MEETING REPORTS

SRP SouthWest Regional Meeting: Waste Management and Transport
SRP One-Day Conference—Practical Design of Radioactive Facilities

To cite this article: 2010 J. Radiol. Prot. 30 817

View the article online for updates and enhancements.

Related content
- One-day scientific meeting: "Modelling of the Transport of Radionuclides in the Environment"
- SRP meeting: "High Activity Source Management"
- The Management of Small Sealed Sources
- Third European IRPA Congress
  John Hunt and Chris Englefield
Meeting reports

SRP South West Regional Meeting: Waste Management and Transport
Dartington Hall, Devon, UK, 21 October 2010

The South West conference saw a return to Dartington Hall, Devon, in the beautiful surroundings of the manor house and estate. The conference promised to be a very informative day for delegates from both nuclear and non-nuclear organisations.

The evening drinks reception and conference dinner provided a chance for delegates to register and have a first view of the exhibitors’ stands. During the reception SRP President Richard Wilkins presented the SRP’s Founders Medal to Paul Jarvis (Frazer–Nash Consultancy) for his efforts in setting up the South West Regional Group (in 2002), for his continued work in the field of radiation protection, and his efforts within the SRP.

Roger Collison (Babcock) chaired the day’s proceedings and made a prompt opening to the conference by welcoming our first speaker of the day, Phil Fahey from the Environment Agency. Phil gave a presentation on the regulation of radioactive substances from the regulators perspective. BAT seems to be a hot topic at present and Phil walked us through what the regulators expected, how to apply BAT and when a review of BAT should be initiated. There were examples from the industry where BAT had successfully been applied but Phil also identified areas in which the odd eyebrow would be raised! There was an emphasis on the management system of BAT and Phil highlighted the types of systems we should have in place in order to fully engage with BAT.

Terry Woodcock, from Magnox South gave the second presentation of the morning entitled ‘Minimising Decommissioning Low Level Waste Volumes through Risk Based Decontamination and On-Site Disposal’. Terry described an example of building decontamination and demolition which incorporated the use of risk based modeling, concrete core samplings, devising a statistical contamination monitoring regime and atmospheric dispersion modeling for a few examples—the results of which are detailed in the slides.

After a short coffee break, Kevin Dodd from Studsvik gave a presentation on the Metal Recycling Facility from an RPA’s perspective. The company is a global leader in treating large components of scrap metal from the nuclear industry and covers waste from over 10 countries. Treating LLW metal is an effective means for waste reduction, it allows for the recovery of valuable metal which can be re-used several times and has been established as the BPEO/BAT. The first shipment to the new UK facility was successfully treated in September 2009, with 98% volume reduction of the load and 215m³ of waste diverted away from LLWR. There are many shipments which share similar encouraging figures. Key lessons learned from the first year of operations are to segregate and package our waste in a way which better accommodates metal recycling and that fingerprint characterization is critical. Studsvik actively seek to engage with the local community by setting up local liaison groups and are making efforts to preserve the natural landscape by encouraging the settlement of indigenous plant and animal species. The NDA has much legacy waste to process which will offer Studsvik the opportunity to invest in the nuclear industry for the long-term.

Martin Walkingshaw, from LLWR, presented an update on work which has recently been taking place at LLWR. The main point made was that Vault 9 has now officially been opened...but that they don’t want us to use it! There is a big push on finding alternative ways to treat waste and government funding is being made available as target incentives for the industry. There are companies already providing services for treating both metallic and combustible waste including Nuvia, Studsvik, Energy Solutions and Abbott Nuclear Consulting. Projects under investigation at LLWR include developing a waste inventory/forecasting and a waste tracking system. New services on offer include waste characterization and transport—whereby there would be an integrated transport system across the UK.

The morning session concluded with an interesting discussion involving all the morning’s speakers followed by lunch in the magnificent Great Hall and another opportunity to visit the exhibitions set up by ACB, BIC, Energy Solutions, Pycko Scientific, Qados and Southern Scientific. Glorious autumn weather allowed those delegates seeking to walk off a few calories after lunch the chance to admire the beautiful grounds and historic buildings in which the conference was held.

A small poster display in the Great Hall showed work which had been performed by
Babcock at Devonport on transfrontier shipment and post-operational clean-out. Both operations involved the use of Studsvik and the latter showed an example of a piece of metal which had been recycled and found its way back to Babcock—Roger was rather fond of his new paperweight!

The Waste Services Group, AWE, displayed posters entitled ‘Cost of waste—radioactive waste management’. The posters defined activity groupings for radioactive waste produced at AWE under the categories clean, exempt, high volume, very low level waste, low level waste and intermediate level waste, each with an associated disposal cost.

The posters outlined their commitment to reducing the activity category of its radioactive waste and the tools in place to achieve this aim. AWE has commissioned two CRONOS 11 Object monitors capable of assaying soft waste such as paper, cotton and plastic down to exemption levels. As a result of its introduction and implementation of good practices such as increased awareness, increased recycling reuse options, improved decontamination practices and segregation, the company has diverted significant material from consignment to the low level waste repository.

