Type Transport Packagings to radiopharmacies for 12 years and has recently reviewed and upgraded the two designs. This is in response to market changes and a drive to simplify labelling. Both designs now come with label holders which will accommodate a 200 x 100mm laminated label that may be reversed.

The GP3400C now has a custom made syringe carrier and the exposed lead shield is painted to aid cleaning. Some of the packagings have been in the field now for 10 years and as such are outside their nominated life.

Consequently ONET has inspected some of the older designs which have been used on a daily basis for 10 years and generally (apart from replacing rivets and lid hinges) the packagings are good for several years more. This is a testament to how the radiopharmacies have looked after the packaging and also the robustness of the original design. We are now able to state that radiopharmacies should, with careful use, get at least 10 years' service from the design.

We are also able to retrofit the new label plates to existing designs.

The revised certificates and operating instructions for the new design will be added to our website at the end of October. For details please go to www.onet-technologies-uk.com

Contact Gerry Holden or David Windley, ONET Technologies UK Ltd; gholden@onet-uk.com



Example Type A carrying case from ONET – not sure David Rowe will be happy with labels at 45° !

NEWS FROM HPA- Radiation Protection Division

Recent publications that are of relevance are listed below.

- [**HPA-CRCE-042 - Radon in Scottish Homes: Report of a Targeted Programme**](#)
This report details a programme, supported by funding from the Scottish Government, to identify homes with significantly elevated radon concentrations in the areas of Scotland with the greatest risk of high radon levels and, where high levels are found, to encourage the responsible person, normally the owner-occupier or landlord, to carry out remedial works. The three-year programme commenced in April 2009 and was initially based on the radon maps published at that time. An updated and more detailed radon map was published in July 2011 and the programme was modified to accommodate this.
- [**HPA-CRCE-041 - Environmental Radioactivity Surveillance Programme: Results for 2011 Including Monitoring Following the Fukushima Dai-ichi Accident in Japan**](#)
This report is the latest of a series in which the results of the Health Protection Agency's Environmental Radioactivity Surveillance Programme are presented. It contains the measurement data for the year 2011. Within the main programme, samples of airborne dust and milk are collected routinely from selected locations within the UK, the Channel Islands and the Isle of Man.
- [**HPA-CRCE-040 - Scoping Health Risk Assessment for Beach Users at Dalgety Bay to Support Advice to Scottish Government Given in February 2012**](#)
A scoping public health risk assessment for beach users at Dalgety Bay was carried out at the request of the Scottish Government Health Department. It was recognised that the scoping assessment was being undertaken prior to sufficient data being available for a full public health risk assessment. The aim was to carry out a preliminary assessment of the possible health impact for people currently using the beach area in order to determine if any additional urgent actions were required, in addition to the restrictions on access to an area of the beach and advice to beach users that were put in place in the autumn of 2011.
- [**HPA-CRCE-039 - Modelling approach for the transfer of radionuclides to fruit species of importance in the UK**](#)
A compartment model has been developed to predict activity concentrations in fruit following deposition of radionuclides from both accidental and continuous releases of radioactivity to the atmosphere. This model replaces an earlier fruit model within the FARMLAND suite of foodchain models which was developed specifically for continuous release applications in 1995.
- [**HPA-CRCE-038 - Evaluation of the Groundhog Synergy Beach Monitoring System for Detection of Alpha-rich Objects and Implications for the Health Risks to Beach Users**](#)
Since 2006 an intensive programme of monitoring for radioactive objects has been carried out on beaches in the vicinity of the Sellafield site in West Cumbria. This beach monitoring programme is carried out by Nuvia Ltd on behalf of Sellafield Ltd (SL).
- [**HPA-CRCE-037 - Radiological Consequences Resulting from Accidents and Incidents Involving the Transport of Radioactive Materials in the UK – 2011 Review**](#)
This report includes descriptions of thirty eight accidents and incidents involving the transport of radioactive materials from, to, or within the UK, which occurred in 2011.

- • [HPA-CRCE-036 - Environmental Radioactivity Surveillance Programme: Results for 2010](#)
This report is the latest of a series in which the results of the Health Protection Agency's Environmental Radioactivity Surveillance Programme are presented. It contains the measurement data for the year 2010.
- • [HPA-CRCE-035 - Data Report on Radiotherapy Errors and Near Misses, Dec 2009 - Nov 2011](#)
Report no 2. This report is the second in a series of 2 yearly reports of radiotherapy errors and near miss events.
- • [Environmental Radon Newsletter](#)

This newsletter is available as a free subscription. The latest edition takes a further look at remediation case studies, in this case looking at multiple internal sump and fan systems. There are also articles on: natural gamma radiation linked to childhood leukaemia; a review of factors affecting radon reduction; and, awareness of radon in new-build homes.

