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

April 2010 # AURPO NEWSLETTER **Editor T.J.Moseley**

CONTENTS **Page No.**

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EDITOR'S INTRODUCTION

Well the Christmas edition caused a lot of excitement and I managed to upset a few people again! I must thank all those members who contacted me to give their support and to reflect that although I was a bit provocative in my criticisms of the Environment Agency there are a lot of people out there who think I was 'spot on'. I was only reflecting in my editorial what I had been told by members. It would perhaps help if more members complained directly to the Agency through the appropriate channels with complaints re non-compliance reports or 'Warning Letters' if it is felt that these have overstepped the mark. Although I think we have got the message through to the Agency now and they have been very responsive in addressing concerns re these matters. I think in future you should find that you will get a 'Compliance Report' after an inspection in which good aspects of your management systems will be commented on as well as identifying areas of non-compliance.

There was some good news also with the charging scheme 2010/11 in that they have got rid of the 7 rooms and used an outcome based formula instead. There are some parts of the scheme and non-nuclear OPRA that could still be improved but we can work on that as well (full details on pages 8-9).

I seem to have put a lot in about Agency matters in this newsletter, but I have no crusade against them. It just happens that there has been a lot happening recently with EPR2010 coming into force and developments with non-nuclear OPRA and Compliance Classification Assessments. I've just tried to look into what is being done to see that we are being treated fairly compared with other environmental permitting regimes and that 'Fairer and Better Regulation' lives up to its title. Unfortunately the powers that be seem to think that 'fairer and better regulation' means more detailed and intrusive regulation when what is need is for people to take a step back, get real about the risks involved and instead produce simpler and less regulation.

Let me have your views so that I am not just a lone voice. Look out for a letters section in the next newsletter. I will not publish anything from an individual without their permission and there will be the option to post things anonymously - I might even send one in myself!

Contributions for the next newsletter by the end of June please. The next SULG meeting is on June 10th, so there will be a report on that. Anything you want bringing up at SULG contact myself or Richard Harrison by the end of May.

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PRESIDENT'S REPORT

We are well into 2010 and once again I am looking forward to seeing as many members as possible at the AURPO Annual Conference later this year, in September.

The annual conference, which will take place in Cambridge 7th – 8th September 2010 is now beyond its planning stage and we await your participation. The facilities look excellent and the Scientific Programme is now close to completion and promises to comprise some very interesting sessions. You should all receive an invitation and registration form to participate in the conference very soon. David Plumb, Libby Yates and the team at Cambridge have been working very hard to ensure that we all have an enjoyable time at the conference.

The meeting in Newcastle in 2011, the Association's 50th Anniversary, is in its early stage of planning. We have accepted an offer to host the annual conference in 2012 from the University of Central Lancashire in Preston and we are now looking for offers for 2013 and beyond. It seems early to be talking about 2013 but conference planning and confirmation of facilities is required at least 2 - 3 years in advance. If anyone feels that they have good facilities at their organisation and is prepared to make us an offer, please let us know.

Sadly, the December Newsletter Editorial and the follow-up mail shot requesting information from members on EA warning letters have led to an official compliant from the EA. Unfortunately for the Association, the publishing of the Editorial and collation of such letters was seen to have received official backing and approval from the AURPO Executive which was not the case and therefore as President of AURPO my responsibility has been to diffuse this situation.

I have discussed this issue fully with the Executive and it was recorded in the minutes of the Executive meeting held on the 9th March 2010 that:

- It is not the role of the Executive Committee to censor the editorial, but the Newsletter Editor would, in future, be mindful of how others might interpret his comments.
- It was agreed to issue a reminder to members about expressing views *[regarding general Environment Agency matters]* via the Small Users Liaison Group (SULG), rather than individual complaints.
- Rather than have a restricted members list, it was agreed to use careful wording of requests for feedback from RPOs and RPAs to ascertain the extent of any problem.

AURPO has two representatives on the Small User Liaison group (SULG). They are Trevor Moseley and Richard Harrison. I encourage all members to discuss all EA issues with these representatives so that these may be taken forward to SULG meetings.

This episode has now been fully investigated and dealt with and we must move on. However, I do believe that the Association should be able to provide an arena in which members are able to air opinions freely and I am anxious to find some way in which to do this without damage to the reputation of the Association. I propose therefore that we add a new section to the Newsletter dedicated to 'Letters to the Editor' in which members will be able to voice any personal issues for themselves without these necessarily being regarded as the view of the Association. I would be grateful for any feedback you may have on this proposal.

Good wishes to you all.

Sonia Nuttall
President of AURPO
19th April 2010

AURPO Conference 2010 – University of Cambridge

The annual AURPO conference for 2010, will be held on September 7th and 8th, at the University of Cambridge. All accommodation and conference facilities will be at Downing College (*above*), located in a magnificent setting on the immediate perimeter of the central historic area of the City of Cambridge. The Conference will begin at 2 pm on the Tuesday 7th, in the new Howard Theatre with update sessions, followed by the AGM. On Tuesday evening we will visit some of the galleries of the nearby Fitzwilliam Museum for food, wine and music. The Conference will continue at 9 am on Wednesday and continues through the day until approximately 4.30 pm with the theme of the scientific meeting being 'The Management of Waste and Radioactive Substances Use'. Wednesday evening features the Annual Conference Dinner which will be held in the recently superbly restored main Hall at Downing.

Everyone should have received a mail-shot from Cambridge by now and full information will shortly be posted on our website – www.aurpo.org

The Conference and accommodation facilities are amongst the best in Cambridge, and the location and facilities will ensure a relaxing but efficient environment for the AURPO Conference in 2010.

UNIVERSITY OF CAMBRIDGE

Conference Organisers: David Plumb and Libby Yates
Email: drp21@admin.cam.ac.uk

HSE NEWS – Basic Safety Standards

The Basic Safety Standards (BSS) are being revised in order to reflect the recommendations of the International Commission for Radiological Protection published in 2007 (ICRP 103). In particular the draft standards incorporate new biological and physical information. The Euratom BSS Directive is being revised by a group of experts under article 31 of the Euratom Treaty. The group aims to include the ICRP103 recommendations and to simplify current legislation by consolidating 5 Euratom directives into a single text.

