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MEETING REPORTS

Education and Training in Radiation Protection Engaging stakeholders in decisions about radiation protection—Progress towards IRPA 12 Transport of Radioactive Materials

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Meeting reports

Education and Training in Radiation Protection
The Royal Geographical Society, London, 30 January 2008

With concerns about skills shortages in radiation protection, this meeting concentrated on the future challenges for training in helping to recover this situation. There were two sessions during the day which focused on the training and development of health surveyors, supervisory staff and workers, rather than of the RP professional.

The first session began with Ralph Witcher (West Sussex County Council), who raised the issue of preconceived notions about radioactivity and radiation, suggesting that these are gained in our early years of schooling. These misconceptions become enshrined in our thinking and perpetuated through the educational cycle. Many of the myths are reinforced through the media. Thus views of the dangers of radioactivity and radiation appear to play into our apparent aversion to risk. Ralph suggested that trainers need to be aware of these misconceptions and make time during the early stages of training to dispel them, to use practical work to reinforce the incorrectness of myths, and to check reference materials for factual accuracy. In answer to a question about how we should go about changing the situation, he replied that the National Curriculum needed to be changed.

John Ellis, physics adviser to CLEAPSS (Consortium of Local Education Authorities for the Provision of Science Services), said that each secondary school is a member of the organisation, and more than a third of the calls they received were to do with radioactivity. He explained the role of CLEAPSS in providing sound advice to educators for the safe delivery of science material, and that included the use of radioactivity. L93, 'Managing Ionising Radiations and Radioactive Substances', was a document available for free download from the CLEAPSS site. Materials were prepared with input from RPAs possessing experience of the teaching environment. One concern was that many teachers of science aren't scientifically trained. He gave examples of practical work that could be used to educate students in relation to ionising radiations. In answer to a question, he said that CLEAPSS only responded to the National Curriculum and is not in a position to influence the direction of the National Curriculum.

Trevor Moseley (University of Sheffield) focused his attention on the training of staff and students in the higher education sector. He outlined the results of a questionnaire sent to universities, based on the 28 responses received. This covered radiation worker training (both staff and postgraduate), Radiation Protection Supervisor (RPS) training and undergraduate training, and looked at what the training is and how it is delivered, who it is given to, how competence is assessed and what records are maintained. The results were somewhat varied, but in particular 'competence' was assessed, with nine institutions reporting testing at the end of courses, primarily using multiple-choice testing, with only four setting a pass/fail criterion. Four institutions reported assessment by the RPS prior to work commencing, and one institution documented assessment by the academic supervisor prior to work. Trevor received a number of questions from the delegates. To one he responded that in order to assist with the dissemination of good practice within the academic sector a new guidance document was planned to be introduced this year. His one concern, though, was what the majority of institutions were doing with regard to training, since only a small proportion of all institutions had responded to the questionnaire. On the question of retraining frequency, he said that the tendency was to leave this to the local RPS as this was very much dictated by circumstances, though every 3–5 years would seem appropriate. He added that his current experience was that individuals seem to be more cautious than they used to be and are more inclined to seek training.

Harold Stockdale (Royal Liverpool University Hospital) outlined the training strategy within the Health Service. Radiation Protection training is embodied within the general two-stage training scheme for clinical scientists. The Part 1 training occupies two years and comprises successful completion of an MSc in medical physics or clinical engineering, undertaking three hospital placements in various aspects of medical physics or clinical science, and attainment of a pass at a viva examination. Radiation Protection can be taken as a specialist topic both within the MSc and as one of the placements (with certain limitations). This training is regarded as broad rather than deep. Part 2 training is accessible to those who have satisfactorily achieved Part 1 training, or those who have an

appropriate PhD (or equivalent) qualification and who have received appropriate top-up training. Assessment is by portfolio and viva. Specialising in Radiation Protection requires the trainee to also specialise in diagnostic radiology. IPEM (Institute of Physics and Engineering in Medicine) also runs a Technologists' Training Scheme, based on a vocational BSc in Clinical Technology and hospital-based experience. Experience indicates that, once trained, individuals tend to stay within the clinical profession. It is not known how many individuals move from industry into the health professions, though the training scheme has the flexibility to accommodate them. In response to a question, Harold said that training for NAIR was not included in the programme, though this was effectively provided by the Health Protection Agency (HPA).