- • [Monitor: Newsletter of the Personal Dosimetry Service \(formerly Personal Monitoring Services\)](#)
- [The Radiation Protection Implications of the Use of \(CBCT\) in Dentistry - What You Need To Know](#)

HPA response to the ICRP statement on tissue reactions and recommendation on dose limit for the eye lens

In April 2011, the ICRP released a statement on tissue reactions (www.icrp.org/publication.asp?id=ICRP%20Publication%20118) based on findings of a review of Early and late effects of radiation in normal tissues and organs (ICRP Publication 118, 2012). These documents indicate that the threshold dose for effects on the lens of the eye is now considered to be 0.5 Gy. The ICRP judgement is in line with a published review of the epidemiology and mechanisms of radiation cataractogenesis from HPA (Ainsbury et al 2009). Prior to the April 2011 statement, the ICRP had judged there to be a 2 Gy acute exposure threshold for cataracts and a 4 Gy or higher threshold for protracted exposures (ICRP 1991; ICRP 2007). The ICRP April 2011 statement recommended a reduction in the annual equivalent dose limit to the lens of the eye to 20 mSv averaged over five years with no single year exceeding 50 mSv for occupational exposure in planned exposure situations.

This HPA response to the ICRP statement on tissue reactions re-examines the evidence for radiation associated cataract risk including studies that were not considered by the ICRP or by Ainsbury et al (2009). Issues related to eye lens dosimetry are also considered as these will be important in the implementation of any new dose limit.

It is concluded that there is good evidence from epidemiological studies that any threshold for radiation-induced cataract is much lower than the value of 2 Gy acute exposure given by the ICRP in its 2007 recommendations. The available data are consistent with a low threshold of around 0.5 Gy or no threshold. It is possible that cataract induction is a stochastic process and a threshold does

not apply. An important observation is that doses accumulated over extended periods of time appear to be similarly effective as doses resulting from a single exposure.

The HPA endorses the conclusion reached by the ICRP in their 2011 statement that the equivalent dose limit for the lens of the eye should be reduced from 150 mSv per year to 20 mSv per year, averaged over a five year period, with no year exceeding 50 mSv. This reduced dose limit will afford protection against the non-lethal but nonetheless undesirable health effect of cataract, which even when treated, can lead to loss of visual acuity. There will be a need to monitor eye dose more closely in some occupations, particularly interventional radiology and perhaps some areas of the nuclear industry, and there will also be a need for greater attention to requirements for personal protective equipment.

The ICRP recommendation of a reduced dose limit for the eye lens represents a prudent interpretation and application of scientific knowledge. However, further work is required to establish the magnitude of risk at low doses and following protracted exposure, along with research into the mechanistic basis for radiation cataractogenesis to inform selection of risk projection models.

NEWS FROM AFFILIATES

News from Pycko Scientific

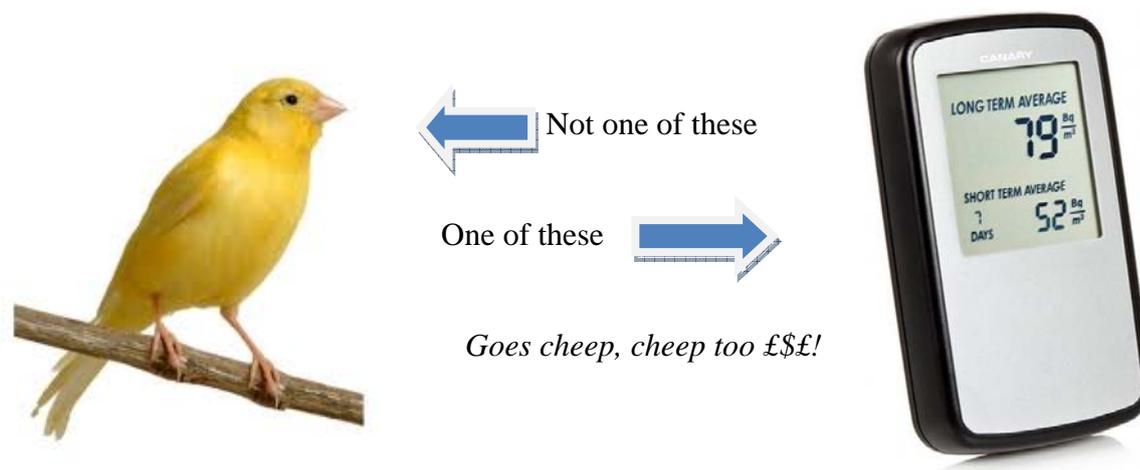
Bill Snooks is now acting for Premium Analyse of France and can supply a new range of tritium monitors. These include a portable instrument – Beta Ionix which will detect down to 25kBq/m³ and the M Ionix (a mobile instrument on wheels) that will detect down to 5kBq/m³. <http://www.pycko.co.uk/index.htm>

News from Lablogic

Lablogic currently have lots of special Christmas offers on giving away free monitors with scintillation counters (300SL and Triathler) and the B-Ram flow counter. Check out their website for more information - <http://www.lablogic.com> .