The draft BSS was published on 24th February 2010 together with associated notes from the expert article 31 group.

http://ec.europa.eu/energy/nuclear/radiation_protection/doc/art31/2010_02_24_draft_euratom_basic_safety_standards_directive.pdf

http://ec.europa.eu/energy/nuclear/radiation_protection/article_31_en.htm

The basic foundations of Radiological Protection that were incorporated into the previous directives remain unchanged. The expert group emphasised that current legislation gave appropriate levels of protection to workers and members of the public. In particular they maintain the Commission's three fundamental principles of radiological protection, namely justification, optimisation and the application of dose limits. However, the following gives a summary of changes that are proposed –

- The Recommendations evolve from the previous process-based protection approach using practices and interventions by moving to an approach based on the exposure situation. They recognise planned, emergency, and existing exposure situations, and apply the fundamental principles of justification and optimisation of protection to all of these situations.
- Some of the definitions in the 5 previous directives have been changed. For example the term qualified exert will no longer be used. The new terms for “qualified experts” will be Radiation Protection Expert, Medical Protection Expert and Radiation Protection Officer. The roles of these individuals are outlined in Title 2 of the draft.
- Dose limits are largely unchanged however the ICRP currently have a task force engaged at investigating an appropriate dose limit for the lens of the eye.
- Better integration of natural and artificial sources. Inclusion of NORM industries. The new draft Euratom BSS includes radon in dwellings and exposure to building materials in the scope of the existing exposure situations. The National reference levels for radon are set to 200Bq/m^3 for new dwellings or buildings with public access and to 300Bq/m^3 for existing dwellings or buildings with public access.
- Exposure to cosmic radiation in plane and spacecraft is covered. Exposure of space crew is managed as a specially authorised exposure.
- The draft Directive explicitly introduces consideration of radiation protection to non human species in the environment.
- The draft Directive has developed the concept of a graded approach to regulatory control so that it is commensurate with the risk and with the effectiveness of such

controls. In line with the international standards the Directive will introduce a system of regulation based on the concepts of notification, registration and licensing.

- To try and align with the international BSS the default values included in the Directive for exemption and clearance of materials with very low activity concentrations are those laid out by IAEA RS-G_1.7 rather than earlier guidance of experts (Radiation Protection 122). The same levels are used for both exemption and clearance.
- There are new justification requirements for medical exposure of asymptomatic individuals.

The next steps are for the draft Euratom BSS Directive and the associated article 31 expert notes to be circulated for comment. The Directive will then be prepared by the EC legal services and then adopted by the Commission. Following this the UK will implement the BSS into our regulations.

The International BSS (version 3.0) are also being redrafted in response to ICRP 103. Compliance with these standards is not mandatory however the international BSS are relevant to several areas of the nuclear industry and harmonisation between the IAEA and Euratom BSS is sought. To this end representatives of the IAEA participate as observers in the Article 31 group of experts and in some of the working parties. The IAEA BSS have been issued to Radiation Safety Standards Committee (RASSC) members for comment (deadline 31st May 2010) and it is hoped they will be adopted by December 2010.

Dr Chris Bull
University of Sheffield

(from HSE update at SRP conference)

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Scrap worker dies of radiation poisoning

A SCRAP dealer died of radiation poisoning after dismantling a machine once used by a university chemistry class, police in India said yesterday. The dealer died on Monday in New Delhi after being among workers who sawed open a "gamma cell" that Delhi University auctioned in February, a police statement said. Seven other workers were being treated for radiation exposure.

Delhi University vice-chancellor Deepak Pental apologised yesterday and accepted "moral responsibility" for the lax manner in which the radioactive equipment had been handled, and said the university would compensate the victims, although "no amount can compensate for the damage," he said.

The case has raised fears about the unregulated disposal of hazardous material in India, where dangerous chemicals and even radioactive waste are often sold to scrap dealers.

"In India we have better laws than most countries, but the laws are not enforced," RG Pillay, a nuclear expert at the Mumbai-based Tata Institute of Fundamental Research, said recently.
A gamma cell uses the radioactive isotope Cobalt-60 to study the effects of gamma rays on chemicals. Gamma rays are radiation similar to X-rays.

From an article by **NIRMALA GEORGE (Scotsman) 30/04/2010**

EPR Regulations & Guidance Issued by DEFRA

DEFRA are pleased to report that the EP Regulations 2010 (SI No. 675) were made on 10th March after they were approved by Parliament and the National Assembly for Wales. The Regulations can be found at:-
http://www.defra.gov.uk/environment/policy/permits/guidance.htm.

DEFRA also published the Government Guidance that accompanies the EP Regulations 2010. This includes all existing EP Guidance updated for the new Regulations and the EP Guidance which covers the new EP regimes. You can currently access these documents on http://www.defra.gov.uk/environment/policy/permits/guidance.htm).

All existing Guidance for the EP Regulations 2007 can be accessed on http://www.defra.gov.uk/environment/policy/permits/guidance-epp.htm and will remain there until we remove it in April.

EA MATTERS

EPR 2010 – Briefing Note From EA

The Environmental Permitting Regulations 2010 (EPR2010) and Radioactive Substances Regulation in England and Wales

When do the Regulations start?

We expect that the new regulations will come into force on 6 April 2010. The changes are only being made in England and Wales. Arrangements in Scotland and Northern Ireland will stay as they are.

Do I need to apply for a new permit?

Existing registrations and authorisations will automatically become 'environmental permits' – you do not need to apply to convert them and they will continue to be valid.

Is RSA93 going to stay in force?

Much of what was contained in the Radioactive Substances Act (RSA93) will appear in Schedule 23 of EPR2010. There will be a small 'rump' of provisions in RSA93. Overall, there will be no substantial change in the Government's regulatory policy for Radioactive Substances or in the Environment Agency's regulatory practice.

How can I find out more?

We will later publish a fuller overview of what EPR2010 means for you as a user of radioactive substances – it will highlight those changes to the way we will need to work with you and include a glossary of terms. More general information about the Environmental Permitting Regulations 2010 can be found on the Defra and Environment Agency websites.

I think I need to make an application to use radioactive substances or manage radioactive waste now.What should I do?

We aim to make the change from RSA93 to EPR2010 straightforward for you. If you plan to make an

application between now and 6 April you should use our current application forms. But it would help us if you could avoid making an application very close to the changeover date. We will publish new application forms and guidance to applicants before 6 April on a EPR2010 Radioactive Substances web page on the Environment Agency website.

You said 'no substantial changes'. That implies some changes – what do I need to know?
EPR will allow permits to be transferred between operators, for example, when one company takes over another - we will publish an application form and guidance. If you stop using radioactive substances, you will now need to apply to surrender a permit. The process will be similar to that used under RSA93. Again, we will publish an application form and guidance. We will advertise applications on our web site – except where national security or commercial confidentiality means that we shouldn't.

We will now issue three types of permits:

• a standard permit, as a replacement for the fixed condition registration
• a 'security' permit for sealed source use and waste management
• a 'publicly available' permit, for open source use and waste management

We will change the way we charge for applications and for annual subsistence. We have consulted on those changes and are considering the final details of the scheme so we can publish it before 6 April. If you currently have a RSA93 permit relating to sealed sources, there will be no requirement from 6 April to post that permit on the premises and we encourage you not to post it. Those permits also require that you post the name of the relevant competent person alongside the permit – we will not enforce that condition for sealed source permits.

Are the Exemption orders being changed as part of the introduction of EPR?
DECC has not yet completed its exemption order review – the current suite of orders will continue for now.

