



NDT MainCal Limited
www.maincal.com

Radiation Protection Services



Unit 2 Dale Road • New Mills • High Peak • Derbyshire • SK22 4NW
Tel: 01663 742549 • Fax: 01663 746837 • Email: rpa@maincal.com

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RADIATION PROTECTION NEWSLETTER

To all our RPA customers:

NDT MainCal is continuing to expand RPA services, not only gaining new clients but also providing training to our existing ones. Many of you have benefited from our RPS and HASS training courses, and we appreciate your support for this growing avenue of our business. Aside from RPA activity MainCal has set goals to develop and improve calibration services, and to that end we have employed Marcus Jones who will be focusing on sales, marketing and quality assurance. Another recent addition to our team is Katharine Lomas, who will be involved in customer service and administration. You will probably speak to Katharine when you ring the office. So we're looking forward to a busy 2007. We hope you find the following information to be of interest and practical value:

Transport of Radioactive Materials

On 29 November the radioactive materials division of the Department of Transport held a one-day seminar in Birmingham, focusing on 'small users' of radioactive materials. Although some of you were able to attend, we wanted to provide everyone with pertinent information. Here is a brief synopsis of some relevant matters that were discussed:

- **Labelling of source containers:** Many NDT companies order sources of activity below the type 'A' limit (e.g. 1 TBq of Ir-192), so as to avoid extensive hazardous goods driver training that would be required for a higher activity type 'B' consignment. However, many NDT source containers are designed and labelled as type 'B'. Transporting them would apparently invoke the additional driver training requirement *even when they only contain type 'A' activity sources!* The 'quick fix' for this would seem to be re-labelling the container as type 'A', which some of you are already doing. But there's a catch; due to an anomaly in design standards, it seems that a type 'B' package cannot *automatically* be assumed to meet type 'A' standards. The Department of Transport requires *written confirmation* of this. This places many NDT companies in a difficult position; either they have to get some sort of Type 'A' certification from the supplier / manufacturer of the container, or they have to do the hazardous goods driver training. In our opinion this is an unacceptable situation that needs resolving, and at the seminar we were urged to talk to the inspectors about it. So please do so if they come to see you! What really needs to happen is for the standard to be modified so that a type B container can be assumed safe for transporting type 'A' quantities and simply re-labelled.

- **'Special Form' certificates:** Most industrial radiography sources are supplied as 'special form', which means that the source capsule is manufactured to a standard that ensures its integrity in normal use and accident situations. When you buy in a source, on the source certificate/decay chart you should see a reference to a 'special form certificate number'. If you intend to transport the source, the Department of Transport would expect you as the user to obtain a copy of this certificate, which you should be able to get from the source supplier. The special form certificate has an expiry date, typically 10 to 15 years; this represents the recommended working life of the source. If the source is kept beyond this date, it can no longer be transported as special form, and it becomes much more difficult (and expensive) to transport. This shouldn't be an issue for users of 'short-life' sources like Ir-192, but for Co-60 users, or for anyone with sources in long-term storage, this could be a problem. So check the paperwork for the source before you think about transporting it.
- **Quality assurance programme:** This is something that has been in the transport regulations for a long time, but until Department of Transport began their recent programme of audits, few people fully understood exactly what is invoked by this requirement. In a nutshell, anyone who transports sources should have procedures that cover every step, from loading the vehicle through to completion of the journey, and including contingency plans for accidents and emergencies. The procedures should generate records such as checklists and transport documents. The whole system should then be audited periodically by the organisation to ensure that transport requirements are being met.
- **Changes to the regulations:** In 2007, the transport regulations are likely to be re-issued. The main change is that instead of being mode-specific (different regulations for road, rail, air etc.) there will be one set of regulations for all, with some additional clauses for the various modes of transport. The main effects for users will be that transport documents will need to be amended to refer to the new regulations, and there are additional requirements for driver training which will invoke a more specific training programme.

We will be discussing these issues in more detail with those of you who are affected when we make our scheduled visits next year. Meanwhile, if you need further guidance feel free to contact us, or the Department of Transport Radioactive Materials Division on 020 7944 5777.