Radon Tests – Have you tried a Canary?

Recently developed in Norway (see - <http://www.corentium.com>) and being marketed and supported in the UK by Mike Scott of BIC (<http://www.bicetechnology.co.uk>). This new digital radon monitor utilising a silicon photo diode detector that differentiates between alphas from radon and other alphas (daughters) and has just come on the market. Does it work? That's what I asked and the answer is I've just bought one!



Corentium have had it tested in various places to demonstrate its accuracy and it seems to put the old alpha track detectors in the shade. The National Institute of Radiological Sciences (NIRS) in Japan tested it in 2011. For alpha track detectors, typically 70% of the participants have a result within $\pm 20\%$ of the reference value. This implies that measuring with an alpha track detector in a room with exactly 100Bq/m^3 over a two months period, the measurements done in that room with an alpha track detector from a random supplier will show values from 60Bq/m^3 up to 140Bq/m^3 with 95% probability. In the test at NIRS, Canary had a deviation of 3% of the NIRS reference value. Since the reference value has an uncertainty of 6%, the Canary is thus well within the NIRS laboratory measurement uncertainty and far more accurate than the alpha track detectors.

The NIRS report may be downloaded here: [NIRS report](#)

In September 2012 Canary was tested in the Federal Office for Radiation Protection in Germany. 21 monitors were tested against reference monitors, and all were statistically measured to be within the laboratories own measurement uncertainty – which is 7%.

Canary has also been tested in calibrated radon laboratories in the Czech Republic. These tests verify that Canary shows the same radon values irrespective of any changes in temperature, humidity, aerosols (dust particles in the air) and electromagnetic fields. This is in contrast to many monitors that are sensitive, and will typically show wrong results when these parameters change.

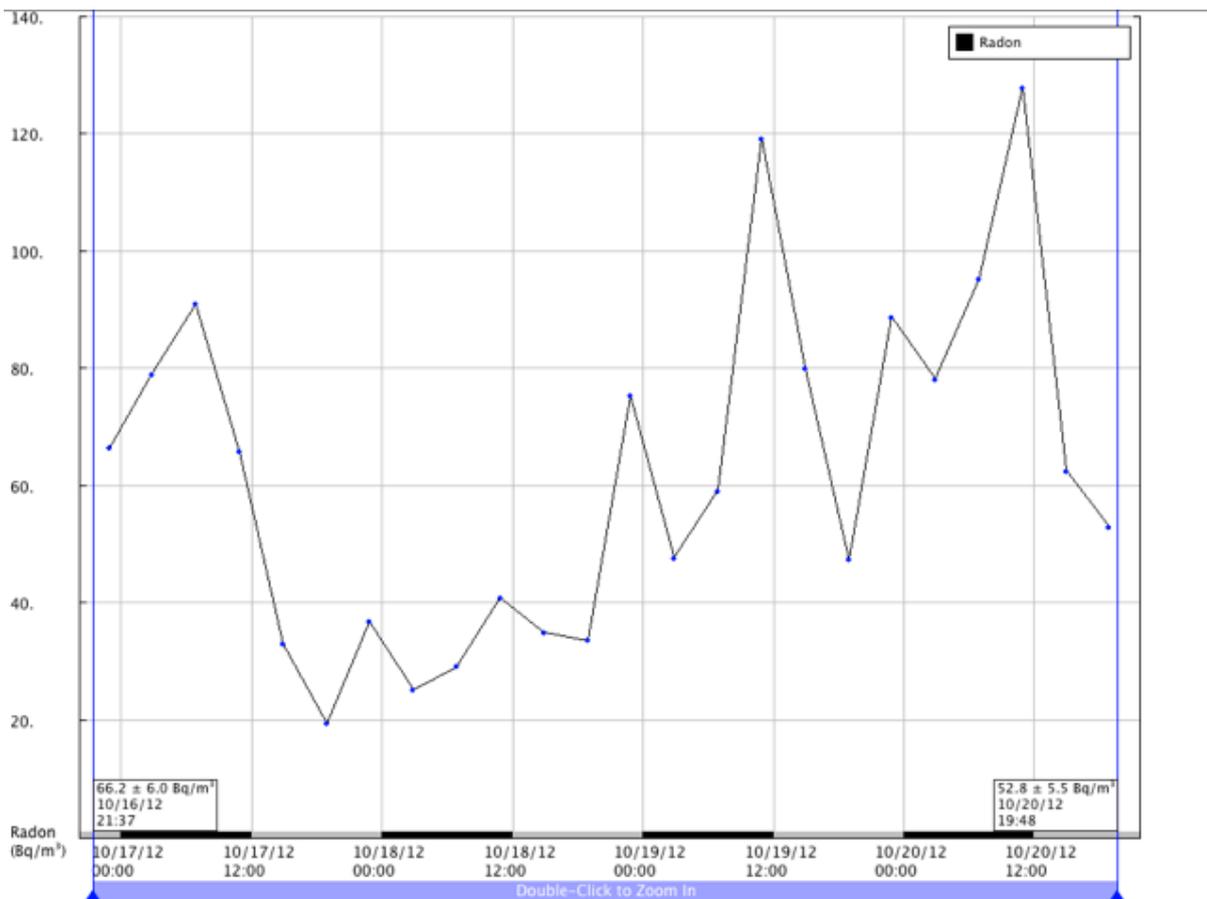
Of course I wanted to test the device myself so I got one of our researchers in Physics to test the Canary against a DurrIDGE Rad 7 that can measure accurately down to 1Bq/m^3 . Now the DurrIDGE is susceptible to humidity and you need to apply correction factors to its results unless you dry the air before testing. Physics have a desiccant tube that they use with their Rad7 to strip out the humidity effects. The researcher set up the Rad7 in his cellar and compared the readings with the Canary over the same period. The results of the 4 day test were as follows:-