Chris Englefield EA, January 2010

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Environmental Permitting Charging Scheme and Guidance 2010/11

The EA charging scheme has now been published on their website at - http://www.environment-agency.gov.uk/static/documents/EP_scheme_and_guidance_2010-11.pdf

The section relating to RSR activities is from p76-91. It covers all radioactive substances use and not just 'small user' activities. We are referred to as operating 'Tier 2' medium risk facilities. There are currently no 'Tier 1' charges - these will probably relate to exempt activities in future. 'Tier 3' are for bespoke permits associated with nuclear facilities and other 'large users'.

For Tier 2 there are 4 levels of sealed source user and four levels of unsealed source user (see non-nuclear OPRA to see how your establishment fits in) and there is a complex matrix of subsistence charges and an increased range of things that they can charge for, with the introduction of transfer charges and surrender charges. In concentrating our fire on the original structure of non-nuclear OPRA we have perhaps let some of the detail in the rest of the charging scheme slip by under the radar. Of particular concern should be the arbitrary

nature of 'surrender charges'. Apparently in future we will not only have to pay to get a permit, then have to pay each year to use the permit, we will also have to pay to give it back! Now, I can understand that for some unsealed source work there is quite a bit of checking and work involved in confirming decommissioning of a site, but what if you only use short half-life radionuclides? If you wait a little while everything will be gone, no clean-up or decommissioning required but you will still be required to pay EA £2470 to surrender your licence if you need to submit an environmental survey report. For very short half life radionuclides where it is agreed that no environmental survey is required you still have to pay £530. If you stop using sealed sources, having gone to great expense in disposing of them, you will still be liable to pay EA up to £370 to surrender your licence. Why? Another hard to justify charge is that for adding a small sealed source (Cat 5) to an existing sealed source licence that includes HASS. The cost for this variation is £1280 (previously £745) yet you can get a separate Cat 5 licence for either £390 or £600 and if you already hold a Cat 5 licence it does not cost you anything extra to add to your inventory up to the A/D level of 0.01. Why such a high additional cost when you hold a HASS licence, have already been inspected and are paying a substantial subsistence charge?

Clarification is needed on what constitutes a partial surrender of a permit as this appears to be subject to the full surrender charge. Does this mean if you have a number of buildings on a site and you decommission one building and notify the Agency about the change to the premises covered, you will have to pay a surrender charge? (*I'll add this to my list of questions for the next SULG!*)

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Non-nuclear RSR OPRA

Our presentations to the Environment Agency about the unacceptable nature and structure of the non-nuclear RSR Opra scheme that they were proposing last year were eventually heard and we are grateful to the officers in the EA technical section for having another look at what had been produced and coming up with the revised scheme that has now been posted on the EA website - http://www.environment-agency.gov.uk/static/documents/Business/Non_nuclear_Opra_rev_for_web_April.pdf

A great deal of effort has gone in to producing a more equitable, scientific, risk-based and proportionate scheme and this is greatly appreciated.

References to risk in the Opra banding have been taken out and references to 'high level' in describing the type of work now relate to the complexity of the work rather than a risk level (it was the use of the term 'high risk' in relation to open source work where the outcomes could be minimal that caused most outrage in the previous scheme). EA may wish to look at the note for Table B where 'medium level' perhaps should be replaced by 'level 3' and 'low level' by 'level 2'. The reason for this being that with the removal of the risk rating row in Table B no mention is made of medium and low levels until Table D.

It was good to see an extra sentence put in at the end of the 3rd para of 2.2 (Use for compliance activities) which recognised that 'the generally good performance of most users of radioactive substances will lead to few having their charges increased as a result of compliance issues'. In fact if you look at how the compliance rating and subsistence charge multipliers work (under 2.2.2), with there being no carry forward of black marks from one year to the next, you effectively have to rack-up over 10 CCS4 non-compliances in your annual visit to have an impact on the subsequent years subsistence charge. Now, members might not thank me for suggesting this, but if I wanted to try and encourage operators to

improve I would look at non-compliances over 2 years. Otherwise there appears little incentive to take any notice of minor recorded non-compliances.

This brings me to the question of what constitutes a non-compliance and how should our non-compliances be rated? As we are part of EPR now there is a generic compliance classification scheme that our RSR one should comply with - I thought I'd have a closer look at this – see below on page 11.

Finally the annex at the end of the scheme details how to work out the ratio used to determine whether a site falls into the 'high complexity' banding. This would have benefitted from a worked example – so I thought I'd do one:-

Complexity rating for a University site				
	Monthly (Bq)	Annual (Bq) (A)	OPRA value (Bq) (O)	A/O ratio
Aqueous waste limits				
H-3	20 GBq	240 GBq	1×10^{11}	2.4
Low energy (<0.3MeV) betas	2 GBq	24 GBq	1×10^{8}	240
Others ex alphas	2 GBq	24 GBq	$1x\ 10^{6}$	24000
Gaseous waste limits				
H-3	-	2 TBq	1×10^{12}	2
C-14	-	1 GBq	1×10^{10}	<1
Others ex alphas	-	200 MBq	1×10^{8}	2
Solid transfers				
H-3	-	5 GBq	1×10^{12}	<1
Low energy (<0.3MeV) betas	-	5 GBq	1×10^{10}	<1
Others ex alphas	-	5 GBq	1×10^{8}	50
Sr-90 and alphas	-	10 MBq	1×10^{5}	100
Organic liquid waste transfer				
Others ex alphas	-	200 MBq	1×10^{8}	2
			Sum of Ratios	**24401**

As the above sum of ratios is <30,000 this is categorised as a permit type 'G' – medium level.

Compliance Classification Scheme – are radioactive substances users getting a raw deal?

All the regulators these days are required to follow the 'Better Regulation Approach' as required by Government edicts. This follows from the Hampton Review in 2005 and the subsequent Macrony Report . The Environment Agency claims to follow the following five principles of better regulation:-

- Transparency – with clear rules and processes
- Accountability – we explain our performance
- Consistency – the same approach is applied within and across sectors
- Proportionality – our actions are governed by the environmental risk
- Targeting – we focus on the most important environmental outcomes

And in the Foreward to the RSR Environmental Principles (Sept 2009) Joe McHugh states that - 'In using the REPs we will take a pragmatic, proportionate and sensible approach'.
Let us keep this in mind when we look at the implementation across various sectors of the Compliance Classification Scheme (CCS).

CCS Generic Guidance
Firstly we should consider the relationship between CCS (Compliance Classification Scheme) and CICS (Common Incident Classification Scheme). CCS categorises non-compliances on the basis of their potential to cause harm whereas CICS classifies incidents where actual harm has occurred. The key word here is potential and what it means. In EA CCS Generic Guidance it is clearly stated that potential impacts should be based on a balance of probabilities, i.e. is the potential impact likely to have occurred? It should not be overly pessimistic. In other words it is not a worst case scenario judgement.
So the CCS Classification scheme aims to classify all non-compliances with permission conditions to indicate the potential threat of **real harm** to the environment. Of main interest to small users are what is meant by the lower levels of transgression CCS3 and CCS4.
CCS3 relates to non-compliances with the potential to give rise to a minor pollution incident requiring no or very limited intervention.
CCS4 relates to non-compliances that will have no or negligible impact on the environment.