Joanne Stewart (HPA) ended the morning session with a discussion of our understanding of the function of training, and explored competence and suitability. There is sometimes confusion in which meeting a level of knowledge specified in a syllabus is erroneously taken to mean competence. In respect of RPS training, Joanne referred to the difficulty of assessing the abilities of candidate RPSs, and the lack of a nationally recognised qualification. She outlined two European initiatives designed with harmonisation and recognition of European qualifications in mind, EUTERP (EUropean Platform on Training and Education in Radiation Protection) and ENETRAP (European Network on Education and Training in RAdiological Protection). The findings of the latter included that there were significant differences in interpretation of the roles of the Radiation Protection Expert (RPE) and the Radiation Protection Officer (RPO), and that whilst the majority of countries had systems in place for recognition of the RPE, there was a strong bias towards academic standards rather than ones of competence. A similar outcome was also found for the RPO. Only 40% of European countries consider that they have a sufficient number of RPEs. All countries require workers to be trained, though what was required was not defined. In order to facilitate transnational access to vocational education and training, EUTERP has indicated that qualification criteria for the RPE and RPO are required. This raised the question of whether the RPS also needs to be 'qualified'. In response to a question Joanne stated her view that blanket qualifications for the RPS were not desirable, though there did appear to be a move in this direction. In respect of 'proportionality', Joanne indicated that in Europe there didn't appear to be a proportionate approach.

Beginning the second session, Michael Calloway (NDA) outlined the strategic approach of the NDA to ensure that its workforce was appropriately skilled and fit for the challenges it faced. The NDA regarded the investment in skills management infrastructure as being key to meeting its goals. A lot of work has already been undertaken to identify the existing skills base and establish future needs, and the mechanisms for transitioning skills to those future needs. Considerations have focused on 'understanding the need', 'delivering the training programmes', 'provision of a robust skills infrastructure', 'attracting and retaining the right skills' and 'skilling networks'. He indicated the roles to be played by the National Skills Academy Nuclear and the Dalton Institute (an NDA and University of Manchester alliance). He also indicated that 'Energy Foresight', a resource of a wide range of support material for teachers, is perhaps in a position to influence the National Curriculum. The radiation protection NVQs have now been established at Level 2 for the Health Physics Surveyor, and Level 3 for the Health Physics Supervisor. Consideration is currently being given to the need for Level 4 in radiation protection, as recognition of that experience [as a health physicist] even if not certificated as an RPA. In response to a question about the relevance of the newly established status of Chartered Radiological Protection Professional to this scheme, Michael thought that it was essential to engage with the professional health physicist.

Chris Englefield (Environment Agency) reported on the outcome of the SNIFFER (Scotland and Northern Ireland Forum for Environmental Research) initiative to establish the identity and qualifications of the Qualified Expert for RSA93 (QE(RSA)). He gave a clear indication of the origins of this requirement and the process by which the project was undertaken. The project report is now available online. He noted that this is the report of the SNIFFER project, and does not necessarily reflect the views of the environment agencies. These will be formulated over the coming year following a consultation exercise. He also recognised that although the competence profiles of the RPA and QE(RSA) (or whatever it is ultimately called) are not the same, there may be some commonality between the two. Any certification scheme for QE(RSA) would need to recognise any existing knowledge and skills possessed by the certificated RPA, though it is also clear that the RPA would need to undergo additional training and gain additional experience. Whatever scheme is ultimately adopted, he was emphatic that this was to be owned by the profession, not the Regulators. In this regard he foresaw that the profession may wish to have expectations beyond those of the Regulators, whose aim is to ensure that radioactive waste is managed appropriately.

Cliff Ellis (Aurora Health Physics Services) spoke about training for emergency situations. What marks this situation out as different to the needs of other types of RP training is that emergencies are infrequent, so there is little, if any, experience of a real event. Training is still necessary in order to properly equip the individual so that he/she can perform reliably and effectively control the new found situation whilst minimising the risks to those involved, and to ensure that legislative requirements are met. He outlined the sorts of training provided to 'small users' and to the nuclear sector. He identified the value of practical exercises being as realistic as possible, and of the need to hold refresher training. Some examples were given of where the response to an emergency was effective and where it wasn't, highlighting how training could have an important influence on the outcomes.

Jim Marsh (formerly AWE) looked at the world of the Health Surveyor (not monitor, which he insisted is a device for making measurements!) with retrospective asides. He contended that, for the most part, it is the Health Surveyor/Supervisor who provides most of the day-to-day health physics advice, and asked 'What are the consequences of getting the training wrong?' He referred to the City & Guilds 'Radiation Safety Practice', and noted that both Stage 1 and Stage 2 syllabi are due for review this year. He made a pertinent comment that if you train all your operators to perform their own routine front-line health physics, to whom do you turn to deal with the non-routine issues?