The company has an ongoing programme to use high resolution gamma spectrometry techniques to reclassify legacy waste to its lowest category and is investing in a super compactor to size reduce drums designated as intermediate level waste to approximately 20% of their original volume, increasing storage capacity and reducing costs.

For further information contact Giorgio Marcello (giorgio.marcello@awe.co.uk)

After lunch, we started the session with a presentation from Allan Ashworth from Atkins entitled ‘Modernising radioactive waste legislation—fit for another fifty years?’ Allan provided an overview of government policy papers summarising how the UK had come to the current arrangement and those that are proposed. Allan then went on to describe the proposals for the revised exemption regime under EPR 2011. These arrangements are considered clearer than those that came before and are based upon a risk assessment approach. Easier than their predecessors, but not necessarily easy. The arrangements are aiming to be compatible with Euratom BSS and possible future changes and use numerical values based on internationally-accepted standards, derived from BSS and other Euratom documents. The amended EPR is expected to be implemented in spring 2011.

Debbie Peet (Royal Surrey County Hospital) introduced us to the various radiopharmaceuticals used within the medical industry and the different pathologies and treatments each can be used for. There were some interesting and particularly colourful nuclear medicine scans which showed the radionuclides at work (and admittedly, if you didn’t know what you were looking at, it was a game of guess the body part...but we took Debbie’s word for it!) The difficulties of waste management within a hospital environment are complex as there are some modalities which are mobile (i.e. PET scanners) and so the lorry unit itself becomes part of the waste management system. Along with the obvious source issues, there is also the biological radioactivity to manage, namely the control of radioactive waste going down the loo! There are some very different challenges posed within the hospital environment and Debbie explained these along with some of the solutions. A hefty dose of medical humour accompanied the presentation!

Our second medical presentation for the day was delivered by Rob Kenyon. Rob talked us through the production and use of $^{99m}$Mo and $^{99m}$Tc. Speed is of the essence with these generators as they need to reach their destination hospitals with a minimum level of activity in order to produce quality diagnostic images. All the while during transport—road, rail or air—the radionuclides are decaying which means the clock is ticking the moment they leave the site. The demand for these generators has doubled in recent years and so with increased production pressure, there has been a need to review the waste and transport provision. GE Healthcare performed a safety, pharmaceutical and operational review in order to identify how they would be able to meet these challenges. The key limiting factor was liquid effluent handling and after considerable option review, a new multi-tank remote effluent facility was to be built. There was also an issue with transporting the generators due to complications of day-day travel issues (flight times, traffic jams etc) and restrictions from transport regulations. Additional side shielding to the container and to the driver’s cab greatly reduced the dose rates and operational management ensured that dose rates remained compliant with the regulations. Lower operator dose rates were also experienced during the loading process as part of this solution.

After tea, David Rowe from the Department for Transport (Dangerous Goods Division) brought us up to speed with recent developments in the regulations and gave us advice on what was now required. These areas ranged from emergency arrangements, security provisions, dangerous goods safety advisor, vehicle equipment and also QA & training. Research by the department has identified areas where shortfalls have arisen in the industries’ approach to the transport of radioactive material and David highlighted these areas in order to provide a better understanding of what the DT require from us in attempting to ensure greater
compliance with the regulations. The DfT have a questionnaire at large and we are kindly requested to complete it (even if it is at the bottom of the paper mountain!) in order for the research to be updated.

John Simpson, Class 7 Ltd, was our last speaker of the day and provided a helpful explanation of transport requirements for radioactive material which also meets the classification criteria of another class of material, special provision 290. There was a useful discussion on significant changes to sub-hazard materials in July 2011. Delegates were advised to look afresh at requirements for radioactive samples which have a sub-hazard but have historically never been above the excepted criteria.

The day came to a close after a discussion involving the afternoon’s speakers and a few words from our Chairman, Roger, who did a very good job at time keeping with such a tightly packed day.

The SW Regional Committee members would like to express their gratitude to all of those who made the day a success (of which there are too many to name individually), but especially our speakers, exhibitors, Tessa, and all the people who silently work behind the scenes.

Nikki Green
Frazer–Nash Consultancy Ltd

SRP One-Day Conference—Practical Design of Radioactive Facilities
Birmingham & Midlands Institute, Birmingham, UK, 9 November 2010

This one-day event was organised by the SRP practical radiation protection topic group and followed on from their last meeting in 2006 which covered the practical decommissioning of small facilities. The outcome of this previous meeting has been the production of a practical decommissioning guide, the draft of which is currently available on the SRP website.

The meeting was opened by the chairman, David Williams of Magnox South. The purpose of the meeting was to bring together radiation protection, project management, security, regulatory and architectural professionals in order to present and enable discussion on how the requirements of radiation protection are captured during the design, build and commissioning phases of both new-build and re-kit projects. The meeting focused on the non-nuclear sector with emphasis on healthcare and research facilities. Over 60 delegates attended, along with three instrumentation exhibitors—Pycko Scientific, Southern Scientific and James Fisher. Six speakers presented, and many thanks go to all for the stimulating and useful discussions that were had throughout the day.