Use of CCS in other sectors
In CCS for water quality an example of a CCS3 event is given where the non-compliance could have a minor impact on a fish population or other damage to a habitat. A CCS4 event would be where there is no potential to cause environmental harm and this could include up to 20% exceedence of a numerical limit or failure to comply with reporting requirements.
In CCS under the groundwater regulations a CCS3 event is described in similar terms with the potential for minor damage to a fish population and disposal of pollutants in a non-authorised manner. CCS4 events are all technical breaches of conditions relating to actual disposals.
So we can see that in other sectors there has to be the potential for real harm to the environment before a CCS3 non-compliance is recorded.

CCS and RSR
To obtain consistency across sectors and ensure proportionality governed by environmental risk (2 key principles of better regulation), the key question for radioactive substances users is what level of discharges to the environment could be considered to have the potential to cause real harm and hence get into the CCS3 level or above? The obvious level for this is the individual source/site constraint of 300uSv/y because this is the maximum level that could be

permitted in an authorisation and the EA would not issue a permit for something that could be said to cause environmental harm. Now this may address environmental harm but one could argue that we also need to address 'alara' and that the 20uSv/y optimisation level should be used as the trigger level before a CCS3 should be applied. If 20uSv/y was used it would still be much more restrictive than any other regime.

However, the question of what constitutes real environmental harm is not addressed by RSR and it would appear that any discharge that exceeds a discharge limit, evidence of contamination or leaks, lack of labels on a waste bin, errors in records or reporting could be construed as a CCS3 event without reference to potential outcomes. In the current CCS guidance for the Radioactive Substances Regulatory Regime an unbelievable statement is made in relation to CCS4 events - 'non-compliances with no potential to cause environmental harm will normally be limited'. The exact opposite of this should in fact be the case as most 'small users' environmental impact assessments will show outcomes of <20uSv/y. For a small user therefore it should be very difficult to have a non-compliance that is anything other than CCS4.

This failure to address the question of what constitutes 'real environmental harm' is a serious weakness of the RSR scheme leading to an unnecessary level of enforcement action out of all proportion to the risk posed by the activities being undertaken.

One other issue that is not clear in relation to what constitutes a CCS4 non-compliance is the frequency of an event or failing that is serious enough to warrant being recorded as a non-compliance. It would appear that in some cases recently a single incident of a failure in record keeping (for example) has been recorded as a non-compliance rather than requiring a number of incidents that would provide general 'evidence of poor record keeping'. Similarly an isolated incident of a missing warning label should not on its own warrant a non-compliance but if this was found in several places then 'poor labelling' should be recorded as a non-compliance. Different inspectors take a different line and clearer guidance needs to be given from the top. Repeated recording of trivial items as non-compliances will not help the Environment Agency's image.

Conclusion

It seems very clear to me that radioactive substances users are getting a raw deal with the Compliance Classification Scheme. It is one thing saying that we have a level playing field but actions speak louder than words and a disproportionate amount of time and effort is being spent on the process of regulating activities with an insignificant risk of environmental harm and people are being issued with CCS3 non-compliances where there is clearly no 'potential for real environmental harm'.

T.J.Moseley, RPA University of Sheffield

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Fairer and Better Environmental Enforcement – Implementing new Civil Sanctions

The Environment Agency are currently consulting on the introduction of new Civil Sanctions under the banner of ‘Fairer and Better Environmental Enforcement’. The consultation opened on 15th February and closes Friday 7th May.

I've had a brief look at the consultation documents and can report the following:-

1) Currently it will not apply to RSR but it is planned that all EPR regimes will operate under this umbrella in the future.

2) As long as things are implemented fairly and proportionately in accordance with the guidance then people should have no complaints.

3) The FMPs (fixed monetory penalties) that on first sight gave visions of inappropriate fines by inspectors acting like traffic wardens proved not to be a problem when looked at in detail. The guidance is at pains to point out that 'No civil sanctions will be issued in the field by inspectors'. Initially any sanctions including FMPs will have to be approved by an 'Area Enforcement Panel' and this will be overseen by a National Panel to ensure consistency and proportionality. There will also be an appeals procedure. (FMPs would be £300 with early payment down to £150)

4) There would be no double penalties. If a civil sanction is imposed the offence will not then attract points under enforcement history attribute of OPRA. Thinking about this though, it does not make sense, someone with a record of committing offences will require closer monitoring by the Agency and therefore this would justify a higher subsistence charge.

5) VMPs -variable monetary penalties are there for more serious offences where operator has damaged the environment, dumped things inappropriately without a licence or is generally negligent in its operations. The fine can therefore be set to make sure the operator has not made any financial gains by flouting the regs and any damage to the environment is made good. They have however made this section overly complex with too many different multipliers and I will comment accordingly on this but will support the principles involved.

It is worth looking at this consultation and making comments now because once the Civil Sanctions have been introduced for other environmental regimes they will probably just be transferred over to RSR sometime in the future.

NEWS from DfT

Report on DfT Stakeholder Meeting 12th Feb 2010

Matters Arising
Use of 'Limited Quantity' concept used in ADR for other dangerous goods not available for radioactives. General feeling amongst EU regulators is that it was a good idea but unsure as to how to progress it as could not be based on packet size/size of load. They need suggestions on how to move this forward – thought it would help with medical shipments and local distribution.
Fitting orange plates to small vehicles – put orange plate centrally where number plate usually is and put number plate off-centre. (Orange Plate can't be flexible/curved)

REGs Update
Still looking at 2013 for next main update. May be changes in 2011 in relation to pressure vessels but no change for Class 7.
Current work of TRANSSC – fissile excepted material provisions under review.
There will be a change in para 611 of IAEA Regs permitting the use of transport frame and auxiliary equipment to tie down packages but not compromise safety.
Provision for transport of large components (from decommissioning work) as SCO II unpackaged. Guidance to be produced on how this can be accommodated under special arrangements.
Re-calculation of A1, A2 and exemption values currently being undertaken by HPA (2012 scheduled completion). Looking for more standardisation throughout different regulatory regimes. New values will also be aligned with next ICRP dose-coefficients.
Transistional arrangements in relation to old packaging to be continued permitting package designs approved under old regulations to continue to be used providing maintenance and QA have been maintained.
Review of labelling of excepted packages to permit alternative location – permitting external label in some circumstances (e.g. liquids).
Office of Nuclear Regulation to be set up under DECC autumn 2010. (This was previously talked about as the Nuclear Regulatory Commission.) Rad materials transport will be part of this. Inspection reports to go on new website.