Ian Collingwood
HPA-RPD

Engaging stakeholders in decisions about radiation protection—Progress towards IRPA 12

Brief report on the Montbéliard and Oxford Workshops held respectively 29 November–1 December 2006 and 10–12 December 2007

The challenge deriving from IRPA 11

During the 11th Congress of the International Radiation Protection Association (IRPA) held in Madrid in May 2004 there were considerable discussions on the need for involving all relevant parties in decision making in radiological protection. It was agreed that this involvement, briefly described as 'Stakeholder Engagement', should play an important and integral part in many decisions. A need was identified for guidance to be produced to help radiation protection professionals to understand the objectives, requirements and demands of stakeholder engagement, encourage participation and provide a framework for establishing a constructive dialogue with other stakeholders.

Involving people and groups with very different backgrounds, competencies, values and priorities—from outside the immediate radiation protection/health physics 'expert' community—may still be seen as a pretty radical step. So what does it actually mean in practice; when should it be seriously considered, who needs to be involved, what does effective, efficient and sustainable pluralistic decision aiding look and feel like, what are the resource implications, how should it impact on local and public policy decision taking, and where does it leave the RP professional? These are some of the practical issues that need to be unpacked and communicated to the RP community at large.

The response

Rather than commissioning more academic research (much has already been written on participative decision making and stakeholder engagement) the Spanish, French and UK Societies came up with the idea of holding a series of 'stakeholder workshops' to combine the expertise of the RP specialist with the practical knowledge and experience of selected 'other stakeholders' and practioners in undertaking and evaluating stakeholder engagement. **The longer term aim is to produce a supplement to the existing 'toolkit' available to RP professionals and policy makers.**

The first of these events was held in Salamanca, Spain, 16–18 November 2005 (reported on in JRP September 2006 (**26** 339)). Others have now been held in Montbéliard, France in 2006 and recently near Oxford, UK in December 2007. The Italian RP Society was represented throughout the workshop series.

The Montbéliard event

In common with the Salamanca workshop, participation was drawn from a wide range of interests in decision making on RP—international organisations, scientists/technicians, municipalities, communication experts, ecologist NGO, regulators, enterprises and syndicates.

The workshop was again structured so that participants could share and collectively improve their knowledge and understanding of the processes, methodologies and tools necessary for involving stakeholders. Salamanca was based on four thematic areas which were pursued in some depth, namely: (i) regulation of operating installations, including environmental monitoring and surveillance, (ii) siting, commissioning and decommissioning of installations, (iii) preparedness and

management of emergency situations, and (iv) recovery and rehabilitation of contaminated sites and territories. Montbéliard extended this to consideration of:

1. Patient and worker protection in the healthcare sector;
2. Environmental radon exposure.

The workshop was grounded in various case studies (two of which were provided by the UK), which were explored by mixed groups of stakeholders. Plenary discussions of the common issues and learning points were aided by parallel, facilitated working groups. The latter were set up to identify, from a practical perspective, the future needs for better developing stakeholder participatory processes in the evaluation and management of radiological risks. Building on the concrete outputs from Salamanca, the Montbéliard working groups succeeded in producing an agreed **first draft set of common 'guiding principles' for stakeholder engagement**. There was some debate about whether this should be the basis of a 'code of conduct' to sit eventually alongside the existing IRPA 'code of ethics', and as a consequence both titles have been used to describe the draft document since it appeared.

A commitment was made to develop the draft sufficiently for it to be more widely circulated for comment in the early months of 2007 and then brought back to a third workshop in Oxford in December 2007 for more extensive 'reality checking' and necessary revision. The objective is to have a version available for tabling at IRPA 12 as an initiator for eventual endorsement of stakeholder engagement and the 'guiding principles' by the IRPA community as an adjunct to the existing decision-making 'toolkit'.

The Oxford event

This workshop was deliberately designed along different lines to the previous events. It comprised a 'core group'—from the two previous workshops and intervening discussion networks—which met over three days to deliberate on the developing Principles draft document. The central day was given over to a meeting that was advertised through SRP channels and was opened up to anyone interested in the topic of stakeholder engagement as it relates to RP. Some 25 delegates joined the core group members to hear presentations on the Principles under development and three case studies, one each from UK, Spain and France, on the theme of radioactive waste management as a case for greater stakeholder involvement.