RAD7: 61.9 +/- 1.1 Bq/m³
 Canary 1 day: 59 +/- ? Bq/m³
 Canary 4 days: 60 +/- ? Bq/m³

The mean relative humidity in the RAD7 sensitive volume was very low (2.3%) during this run. As you can see, there is excellent agreement between the two detectors. The small discrepancy may even be due to radon emanation from the desiccant tube!

I was very impressed and am now using it on a series of properties for a week at a time to identify properties that may need closer examination. Hoping for mainly low readings, I am using a trigger value of 100Bq/m³ as a level that would require a closer look at a property. (*currently have one cellar just over 100Bq/m³ with others less than this.*) Corentium could do with getting the device accepted by the authorities as being a true record of radon levels – we could then just work to the recommended radon action levels (200Bq/m³ for residential property and 400Bq/m³ for work places). There is a growing interest in this device so watch out for more developments in this area.

Fig. Plot from Durridge RAD7 below shows the variation in radon levels during the test run on 17-20/10/2012



BOOKS AND PUBLICATIONS

Principles for the Assessment of Prospective Public Doses arising from Authorised Discharges of Radioactive Waste to the Environment

<http://publications.environment-agency.gov.uk/pdf/GEHO1202BKLH-E-E.pdf>

Satisfying the ALARA requirement and the role of Best Practicable Means – SEPA

http://www.sepa.org.uk/radioactive_substances/publications/idoc.ashx?docid=b9c441fd-defd-4364-bb06-874111d3f6bb&version=-1

Report of ICRP Task Group 84 on Initial Lessons Learned from the Nuclear Power Plant Accident in Japan vis-à-vis the ICRP System of Radiological Protection

<http://www.icrp.org/docs/ICRP TG84 Summary Report.pdf>

Dalgety Bay Radium Contamination – Sepa - August 2012

http://www.sepa.org.uk/radioactive_substances/publications/idoc.ashx?docid=c33aa1df-8cb9-4b51-b4ae-c5e95e4eeb82&version=-1

Recent IAEA Publications

Use of a Graded Approach in the Application of the Safety Requirements for Research Reactors

IAEA Safety Standards Series No. SSG-22

This publication provides recommendations on the appropriate manner to comply with the Safety Requirements for research reactors, IAEA Safety Standards Series No. NS-R-4, utilizing a graded approach. It is intended for use by operating organizations, regulatory bodies and other organizations involved in the design, construction and operation of research reactors.

Contents: 1. Introduction; 2. Basic elements of the approach to grading; 3. Regulatory supervision; 4. Management and verification of safety; 5. Site evaluation; 6. Design; 7. Operation; 8. Decommissioning; Annex: Example of steps in the graded approach for packaging of radioactive material.

STI/PUB/1547; 74 pp.; 2 figures; 2012, ISBN 978-92-0-127310-9, English, 29.00 Euro

Electronic version can be found:

<http://www-pub.iaea.org/books/IAEABooks/8765/Use-of-a-Graded-Approach-in-the-Application-of-the-Safety-Requirements-for-Research-Reactors>

Management of Cervical Cancer: Strategies for Limited-resource Centres - A Guide for Radiation

IAEA Human Health Reports No. 6

Clinical guidelines for the management of cervical cancer exist in the published literature. However, these guidelines have usually been developed in and for an affluent environment where all modern diagnosis and treatment modalities, and tools are available to the practitioner. This publication is aimed at radiation oncologists working in centres with limited resources and treating a large number of patients with cervical cancer. The approach and techniques recommended are intended to be evidence based, simple, feasible and resource-sparing to the extent that this is possible when dealing with a complex treatment modality such as radiotherapy..