Compliance Inspection Programme
Steve Whittingham in charge of this. Four compliance inspectors (2 only do this part time). Current inspection programme is being evaluated to develop a risk model and then develop a desk-top technique for quality assessment. They aim to develop measures to mark against and to develop targeted guidance for stakeholders. Compliance is judged against ADR, CDG2009 and security requirements of TRANSEC (ADR Ch1.10) using 2 pro-forma questionnaires as a starting point. Steve indicated that DfT inspectors were there to help stakeholders to comply and would be giving advice and guidance in the first instance. Findings of the inspection would be discussed with duty holders so there should be no surprises in the report. The formal written report from DfT should arrive within 10 working days with timescales indicated for any remedial actions required. Inspectors have powers under HASAW act.
They are most interested in people for whom transport of radioactive materials is part of their business. They have been looking at industrial users and hospitals but in the next few months will be focussing on couriers/carriers.
Points where they found failings in some duty holders from the 40 inspections carried out since November:-

1. RPP issues – some were found to be lacking
2. Training – out of date, lack of documented training, lack of refresher training.
3. Emergency arrangements lacking -NB users should not use NAIR as part of their emergency arrangements.
4. Maintenance of packages/instruments lacking
5. Lack of valid certification for Special Form, Type A.
6. Calibration of instruments out of date
7. Fire ex provision not sufficient
8. Security assessment of staff lacking
9. Security awareness training lacking.

Initial surveys showed no real alarms with most people trying to comply. Many users were often reliant on advice from RPA and some were not up to date or thorough enough. (*If users want to argue that they don't need a DGSA for their limited transport work then they must ensure that their RPA is on top of all transport issues.*)
DfT are considering releasing their audit questionnaires to users. It was pointed out by a delegate that the questionnaire on security is the same as the VOSA Inspection sheet and is already on DfT website - http://www.dft.gov.uk/pgr/security/subdangerousgoods/download/road/inspectionformvosa.pdf

Denial of Shipments
There is a form for reporting these on DfT website but none have been received by DfT as yet. The form may be too cumbersome and be discouraging use so Steve Whittingham would like informal reports please to get a better picture of problems. NB DfT can't force people to take goods but can only encourage them.

EU Licence for RAM carriers
There is a proposal for establishing a common system for registration of RAM carrriers. UK opposes this as being unnecessary. The proposals would not affect owners of sources (already licenced) but would just affect carriers/couriers and excepted packages would be excluded. Registration of carriers would go on EU database and would be distributed to relevant competent authorities. (Germany, Spain and Italy currently have licencing requirtements.)

Storage in Transit
Current EO will be rescinded as part of EO review and will not be covered by new EO regime. It will be considered as part of transport operation and will be responsibility of DfT. Arrangements still to be finalised.

T.J.Moseley
RPA University of Sheffield

Artificial Optical Radiation Regulations

The Artificial Optical Radiations Directive (AORD) is due to be implemented into UK law on 27th April 2010. See - http://www.opsi.gov.uk/si/si2010/pdf/uksi_20101140_en.pdf

All hazardous sources should already have been identified by risk assessments under the Management Regulations. Lasers are already dealt with under the requirements of BS EN 60825. The vast majority of other light sources are known to be safe. Only those sources likely to cause harm need to be identified and appropriate measures taken. These are most likely to be invisible sources (UV and IR) where safety is not afforded by the aversion response.

The safety classification of non-coherent (not laser) sources is defined in BS EN 62471 and based upon maximum accessible emission levels. Four risk groups have been identified with only the highest risk group presenting a significant risk of harm.

Risk Groups

1. Exempt	- no photobiological hazard under foreseeable conditions. E.g. domestic and office lighting, computer monitors, equipment displays and indicator lamps.
2. Risk Group 1	- low risk, limited by normal behavioural limitations on exposure. Safe for most applications – requires prolonged direct ocular exposure to cause discomfort/harm. Some bright light sources such as a torch may fall into this category.
3. Risk Group 2	- moderate risk, but risk limited by aversion response to very bright light sources. Such aversion responses not always applicable especially to invisible sources.
4. Risk Group 3	- high risk group, may pose a risk of harm even from a brief exposure. Training and safety control measures required for any source falling into this risk category. Written schemes of work required to include contingency plans for accidents or incidents. Medical exam required in the event of an accident.

HSE Identified potential hazardous light sources

- Metal working-welding and plasma cutting
- Pharmaceutical and research – UV fluorescence and sterilisation systems
- Hot industries with furnaces
- Printing- UV curing processes
- Motor vehicle repairs – UV curing processes
- Medical and cosmetic treatments

HSE Identified safe light sources

- All forms of ceiling mounted lighting in offices
- Compact fluorescent lamps and tungsten halogen lamps >60cm from user
- All forms of task lighting (includes desk lamps etc)
- Photocopiers

- Computer type displays
- Photographic flashlamps
- Gas-fired overhead heaters
- Vehicle lights other than headlights

HSE Identified light sources where aversion response should ensure safety but staring at for long periods or being in close proximity could be a problem

- High pressure mercury floodlights
- Desktop projectors
- Interactive whiteboards
- Vehicle headlights
- Medical theatre and task lights including foetal transilluminators and x-ray viewing boxes
- UV insect traps
- Spotlights, effect lighting and flashlamps used in entertainment

The above lists are not exhaustive but give a good guide as to what to look out for. Precautions should already be taken for all the identified hazardous situations e.g. welders goggles, visors and gloves for welding (adventitious UV) and hot metal work, visors for UV work .

What should we currently be doing?

- Using an alternative safer light source if possible, e.g. non-UV transilluminators
- Controlling access by engineering controls and design features of equipment e.g. interlocked screening
- Restrict access to hazardous areas to trained, authorised personnel only
- Increase distance between staff and harmful source
- Issue PPE e.g. gloves, goggles or face visors as appropriate
- Ensure safe systems of work are in place and that workers involved have received suitable and sufficient information and training
- Have documented risk assessments for Risk Group 3 sources – these should have been included in existing workplace risk assessments
- Have a procedure for effectively dealing with accidents.

T.J Moseley RPA 26/01/2010

Ed – I've been doing some surveys in recent weeks and found that some manufacturers warning labels leave a lot to be desired. Even found a manufacturers screen made of ordinary Perspex and not UV opaque Perspex. Also some users are not fully aware of the properties of different wavelengths of UV and have even found a 'blacklight' (UVA) tube in a germicidal cabinet! STC will look to provide a new guidance document for members on UV in the near future.

NEWS FROM HPA- Radiation Protection Division

NEW GAMMA RADIATION INSTRUMENT TEST FACILITY

The HPA's Radiation and Environmental Monitoring Scotland (REMS) Department, based in Glasgow, commissioned a new gamma radiation instrument test facility at the end of 2009. The new fully automated system replicates one of the systems in use at the HPA's Radiation Metrology Group in Chilton and the system in use at the Occupational Services Department in Leeds. The facility reinforces consistency in testing protocols and procedures and increases testing capacity across the three sites.

The automated system greatly enhances efficiency and provides fast turnaround times for customers. Same day testing is possible by prior arrangement.

All tests undertaken are performed in accordance with the national measurement Good Practice Guide (GPG) 14 ensuring compliance with the Ionising Radiation Regulations 1999 (IRR99). The calibration of the ^{137}Cs and ^{241}Am gamma sources within the system is directly traceable to the UK primary standard at the National Physical Laboratory (NPL).