The first presentation was given by Rowland Phillips, an architect from Nightingale Associates. Rowland’s presentation, entitled ‘Design meets Radiation Technology’, gave a demonstration of what is involved in facility design. The key to successful design is clearly the early involvement of all stakeholders at the initial brief stage. Ensuring that all requirements have been discussed, challenged and clarified, and formally recorded in the brief, operational policy and schedule of accommodation documentation will save time, money and ensure that the as-built facility is fit for purpose. The consideration of dependencies and flexibility within the design is also of major importance. A radiation facility will most likely not be stand-alone and will require incorporation within a larger operational facility, hence efficient process interactions are vital. The project timescale may span several years, therefore flexibility of design is required in order to ‘future-proof’ a facility. Operational requirements or technology changes are likely to change over time between the initial design and the handing over of the facility.

Moving on from the design of a facility, Ron Barrack of Erigal Ltd presented on the project management of a new facility. Projects may fail for a variety of reasons; a lack of a structured project plan that includes sufficient time and resource estimates will make it difficult to ensure that the project remains on track. A lack of technical knowledge within the stakeholders and different ideas on what the project is to achieve will not produce a successful outcome, and planning for the later stages such as licensing and commissioning early on will do much to mitigate project risks. Ron finished by talking about the operational stage of the facility; it is vital that learning experiences are documented and that systems are put into place to monitor and identify improvements. The highest number of problems are likely to be within the first two years of use of a new or re-kitted facility.

The current international climate and the threat from terrorism means that the security of radioactive material should be an integral part of facility design. Paul Schilling of the Metropolitan Police presented on the terrorist threat and the design of new facilities. Following an overview on the threats from both international and UK-based terrorism, the discussion centred on the publication of the UK National Counter-Terrorism Security Office (NaCTSO) document on the security requirements for radioactive sources. This document uses the source categorisation of IAEA TECDOC 1344, with category 1 sources being high risk and category 5 sources being low risk. The document uses this categorisation
as a means of introducing security requirements that are proportional to the source categorisation. Practically, this means that category 5 sources are subject to the general security requirements imposed by IRR99, whereas category 1 sources must use specific additional measures that are also aligned to security standards (typically British standards and LPS (loss prevention standard) security ratings standards). Further information on the security of radioactive sources can be obtained from the NaCTSO website.

Richard Harrison of Norwich BioSciences Institutes presented on radiochemical lab design for life sciences research. The presentation focused on the key principles, considerations and constraints for radiological protection when fitting-out laboratories that will handle radioactive material; for example, surfaces used should be easy to decontaminate and should help prevent the spread of contamination, laboratories should have access control and shielding appropriate to the type of radiation should be designed in. As with the previous presentations the need to consult an RPA from the beginning of any project was highlighted. Following the presentation Richard was asked about methods used to determine surface decontamination factors; Richard replied that the method he himself used simply provided a ‘rule of thumb’ and that research into this area would be welcome.

The re-kit of facilities follows the same principles as for new-builds. Managing redevelopment was the topic presented by Mark Bradley from the University of Oxford. Some of the university facilities have recently undergone refurbishment however RPA consultation was not sought from the start of the projects; this led to poor laboratory design and issues once the laboratories were commissioned for active use. Mark highlighted that mistakes have been made in the past and that constant consultation with the RPA would help to prevent the same mistakes in future. The Universities Radiation Protection Advisory Group has updated the university policy documents to include the requirement to consult an RPA and they have made a number of improvements, including the introduction of a mobile radioactive waste store. Following the presentation Mark was asked if he had considered setting up a central source store for the university sources; Mark replied that a central source store would cause problems with regards to RPS responsibilities, for example leak testing and waste.

Stakeholder engagement and communication of radiation protection requirements does not end with the design stage. Eddy Rafiqi of the Queen Elizabeth Hospital, Birmingham presented on the RPA input on a new hospital development—radioactive facilities. The presentation focused on the six stages of planning within the healthcare sector and highlighted that currently an RPA is not formally consulted until stage 5 of the planning process (where design drawings have already been signed off). Following instances where radiation protection design aspects had not been met during projects (insufficient lead shielding installed, poor placement of heavy lead-lined rooms) it was suggested that the RPA should check the work at every stage of the design, build and commissioning process to ensure that radiation protection advice is being implemented.

There were two key conclusions from this meeting. Firstly, project delivery teams and stakeholders must understand at an early stage that radiation protection is integral, not additional to the basic facility design. Examples include the route of liquid waste pipes, the location of lead-shielded rooms in areas of high structural strength, and the design of ventilation ducting to avoid shine/scatter-paths from controlled areas. Secondly, early involvement of stakeholders (including the RPA) must be gained in order to understand the requirements of the facility and to ensure that the delivered facility is fit for purpose.

As with many areas of radiation protection, it is by ensuring that good communication is developed and maintained, that safe, secure, clean and well-designed facilities may be enjoyed and used by all.

Daniel West
Amit Desai
Radiation Protection Group, AWE Plc