Importantly, much of the afternoon was given over to critiquing the Principles document using mixed stakeholder working groups led and facilitated by core group members. The reaction to this rather novel form of participation in developing what could well become an International 'standard' was very gratifying. Day delegates and core group members met the task with deep professionalism, practical experience, energy and enthusiasm, and as a result of the recorded outputs, and subsequent deliberations on the third day of the core group workshop, **the next version of the Principles will look substantially different in tone, structure and wording to the pre-Oxford draft, and will certainly not be a Code of anything!**

Key conclusions were that the pre-Oxford document should be redrafted as follows:

- include an opening paragraph to explain the preparation process and put it into an IRPA context;
- improve the introductory material to better explain why it was not merely advantageous but necessary in many circumstances to involve stakeholders;
- remove the 'Declaration of Commitment'. It is too heavy and would put people off;
- the document should be couched as Guidance in a similar style to the IRPA Code of Ethics;
- the Principles should become something like 'Guiding principles' and rewritten using the outcome of the working group discussions at the Oxford Chilton one-day meeting; and
- the Explanatory Memorandum should be improved and include more actual examples.

Next steps

After redrafting through key members of the Core Group based on a meeting held in late January in London, the redraft will be circulated more widely for comment and to gauge support for progressing it through the IRPA system.

In parallel, discussions are taking place with the IRPA Executive to clarify ownership of the work on the principles and the handling in the period leading up to IRPA 12, at the Congress itself and beyond.

Acknowledgments

The development work since IRPA 11 has been supported throughout by SRP and its International Committee, and a number of Committee members are directly involved in refining the Principles draft.

The Oxford event was made possible by funding from SRP and generous support in kind, time and facilities provided by HPA Chilton. In particular, I am indebted to Anne Nisbet, Heather Rochford, Alison Jones and Jill Meara.

The UK RP community and SRP have benefited hugely in reputational terms from playing a leading role in this work, and our colleagues in

France, Spain and Italy, along with IAEA, EC, USA, OECD-NEA and ICRP, all recognise what a rich and valuable experience the UK has to offer when it comes to more participatory forms of decision aiding.

Tony Bandle

Transport of Radioactive Materials
Birmingham, UK, 1 November 2007

Held at the Birmingham & Midlands Institute, this seminar and workshop was organised by The Society for Radiological Protection and was attended by 135 participants from a wide range of stakeholder sectors. The aim was to review the recent and forthcoming changes in legislation for the transport of radioactive materials in the UK and overseas. The presentations in the morning seminar covered the practical implications of these changes, whereas in the afternoon five parallel workshop sessions covered quality assurance and monitoring, packaging, documentation, training and security.

Caroline Billingham from The Department for Transport (DfT) began the seminar with a presentation entitled 'UK Transport Legislation for Dangerous Goods'. The modal structure of international and domestic transport legislation was reviewed before Caroline focused on the new Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2007 (CDG). She emphasised that these represented a simplification of the legislation which has been achieved to a large extent by heavily referencing the relevant sections of the ADR. The practical effects of these new regulations are minimal for the road transport of radioactive material. There are no changes in design requirements or responsibilities, allowable contents, marking, labeling and placarding. The requirements for training remain largely unaltered, but consignment notes and certificates of conformity must reference the latest regulations. Quality Assurance programmes must provide evidence that a review against the latest regulations has taken place. The derogations are now easier to locate, although one in particular (fire extinguishers) needs to be worked on! In general, it was proposed that the new regulations should reduce the burden of paperwork. However, it was acknowledged that there were 'little anomalies' that will be sorted out before 2009, and the reasoning behind a biennial change in transport legislation remained somewhat unclear. There was reassurance that guidance notes for these regulations would be available from the Department for Transport (DfT) in the near future, and it was agreed that interactive, hyperlinked web-pages of guidance would be a useful addition to the DfT internet site. Caroline urged all stakeholders to contact the Dangerous Goods Division of the DfT with concerns, requirements and enquiries; they were there to make life easier for all of us.

The arrangements for international transport security were discussed by Loris Rossi from the DfT. He made the distinction between safety (measures to protect people and the environment in normal and accident situations) and security (prevention of malicious or terrorist acts). It was highlighted that radioactive material is probably most vulnerable to such acts during transport but that concern about the transport security of radioactive material (RAM) was a fairly recent issue. Security measures, particularly for 'high consequence materials' (i.e. activities $>$ 3000 A2), should include more effective methods for competent authorities to identify carriers and operators, better source tracking using telematic technology, advanced notification and improved communication between duty holders.