ON-SITE CONTAMINATION MONITOR TESTING

REMS also offer an on-site testing service for contamination monitors. Instruments are tested on the customer's own premises and, if they perform satisfactorily, they are labelled and returned to use immediately. Formal test certificates then follow by post, to allow for quality assurance checking.

Benefits of this service include: reduced administration and transport costs, minimum down time, same day turnaround and tests performed by experienced technicians. The service is also available from the departments at Chilton and Leeds.

Simple repairs can be carried out on site, including: replacing detectors, replacing punctured foils and windows, repairing cable and connector faults, adjusting high voltage settings and replacing minor items such as feet, clips, caps, etc. For more complex repairs, we can organise the return of monitors to the manufacturer if required.

In addition, dose rate monitors requiring testing can be collected or returned during the site visit, thus saving you time and money.

OTHER SERVICES

In addition to two Gamma facilities, one of which is UKAS accredited, the Radiation Metrology Group at Chilton has a comprehensive range of additional test facilities that are traceable to the UK primary standards' laboratory. These include an X-ray facility, a neutron facility and the UK's only beta dose rate facility.

Assistance can be provided to manufacturers developing new instrumentation. This can be followed up with type-testing, which in addition to radiological testing, can include investigation of environmental and electrical characteristics.

FOR MORE INFORMATION

To discuss your requirements please contact:
David Macdonald (REMS) (0141) 440 2201 or Rems_Instruments@hpa.org.uk
Duncan McClure (Chilton) (01235) 822738 or rad.met@hpa.org.uk
Lisa Roche (Leeds) (0113) 267 9041 or leeds-calibration-service@hpa.org.uk

NEW WEBSITE for radiation safety training

The Health Protection Agency's new radiation safety training website was launched recently. The site is aimed at radiation workers, their managers and Health and Safety representatives and it showcases the training on offer at HPA. Visit the website to find answers to questions such as '**Why Do I Need Training?'** and '**What is HPA and What Services Does It Offer?'**. You can also '**Test yourself with our free online quiz'** and discover how much you know about radiation safety at work; you may discover gaps in your knowledge which we could help you to fill. The new website has the facility to book and pay for training places on-line.
HPA offers training for all those involved in radiation safety at work including; managers, radiation users and in particular Radiation Protection Supervisors (RPS). RPSs are responsible for supervising work with radiation sources, ensuring safety procedures are followed. HPA offers specific RPS courses for those supervising:

- General radiation work including unsealed radioactive material (4-day course)
- Unsealed users (1-day course)
- Gauges and analytical equipment (3-day course)
- X-ray generators (2-day course)
- Veterinary X-ray sets (1-day course)
- Security X-ray inspection (1-day course)
- Dental X-ray sets (1-day course)

All our courses cover appropriate topics including the nature of ionising radiation and terminology, health effects, radiation safety legislation, radiation measurement and the management of radiation accidents. Presentations, desk top exercises and practical work are used in a mix dependant on the trainees and their training needs. The day is also broken up by breaks and lunch where you have the opportunity to share experience with us and the other trainees.
We can also customise a course to meet your needs and deliver the training at a venue of your choice. This is particularly useful and cost effective where there are a number of persons who require training, such as post graduate students or academic staff. Customised training can include bespoke RPS training courses or awareness level training on applications such as use and management of unsealed radioactive material or X-ray generating machines.
To find out more visit **hpa-radiationservices.org.uk**

Radon

The Spring 2010 Environmental Radon Newsletter has recently been published. It features a new radon map of Northern Ireland and a Remediation Case Study using an internal mini sump system in a bungalow in Devon. The remediation was highly successful with indoor radon levels being reduced to less than 2% of initial readings. See the following weblink for further details -

http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1265637154893

- **HPA-RPD-065 - Recommendations for the Design of X-ray Facilities and the Quality Assurance of Dental Cone Beam CT (Computed Tomography) Systems**
  Approval date: February 2010
  Added/updated: 18 March 2010

- **HPA-RPD-064 - UK Recovery Handbooks for Radiation Incidents: 2009**
  Version 3 of the UK Recovery Handbook for Radiation Incidents is an updated version of the original Handbook, published in 2005. This document replaces HPA-RPD-042.
  Added/updated: 11 February 2010
- **HPA-RPD-063 - Cancer in the Offspring of Female Radiation Workers – a Record Linkage Study**
  Approval date: December 2009
  Added/updated: 8 March 2010
- **HPA-RPD-062 - Third Analysis of the National Registry for Radiation Workers: Occupational Exposure to Ionising Radiation in Relation to Mortality and Cancer Incidence**
  Approval date: December 2009
  Added/updated: 8 March 2010

NEWS from AFFILIATES

NEWS FROM LabLogic

Special offers at the end of the year have become something of a tradition at LabLogic, and now here's another to start the new decade.....

This time we're giving you the opportunity to bring your arrangements for liquid scintillation counting bang up to date for much less than the usual cost.

If you buy a state-of-the-art 300SL benchtop counter before 5 April, you can get a portable Triathler LSC counter at half price - and the consumables start-up packagefor both instruments won't cost you anything at all.

The 300SL is the first counter to take advantage of TDCR (Triple to Double Coincidence Ratio) technology, which means that you won't need a gamma source to calculate counting efficiency. It takes 20ml and 7ml mini scintillation vials, and can count up to four isotopes simultaneously for multiple labels.

As well as LSC, the single-well Triathler gives you gamma counting and luminescence, all with simple one-button operation. Take it wherever you need to count samples in anything from Eppendorf tubes up to 20 ml vials.

Please contact solutions@lablogic.com for further details or to arrange a demonstration.

NEWS from ACB

We (and I am sure our competitor) are still coming across waste sources which have been 'prepared' for disposal by encapsulation in either resin or concrete. Some of this work is quite recent. There still seems to be the opinion that this is the best practice. It is not.

Encapsulated sources cause more problems than they solve. Whilst we as a disposal service do sometimes prepare sources it is under strict QA requirements and with a fully document procedure. Waste stream characterisation is nigh on impossible for a source prepared outside of this control. As a result a great deal of time and effort is taken to prove the original material. Gone are the days when we can just accept hearsay - we need evidence.

Conditioning of sources to meet certain disposal criteria is seriously frowned upon by the EA and more commonly now the disposal facilities themselves. As a result we might find it impossible to dispose of a conditioned source leaving the liability with your members, potentially forever. In addition to this, disposal costs are influenced by volume so it is no-one's interest to increase the volume.

ACB has spent many an hour cutting away concrete and resins to recover an encapsulated source, costs which are passed on to the client. Radioactive waste is expensive at the best of times so please advise your members not to add to that cost.

We are convinced that it is only a small number of ill informed RPAs and RPSs who still believe in this practice. Indeed, in the days of the National Disposal Service it was considered the norm. Times have changed and prices have risen dramatically. If in doubt - don't grout.