STI/PUB/1556; 77 pp.; 17 figures; 2012; ISBN 978-92-0-132010-0; 18.00 Euro

Electronic version can be found:

<http://www-pub.iaea.org/books/IAEABooks/8738/Management-of-Cervical-Cancer-Strategies-for-Limited-resource-Centres-A-Guide-for-Radiation-Oncologists>

The Safety Case and Safety Assessment for the Disposal of Radioactive Waste

IAEA Safety Standards Series No. SSG-23

This Safety Guide provides guidance and recommendations on meeting the safety requirements in respect of the safety case and supporting safety assessment for the disposal of radioactive waste. The safety case and supporting safety assessment provide the basis for demonstration of safety and for licensing of radioactive waste disposal facilities and assist and guide decisions on siting, design and operations. The safety case is also the main basis on which dialogue with interested parties is conducted and on which confidence in the safety of the disposal facility is developed. This Safety Guide is relevant for operating organizations preparing the safety case as well as for the regulatory body responsible for developing the regulations and regulatory guidance that determine the basis and scope of the safety case.

Contents: 1. Introduction; 2. Demonstrating the safety of radioactive waste disposal; 3. Safety principles and safety requirements; 4. The safety case for disposal of radioactive waste; 5. Radiological impact assessment for the period after closure; 6. Specific issues; 7. Documentation and use of the safety case; 8. Regulatory review process.

STI/PUB/1553; 120 pp.; 5 figures; 2012; ISBN 978-92-0-128310-8; 39.00 Euro

Electronic version can be found:

<http://www-pub.iaea.org/books/IAEABooks/8790/The-Safety-Case-and-Safety-Assessment-for-the-Disposal-of-Radioactive-Waste>

Monitoring for Compliance with Remediation Criteria for Sites

Safety Reports Series No. 72

This Safety Report provides detailed and practical advice to operators and regulators on the development and implementation of monitoring strategies in order to demonstrate compliance with radiological criteria for release of sites for unrestricted or restricted use. The publication complements the IAEA Safety Report on monitoring for compliance with exemption and clearance levels, which applies to clearance of bulk material from regulatory control.

STI/PUB/1551; 190 pp.; 49 figures; 2012, ISBN 978-92-0-127910-1 , English, 40.00 Euro

Electronic version can be found:

<http://www-pub.iaea.org/books/IAEABooks/8760/Monitoring-for-Compliance-with-Remediation-Criteria-for-Sites>

Quality Assurance Programme for Computed Tomography: Diagnostic and Therapy Applications

IAEA Human Health Series No. 19

This publication presents a harmonized approach to quality assurance in the field of computed tomography applied to both diagnostics and therapy. It gives a careful analysis of the principles and specific instructions that can be used for a quality assurance programme for optimal performance and reduced patient dose in diagnostic radiology. In some cases, radiotherapy programmes are making a transition from 2-D to 3-D radiotherapy, a complex process which critically depends on accurate treatment planning. In this respect, the authors also provide detailed information about the elements needed for quality assurance testing, including those relating to accurate patient characterization as needed for radiotherapy treatment planning.

STI/PUB/1557; 171 pp.; 43 figures; 2012; ISBN 978-92-0-128910-0; 48.00 Euro

Electronic version can be found:

<http://www-pub.iaea.org/books/IAEABooks/8751/Quality-Assurance-Programme-for-Computed-Tomography-Diagnostic-and-Therapy-Applications>

Assessment of Iron Bioavailability in Humans Using Stable Iron Isotope Techniques

IAEA Human Health Series No. 21

This publication on the assessment of iron bioavailability was developed as part of the IAEA's continuing efforts to transfer knowledge and technology in the use of stable isotope techniques in nutrition. It provides information on the theoretical background and practical application of state of the art methodology to measure human iron absorption and dietary iron bioavailability using stable (non-radioactive) isotopes. These techniques can be used to guide fortification and food based strategies to combat iron deficiency,

which remains unacceptably high among infants, children and women of childbearing age in developing countries..