Drawing on the considerable experience of GE Healthcare, Charlie Carrington gave an interesting talk on the practical issues associated with the international transport of RAM. There are many people involved in the international transport industry who are largely ignorant of RAM and therefore have a poor perception of it. Of course, the truth is that the transport of RAM is really a very safe process. Couple this with a tougher regulatory environment and the significant increase of security in recent years and it is not surprising that international transport of RAM is problematic. Examples include carriers and ports not accepting RAM, tighter checks at borders, holding of dangerous goods prior to shipment and general ignorance of the regulatory exemptions. The consequences of such problems are keenly felt in the medical sector where they lead to wasted doses and increased patient waiting list. Indeed, with a typical bulk transport of 25 000 patient doses, a 24 hour delay can result in 5500 patients not receiving a treatment. The patient is the loser.

Air transport of RAM was given special consideration by Estelle Walker (RPA and DGSA for Onephoton Consultancy) who gave a step-by-step description of the various stages of the process. When packages and their associated paperwork, i.e. Air Way Bill and Dangerous Goods Declaration (aka consignment note), arrive at the airport they undergo a comprehensive acceptance check by IATA trained staff. They are then stored awaiting dispatch in a dedicated area of the transit shed before being loaded into containers (e.g. ULD) and ultimately into the cargo hold of the aircraft. At this stage the pilot, on receipt of the Notification

Document (NOTOC), can refuse the load. On arrival the consignment is checked for damage, mainly caused by fork-lift trucks, and stored in the destination transit shed until collection. All transit sheds are stringently controlled and subject to a REPPIR assessment. It was noted that all airlines have complex and multiple sub-contractor arrangements that are constantly changing. This can lead to problems in staff/RPS training and lack of regulatory awareness.

Bob Russ (EA RSR Policy Manager) talked about the Transfrontier Shipment of Radioactive Waste Regulations. He emphasised the UK government's policy (Command 2919) of 'self-sufficiency', i.e. radioactive waste should not be imported to or exported from the UK. There are exceptions to this principle. For example, shipments for overseas trials of new processing technology are relatively straight-forward to authorize. However, bulk shipments (many tonnes) do not fit well with Cm 2919 unless they are Low Level Waste (LLW). Foreseeable changes include a change to the definition of 'radioactive waste' and the amendment to the Transfrontier Shipment of Radioactive Waste Regulations 2007 in the UK which will be made in 2008.

The morning session was concluded by Trevor Moseley (RPA at Sheffield University) who discussed the packaging of RAM and waste in the non-nuclear sector. The three main CDG (2007) regulations associated with packaging are:

- **Reg. 42** – covering QA programs.
- **Reg. 51** – dealing with the use of packaging and packages including categories and limits.
- **Reg. 57** – setting out package design specifications and performance tests.

These, and their cross-references to ADR, were presented in some detail. The focus was on Excepted, Industrial and Type A packages, and Trevor provided useful information on package design for small users of RAM.

After lunch, the participants were cycled around three out of five workshops that had a 'free discussion' format aimed at bringing to light stakeholders concerns and requirements. In one workshop the re-use of packages was debated. The question was raised as to whether Type A's should be re-used as Excepted. It was felt that this practice was acceptable as long as there was only limited re-use (e.g. once). In relation to multiple use of the same package, the DfT urged consignors to check the original package manufacturer's documentation or have their radiation protection adviser retest the package and issue their own simple certificate of conformity for 'Excepted'.

It was pointed out that Type A is a package design specification. If the package does not bear any indication that it contains RAM (e.g. a trefoil) then it is not a 'radioactive' package, just a package that meets Type A design and testing criteria. Labeling should be covered (i.e. with new labels) as the integrity of the package may be compromised by forcibly removing, for example, some Type A labels.

In another workshop the focus was on transport documentation. There were concerns expressed about 'regular' consignment notes and their expiry dates being three months or continuous. This will be resolved in the CDG Regulations 2009.

It was noted that many ports refuse RAM consignments, and those that do require onerous amounts of documentation and copies thereof. Electronic documentation would facilitate the process but many ports still require signed paper copies.

Once again there was a general call for improved and more accessible guidance notes, perhaps separated into sectors, e.g. nuclear and non-nuclear small user, from the DfT on the transport of RAM and waste.

There was a post-meeting wash-up to address the outcomes from the workshops. A summary of the themes/topics raised during the workshops sessions is to be published on the SRP website. The Non Nuclear Sectorial Committee and Department for Transport propose to address the issues raised and further guidance will be made available through these organizations.

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