Ed – I have been known to do this so quizzed Miles further and his response-

Safeguard operated the SSDP differently due to the procedures that were in place for those wastes at the time. They may still have a minimum volume charge and be quite happy for their sources to be prepared in the way you did.

There has been a lot of change in the practices over the last two years for item receipts at the disposal facilities. I can't see how ACB would be able to satisfy their CFAs by preparing sources outside of an audited QA trail. To be fair I am not sure EnergySolutions would now either.

All I am asking is that sources are not prepared unless it has been specifically asked for by the disposal company - whoever that may be.
Preparation in anticipation of a particular route could prove to be a lot more costly if that option fails to materialise.

Miles Warren ACB

Print in PDF

April 2010

Outside the badge, new services for easy dosimetry management

You need a precision on services, products, regulations… LANDAUER EUROPE is offering new tools to help you in your daily dosimetry management. Focus on the Service Guide and www.landauer.co.uk.

<Read more...>

Radon regulations, requirements and measurements

Radon is a naturally occurring radioactive gas. It seeps out of the ground and can build up in houses and in workplaces. For workers protection, regulations may require employers to measure the radon concentration. LANDAUER EUROPE, the leader and pioneer in radon gas detection and monitoring, offers a simple solution.

<Read more...>

microStar a portable reader for multiple applications

In any environment where there is potential exposure to ionising radiations, needs of dosimetry monitoring are various: emergency response, area monitoring, clinical dose assessment, prior risk assessment... LANDAUER EUROPE's answer to these issues: an OSL portable reader called microStar.

<Read more...>

News from Mirion – Dosimetry Services Division

Watch out for new products from Mirion. They can now challenge the sensitivity of Landauer OSL badge with their new Genesis TLD range of badges which can be read down to 0.01mSv gamma dose.
They will also have a new 'boys toy' of a dosimeter available in the UK later this summer. It is called 'Instadose' and is based on a 'direct ion storage' device with a built in memory chip and USB connectivity. The dose it has recorded can be read on any computer connected to the internet to access the 'intsadose' server. It records down to 0.01mSv, it can be read any number of times and can store doses up to 5Sv, there are no batteries to change and no annual calibration and all the dose records are held online accessible by the user and the area administrator/RPS. It takes all the hassle out of badge changing and dealing with paper reports . It does not have all the advantages of an EPD but it will be much cheaper, more robust and with no maintenance costs. Find out more at –

https://www.instadose.com/default.aspx

IRPA NEWS

For several years, Geoff Webb, IRPA Archivist and Historian and Past-President, has been working on a history of IRPA. To mark the completion of the first full draft of the History, Geoff will make a presentation during the opening plenary session of the Third European IRPA Congress to be held in Helsinki, Finland from 14-18 June 2010 (www.irpa2010europe.com). The full history is expected to be published by the time of the 13th Congress in Glasgow, Scotland in 2012. More details can be found on the IRPA website - www.irpa.net

- A newsletter from the IRPA President, Ken Kase, is on the IRPA website - in it he identifies key IRPA activities and issues for 2010.

- The IAEA and its co-sponsors have released draft revision 3.0 of the International Basic Safety Standards for Protection and for the Safety of Radiation Sources for review and comment. More information on the draft and the comment process is on the website.

Tessa Harris
SRP

BOOKS AND PUBLICATIONS

IAEA is pleased to announce the publication of the following medical books:

Comprehensive Clinical Audits of Diagnostic Radiology Practices: A Tool for Quality Improvement Quality Assurance Audit for Diagnostic Radiology Improvement and Learning (QUAADRIL)

IAEA Human Health Series No. 4

Interest in quality assurance processes and quality improvement in diagnostic radiology is being driven by a number of factors. These include the high cost and complexity of radiological equipment, the acknowledgment of increasing dose to patients and the importance of radiological diagnosis on patent management within the health care environment. To acknowledge these interests, clinical audits have been introduced and in Europe mandated under a European Directive (Council Directive 97/47/EURATOM). Comprehensive clinical audits focus on clinical management and infrastructure, patient related and technical procedures and education and research. This publication includes a structured set of standards appropriate for diagnostic radiology, an audit guide to their clinical review and data collection sheets for the rapid production of reports in audit situations. It will be a useful guide for diagnostic radiology facilities wishing to improve their service to patients through timely diagnosis with minimal radiation dose.

STI/PUB/1425, 193 pp.; 2 figures; 2010, ISBN 978-92-0-112009-0, English. 45.00 Euro.
Date of Issue: 19 March 2010.

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Stable Isotope Technique to Assess Intake of Human Milk in Breastfed Infants

IAEA Human Health Series No. 7

This publication was developed by an international group of experts as an integral part of the IAEA's efforts to contribute to the transfer of technology and knowledge in nutrition. Its aim is to assist Member States in their efforts to combat malnutrition by facilitating the use of relevant nuclear techniques. The stable (non-radioactive) isotope technique has been developed to assess intake of human milk in breastfed infants. The practical application of the stable isotope technique, based on analysis of deuterium by Fourier transform infrared spectrometry (FTIR), is presented in this book.

STI/PUB/1429, 67 pp.; 39 figures; 2010, ISBN 978-92-0-114009-8, English. 32.00 Euro.
Date of Issue: 15 March 2010.

Translation of Radiolabelled Monoclonal Antibodies and Peptides

IAEA Human Health Series No. 8

There is an increased global interest in radiolabelled biologicals for clinical applications. Influenced by the search for the 'biological bullet', a variety of strategies have evolved for radiolabelling biological products with view to human health application. This publication describes the challenges that the in vivo use of these products brings along and provides essentials from in vitro to in vivo validation in human investigations. Additional attention is paid to safety and the effective use of radiolabelled biologicals in busy clinical setting. The publication will be a useful resource for nuclear medicine physicians, radiologists, radiopharmacists, pharmacologists and other researchers engaged with radiolabelling biologicals for clinical applications.
STI/PUB/1416, 140 pp.; 7 figures; 2009, ISBN 978-92-0-108809-3, English. 42.00 Euro

Technetium-99m Radiopharmaceuticals: Status and Trends

IAEA Radioisotopes and Radiopharmaceuticals Series No. 1

Technetium-99m radiopharmaceuticals will continue to have a significant impact in several areas of nuclear medicine. This publication is intended to provide a broad overview of the current status of technetium-99m radiopharmaceuticals. It includes chapters on the most advanced chemical techniques for labelling biomolecules and synthesizing suitable multifunctional ligands that will help in the development of specific radiotracers. Of special interest for the reader are details of recent research to develop technetium-99m tracers for monitoring different biological processes enabling the development of new radiopharmaceuticals with greatly improved clinical potential.

STI/PUB/1405, 360 pp.; 115 figures; 2009, ISBN 978-92-0-103509-7, English. 52.00 Euro.
Date of Issue: 8 February 2010.