STI/PUB/1544; 78pp.; 14 figures; 2012, ISBN 978-92-0-126510-4, English, 26.00 Euro

Electronic version can be found:

<http://www-pub.iaea.org/books/IAEABooks/8830/Assessment-of-Iron-Bioavailability-in-Humans-Using-Stable-Iron-Isotope-Techniques>

Radiation Protection and NORM Residue Management in the Titanium Dioxide and Related Industries

Safety Reports Series No. 76

This Safety Report is a compilation of detailed information on the processes and materials involved in the titanium dioxide and related industries and on the radiological considerations that need to be taken into account by the regulatory body when determining the nature and extent of radiation protection measures. It has been developed as part of the IAEA's programme on the application of its safety standards in the field of radiation, transport and waste safety. The information provided will assist in the implementation of a graded approach to regulation, in terms of which the application of the requirements of the safety standards is commensurate with the characteristics of the practice or source and with the magnitude and likelihood of the exposures. Although aimed primarily at the titanium dioxide industry, this publication is also relevant to industries involved in the mining and beneficiation of mineral sands for the extraction of heavy minerals such as zircon, monazite and ilmenite..

STI/PUB/1568; 105 pp.; 12 figures; 2012, ISBN 978-92-0-132110-7, English, 32.00 Euro

Electronic version can be found:

<http://www-pub.iaea.org/books/IAEABooks/8884/Radiation-Protection-and-NORM-Residue-Management-in-the-Titanium-Dioxide-and-Related-Indust>

Cyclotron Produced Radionuclides: Operation and Maintenance of Gas and Liquid Targets

IAEA Radioisotopes and Radiopharmaceuticals Series No. 4

This publication, which draws on the results of an IAEA coordinated research project and on the input from dedicated experts in the field, provides a comprehensive overview of the technologies involved in the manufacturing and operation of liquid and gas targets for cyclotron based production of radioisotopes. It covers the technology behind targetry, techniques for preparation of targets, irradiation of targets under high beam currents, target processing, target recovery, etc. The publication will be useful to scientists and technologists interested in translating cyclotron based radioisotope production into practice, as well as to postgraduate students in the field.

STI/PUB/1563; 103 pp.; 33 figs; 2012; ISBN 978-92-0-130710-1; English; 35.00 Euro

The electronic version can be found:

<http://www-pub.iaea.org/books/IAEABooks/8783/Cyclotron-Produced-Radionuclides-Operation-and-Maintenance-of-Gas-and-Liquid-Targets>

Sources and Measurements of Radon and Radon Progeny Applied to Climate and Air Quality Studies

Proceedings Series

The naturally occurring radionuclide radon (^{222}Rn), together with its radioactive progeny, has been widely used to study atmospheric processes and to test and validate comprehensive global chemical transport models. Being a noble gas, radon is not removed from the atmosphere by dry or wet deposition processes, nor does it become attached to aerosols, and so it is a good tracer for air mass movements. This publication summarizes the findings of a technical meeting jointly sponsored by the IAEA and the World Meteorological Organization, at which experts in the fields of radon exhalation from the ground, radon measurements in air, and atmospheric transport modelling came together to discuss the latest developments. A major focus of the meeting was on moving towards agreed approaches to estimating radon exhalation flux densities, and to

improving quality assurance of measurements both of radon exhalation flux densities and of concentrations of radon and radon progeny in the atmosphere.

STI/PUB/1541; 162 pp., 88 figs; 2012; ISBN 978-92-0-123610-4; English; 38.00 Euro

The electronic version can be found:

<http://www-pub.iaea.org/books/IAEABooks/8573/Sources-and-Measurements-of-Radon-and-Radon-Progeny-Applied-to-Climate-and-Air-Quality-Studies>

Regulations for the Safe Transport of Radioactive Material – 2012 Edition

Specific Safety Requirements

IAEA Safety Standards Series No. SSR-6

This publication establishes the regulations that apply to the transport of radioactive material by all modes of transport on land, water or in the air, including transport that is incidental to the use of the radioactive material. The objective and scope of the regulations are described in detail as well as the range of their application. The publication provides requirements useful to governments, regulators, operators of nuclear facilities, carriers, users of radiation sources and cargo handling personnel.

Contents: 1. Introduction; 2. Definitions; 3. General provisions; 4. Activity limits and classification; 5. Requirements and controls for transport; 6. Requirements for radioactive materials and for packagings and packages; 7. Test procedures; 8. Approval and administrative requirements; Annex I: Summary of approval and prior notification requirements; Annex II: Conversion factors and prefixes; Annex III: Summary of consignments requiring exclusive use.

STI/PUB/1570; 168 pp.; 7 figures; 2012; ISBN 978-92-0-133310-0, English, 44.00 Euro

Electronic version can be found:

<http://www-pub.iaea.org/books/IAEABooks/8851/Regulations-for-the-Safe-Transport-of-Radioactive-Material-2012-Edition-Specific-Safety-Requirements>

For additional information, or to order a book please contact:

Sales.publications@iaea.org fax: +43 1 2600 29302 tel: +43 1 2600 22529/22530

<http://www.iaea.org/books>

ICRP Publications

ICRP Statement on Tissue Reactions/ Early and Late Effects in Normal Tissues and Organs – Threshold Doses for Tissue Reactions in a Radiation Protection Context ICRP Publication 118, Ann. ICRP 41(1/2), 2012

F.A. Stewart, A.V. Akleyev, M. Hauer-Jensen, J.H. Hendry, N.J. Kleiman, T.J. MacVittie, B.M. Aleman, A.B. Edgar, K. Mabuchi, C.R. Muirhead, R.E. Shore, W.H. Wallace

Abstract - This report provides a review of early and late effects of radiation in normal tissues and organs with respect to radiation protection. It was instigated following a recommendation in Publication 103, and it provides updated estimates of 'practical' threshold doses for tissue injury defined at the level of 1% incidence. Estimates are given for morbidity and mortality endpoints in all organ systems following acute, fractionated, or chronic exposure. The organ systems comprise the haematopoietic, immune, reproductive, circulatory, respiratory, musculoskeletal, endocrine, and nervous systems; the digestive and urinary tracts; the skin; and the eye.

Particular attention is paid to circulatory disease and cataracts because of recent evidence of higher incidences of injury than expected after lower doses; hence, threshold doses appear to be lower than previously considered. This is largely because of the increasing incidences with increasing times after exposure. In the context of protection, it is the threshold doses for very long follow-up times that are the most relevant for workers and the public; for example, the atomic bomb survivors with 40–50 years of follow-up. Radiotherapy data generally apply for shorter follow-up times because of competing causes of death in cancer patients, and hence the risks of radiation-induced circulatory disease at those earlier times are lower.

A variety of biological response modifiers have been used to help reduce late reactions in many tissues. These include antioxidants, radical scavengers, inhibitors of apoptosis, anti-inflammatory drugs, angiotensin-converting enzyme inhibitors, growth factors, and cytokines. In many cases, these give dose modification factors of 1.1–1.2, and in a few cases 1.5–2, indicating the potential for increasing threshold doses in known exposure cases. In contrast, there are agents that enhance radiation responses, notably other cytotoxic agents such as antimetabolites, alkylating agents, anti-angiogenic drugs, and antibiotics, as well as genetic and comorbidity factors.

Most tissues show a sparing effect of dose fractionation, so that total doses for a given endpoint are higher if the dose is fractionated rather than when given as a single dose. However, for reactions manifesting very late after low total doses, particularly for cataracts and circulatory disease, it appears that the rate of dose delivery does not modify the low incidence. This implies that the injury in these cases and at these low dose levels is caused by single-hit irreparable-type events. For these two tissues, a threshold dose of 0.5 Gy is proposed herein for practical purposes, irrespective of the rate of dose delivery, and future studies may elucidate this judgement further.

Ed – check out Science Direct as Annals of ICRP may be included in your institutions subscription. You will then be able to download ICRP Pubs if you need them.

See - <http://www.sciencedirect.com/>

Latest RIFE Report published

The Food Standards Agency (FSA) is pleased to announce that the Radioactivity in Food and the Environment (RIFE) publication 17 (2011), has now been published on the Agency's website and can be found at the following location:

<http://www.food.gov.uk/science/research/radiologicalresearch/radiosurv/rife/>

The FSA would also like to take this opportunity to inform you that it will be consulting on potential changes to its radiological monitoring programme. The consultation is due to be published in the autumn and will be available on the FSA website at

<http://www.food.gov.uk/news-updates/consultations/>

If you would like to receive an electronic copy of the consultation or require further information on the RIFE 17 report, then please send an email to radiation@foodstandards.gsi.gov.uk

SRP Training Course on Radioactive Source Security: Everything the RWA needs to know

see - http://srp-uk.org/images/stories/Security_of_Sources_Flyer.pdf

The course will be held at University of Cumbria, Lancaster Campus, LA1 3JD on Wednesday 30 January 2013. It is being supported by Environment Agency, SEPA and NIEA.

It is a one day course to provide RWAs and RPAs with all the information they need to meet the Basic Understanding requirement of the RWA syllabus on security of radioactive sources.

A course developed in conjunction with the Environment Agency, the Scottish Environment Protection Agency and the Northern Ireland Environment Agency's "RWA Secretariat".

A short voluntary assessment will be available as part of the day, with a certificate of achievement to add to your professional portfolio.

Registration: 0900 - 0925, lunch, tea and coffee included.

A certificate of achievement will be provided for all those sitting the assessment.

Spaces are limited so please book early to avoid disappointment.