Quality Assurance Programme for Screen-film Mammography
IAEA Human Health Series No. 2

This publication establishes a detailed set of protocols concerning the application of radiation for medical purposes within the speciality of mammography. The publication addresses the requirements of a quality assurance programme which will allow an organization to optimize the conditions necessary to achieve the early detection of breast cancer and assure its successful treatment. To that end, the publication contains details of actions needed to install and promote the quality culture, systematic programme of conduct and appropriate education that are critical for success. Instructional material to supplement the knowledge of professionals already working in this field is also provided, as well as quality control worksheets.
STI/PUB/1381, 221 pp.; 91 figures; 2009, ISBN 978-92-0-101609-6, English. 55.00 Euro.
Date of Issue: 21 December 2009.

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Quality Assurance for SPECT Systems
IAEA Human Health Series No. 6

Quality assurance (QA) is a crucial part of all aspects of nuclear medicine practice. The objective of this publication is to provide professionals in nuclear medicine centres with detailed quality control test procedures for the scintillation camera and computer system. Three types of quality tests are described in detail: acceptance, reference and routine tests for the scintillation camera, both in single and multiple head configurations, for obtaining images and quantitative data in planar imaging mode; whole body imaging mode; and single-photon emission computed tomography (SPECT). The publication is primarily intended to be of use

to medical physicists, technologists, and other healthcare professionals who are responsible for ensuring optimal performance of imaging instruments, particularly SPECT systems. It may also be useful to managers, clinicians, and other decision-makers who are responsible for implementing quality assurance and quality control programmes in nuclear medicine centres.
STI/PUB/1394, 249 pp.; 50 figures; 2009, ISBN 978-92-0-103709-1, English. 52.00 Euro. Date of Issue: 4 December 2009

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Release of Patients After Radionuclide Therapy
Safety Reports Series No. 63
Throughout the world there is a widespread variation of the practices with regard to the release of patients from hospital after unsealed radionuclide therapies. This publication aims to harmonize the different approaches, drawing on the new advice issued by the International Commission on Radiological Protection and on a number of regional and national practices. It aims to resolve the diversity of international practice in this area. Particular attention is paid to the most frequent questions from the patients, including those related to potential future pregnancy and the safer approach to reintegration into normal life at home and at work.
STI/PUB/1417, 77 pp.; 1 figures; 2009, ISBN 978-92-0-108909-0, English. 28.00 Euro. Date of Issue: 4 December 2009.

For additional information, or to order a book*, please contact:
sales.publications@iaea.org fax: +43 1 2600 29302 / tel.: +43 1 2600 22529 /
http://www.iaea.org/books

IAEA is also pleased to announce the publication of the following books on radioactive waste:

Disposal Approaches for Long-Lived Low and Intermediate Level Radioactive Waste

IAEA Nuclear Energy Series No. NW-T-1.20

This publication explores disposal approaches for long-lived low and intermediate level radioactive waste. It provides an overview of possible disposal concepts and facilities to be considered for accepting long lived waste, advises on the key factors to be considered when selecting the appropriate disposal approach, and outlines the procedure for selecting the relevant strategy for disposal of long-lived low and intermediate level waste. The information provided on these issues will be useful to decision makers, regulatory authorities, and those individuals or institutions that are interested in planning a national system for the long-term management of long-lived low and intermediate level waste.

STI/PUB/1407, 40 pp.; 8 figures; 2010, ISBN 978-92-0-106009-9, English. 16.00 Euro. Date of Issue: 22 February 2010
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Technological Implications of International Safeguards for Geological Disposal of Spent Fuel and Radioactive Waste

IAEA Nuclear Energy Series No. NW-T-1.21

This publication addresses the potential technological implications for an operator when meeting IAEA requirements on the transfer of spent nuclear fuel and other safeguarded radioactive waste to a geological repository. These implications are based on both waste management and safeguards issues. All phases of the repository lifetime are considered from conception and design through to post-operational oversight. The potential impact of the applied technical measures on the safe operation of the facility is given particular attention. Guidance is based on a generic design with a focus on the features likely to be relevant when meeting safeguards requirements. The conclusions drawn in this publication indicate to the waste management community at large, how safeguards requirements could be met effectively within the constraints of safety and acceptable performance.

STI/PUB/1414, 29 pp.; 1 fig.; 2010, ISBN 978-92-0-106809-5, English. 18.00 Euro.
Date of Issue: 4 March 2010.

Borehole Disposal Facilities for Radioactive Waste
Safety Guide
IAEA Safety Standards Series No. SSG-1
This Safety Guide addresses the safety issues relevant to the disposal of disused sealed sources and provides guidance on meeting the safety requirements and criteria for such facilities. In addition to making recommendations on safety for borehole facilities, such as in site selection and characterization, design and operation, and for closure and post-closure, the Safety Guide also covers provision for containment and isolation, and the performance requirements of the engineered components of the disposal system.
Contents: 1. Introduction; 2. Borehole disposal and the safety of radioactive waste management; 3. Borehole disposal and the protection of human health and the environment; 4. Safety in the planning of new borehole disposal facilities; 5. Safety and disposal in new borehole disposal facilities; 6. Implementation of the safety strategy for existing borehole disposal facilities; Appendix I: Regulatory inspection plan for a borehole disposal facility: items that may be subject to inspection; Appendix II: the step by step approach; Appendix III: Safety case and safety assessment for borehole disposal facilities; Appendix IV: Site characteristics and characterization of the hydrogeological properties of a site; Appendix V: A possible surveillance and monitoring programme suitable for a small scale borehole disposal facility; Appendix VI: Management systems.
STI/PUB/1418, 100 pp.; 2 figures; 2009, ISBN 978-92-0-109109-3, English. 32.00 Euro.
Date of Issue: 12 January 2010

Classification of Radioactive Waste
General Safety Guide
IAEA Safety Standards Series No. GSG-1
This publication is a revision of an earlier Safety Guide of the same title issued in 1994. It recommends revised waste management strategies that reflect changes in practices and approaches since then. It sets out a classification system for the management of waste prior to disposal and for disposal, driven by long term safety considerations. It includes a number of schemes for classifying radioactive waste that can be used to assist with planning overall national approaches to radioactive waste management and to assist with operational management at facilities.
Contents: 1. Introduction; 2. The radioactive waste classification scheme; Appendix: The classification of radioactive waste; Annex I: Evolution of IAEA standards on radioactive waste classification; Annex II: Methods of classification; Annex III: Origin and types of radioactive waste.
STI/PUB/1419, 48 pp.; 2 figures; 2009
ISBN 978-92-0-109209-0, English. 24.00 Euro. Date of Issue: 20 January 2010.

For additional information, or to order a book*, please contact:
sales.publications@iaea.org fax: +43 1 2600 29302 / tel.: +43 1 2600 22529 / http://www.iaea.org/books

Regards,

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Association of UNIVERSITY RADIATION PROTECTION OFFICERS

AURPO Subscription Form 2009-2010

To all Members

The annual subscription of £25 (£10 for retired members) to the Association is due on the 1st July 2009. 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.

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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
(NB full contact details on page 1)