The Society for Radiological Protection
DS009, Dartington Space, Dartington Hall, Devon TQ9 6EN
Tel 01803 866 743
Fax 08442 724892

<mailto:unity.stuart@srp-uk.org> unity.stuart@srp-uk.org
<<http://www.srp-uk.org/>> www.srp-uk.org

RWA Update from SEPA

The latest RWA Update has been provided by Angela Wright of SEPA, see -

http://www.sepa.org.uk/radioactive_substances/idoc.ashx?docid=d4dbc5d1-3ef2-40af-b749-d23790326e80&version=-1

The update contains information about some changes to the RWA Syllabus, -

http://www.sepa.org.uk/radioactive_substances/radioactive_waste_advisers/idoc.ashx?docid=e542b121-473f-469c-b682-db577bee4299&version=-1



Association of
UNIVERSITY
RADIATION
PROTECTION
OFFICERS

AURPO Membership Subscription Form 2012-13

The annual subscription of £35 (£10 for retired members) to the Association is due on the 1st July 2012. Members who attend the Annual Conference in September may pay the subscription fee at the time of registration.

Please fill in the form below. If paying by cheque make it payable to AURPO, attach it to this page and send it to me at the address below. If paying by other way, *regardless of the method*, or not renewing your membership, please complete the form and **e-mail it back to me, copying it to membership@aurpo.org.uk**.

*NB. Invoices will **not** be sent unless specifically requested. POs alone **are not** requests for an invoice and are considered for information only.*

I am paying by: (please ' X ')		<i>For office use only</i>	
Cheque Enclosed		Received	
BACS		Received	
Conference Form		Received	
Invoice Required		Number	
PO Number			
Receipt Required		Number	
I confirm my membership of IRPA through the Association			
<i>I do not wish to renew my membership (please ' X ')</i>			
Title	E-mail		
Name			
Address			
Phone		Fax	
Signed		Date	

Please note that it is now a condition of membership that all subscriptions must be paid by 30th September, but unless paying via the Conference, please pay as early as possible, any time from now on.

Thank you
Gillian Glazier
Honorary Treasurer

PTO for Bank details

Please make your payment either by cheque payable to AURPO or by BACS:

Paying by BACS - IMPORTANT

NB Please ensure that your name, or the invoice number is quoted on the Remittance Advice and that a copy is sent to the Treasurer, preferably by e-mail.

Account Name: **Association of University Radiation Protection Officers**

Bank Name: NATIONAL WESTMINSTER BANK

Bank Address: Leeds City office
 8 Park Row
 Leeds, LS1 1QS

Bank Sort Code 60-60-05

Bank Account No 98900846

BIC NWBK GB 2L

IBAN GB37 NWBK 6060 0598 9008 54

Please send the cheque or remittance advice to:-

Mrs G.C.Glazier, Hon. Treasurer,
21, Viewland Road, Plumstead, London, SE18 1PE
treasurer@aurpo.org



Association of
UNIVERSITY
RADIATION
PROTECTION
OFFICERS

AURPO Affiliate Subscription Form 2012-13

The annual subscription of £125 to the Association was due on the 1st April 2012. Exhibitors who attend the Annual Conference in September may pay the subscription fee at the time of registration.

Please fill in the form below. If paying by cheque make it payable to AURPO, attach it to this page and send it to me at the address below.

Regardless of the method of payment, or you not renewing your affiliateship, please complete the form and **e-mail it back to myself and copy Christine Edwards, membership@aurpo.org**

I am paying by: (please ' X ')		<i>For office use only</i>	
Cheque Enclosed		Received	
BACS		Received	
Conference Form		Received	
Invoice Required		Number	
PO Number			
Receipt Required		Number	
<i>I do not wish to renew my membership (please ' X ')</i>			
Title	E-mail		
Contact Name			
Company Name			
Address			
Phone		Fax	
Signed		Date	

Please note that it is now a condition of membership that all subscriptions must be paid by **30th September**, but unless paying via the Conference, please pay as early as possible, any time from now on.

Thank you
Gillian Glazier
Honorary Treasurer

PTO for Bank details

Please make your payment either by cheque payable to AURPO or by BACS:

Paying by BACS - IMPORTANT

NB Please ensure that your name, or the invoice number is quoted on the Remittance Advice and that a copy is sent to the Treasurer, preferably by e-mail.

Account Name: **Association of University Radiation Protection Officers**

Bank Name: NATIONAL WESTMINSTER BANK

Bank Address: Leeds City office
 8 Park Row
 Leeds, LS1 1QS

Bank Sort Code 60-60-05

Bank Account No 98900846

BIC NWBK GB 2L

IBAN GB37 NWBK 6060 0598 9008 54

Please send the cheque or remittance advice to:-

Mrs G.C.Glazier, Hon. Treasurer,
21, Viewland Road, Plumstead, London, SE18 1PE
treasurer@aurpo.org