HSE Meeting in London

Another important meeting that took place recently was at HSE offices on London. This event was attended by all the HSE radiation specialist inspectors, a large number of RPA's, representatives from the Environment Agency and the Department of transport and several other senior people from the nuclear and health care sectors. The format of the event was quite unusual; the attendees set the agenda by proposing specific topics for discussion in a series of group meetings. This allowed many issues and viewpoints to be aired, and no doubt HSE will publish details at some time in the future. For now, here are some of the pertinent subjects that were discussed:

Dosimetry for low-risk employees: In several industry sectors such as X-ray security screening, the risk of exposure to employees is so low that personal dosimetry (wearing film badges or TLD's) is deemed unnecessary. However, there is a requirement in IRR99 for a radiation employer to set investigation levels for unusually high doses and take action if these levels are exceeded. So how do you comply with this if you're not keeping any dose records? No one really seemed to know for sure, and there was a strong feeling that the regulations need to be changed to accommodate non-monitored low-risk employees. Until that happens the most effective method of control seems to be 1) periodically monitor the general work area and 2) carry out checks to ensure that all safety interlocks etc. are working, thus providing ongoing support for the assessment that there is no risk of significant exposure to anyone.

Risk assessment: This topic was discussed at some length, particularly in connection with site radiography. Some organisations rely on a generic risk assessment, usually embodied within the local rules. While this may be appropriate for repeated identical exposures in the same location, the preferred approach is to look at specific risks for each site. These typically include location of barriers, sufficient control of access, positioning of warning lights and signs, as well as non-radiation aspects such as working at height and electrical hazards. HSE inspectors, if they visit site, will expect you to demonstrate that you have adequately assessed the specific location in relation to the work that is taking place at the time, and recorded the results of this assessment.

Local rules: In quite a number of organisations, local rules tend to be quite lengthy and contain all the procedures that exist in connection with the use of ionising radiation. At the HSE meeting a valuable reminder was given that local rules do not have to be long and complicated. They don't need to consist of just one single document either.

One quite successful approach has been to split local rules into a number of sub-sections so that only the relevant information is displayed in the work area or given to the individuals that need it. The sub-sections might be something like; 1) Administrative procedures such as roles and responsibilities, issue of dosimeters, source records, dose records and trigger levels, RPA appointment and so forth. 2) Specific procedures for operating the equipment at the base facility, such as who can enter the controlled area, operation of interlocks and warning devices and relevant contingency plans. 3) Specific instructions for site radiography such as transporting isotopes, setting up and monitoring barriers, relevant contingency plans.

So if your local rules are the thickness of a telephone directory (and probably just as readable) then think about trimming down and re-organising them. If you need some help, then talk to us!

'Foreseeable misuse' of equipment

Despite growing public awareness of the dangers of ionising radiation, we still hear of occasions (incredible as it may seem) where equipment is deliberately misused, for example allowing someone to pass through the compartment of an X-ray cargo scanner. The potential for misuse also exists particularly with hand-held devices such as XRF materials analysers.

Even where doses of radiation from the equipment might not be medically significant, they are *unnecessary* doses, and therefore under the ALARP principle it is the responsibility of equipment owners to have controls in place to prevent misuse. If you are responsible for devices in your workplace that produce radiation, you therefore need to consider things like control of keys, password protection if the equipment allows it, and secure areas for storage. Don't make the mistake of assuming that everyone possesses common sense!

Polonium 210

Whenever an incident involving radiation hits the media, our phones usually begin to ring a bit more often! This was true with regard to the poisoning of Alexander Litvinenko with Polonium 210, a very rare and unusual radioactive isotope.


It has to be said that Po-210 is one of the most potentially lethal substances on the planet. It is a powerful emitter of alpha particles, which are ejected from the nuclei of some unstable atoms as part of their radioactive decay process. Alpha particles are generally OK if they remain outside the body; the skin will not let them through. However, if they get inside the body due to ingesting or inhaling an alpha-emitting substance, alpha particles can be extremely harmful. Po-210 releases so much alpha radiation that a pin-head sized portion, if it entered and spread through the body, could administer a dose equivalent to several Sieverts that would probably be lethal. Po-210 is also quite unusual in that alpha is the only significant radiation it produces. Because alpha particles only travel a very short distance through air, this makes Po-210 very difficult to locate unless you have the right kind of detector and it's within a couple of centimetres of the substance. Most alpha emitters (such as Americium 241, used in smoke detectors) also produce significant amounts of gamma radiation, which is usually detectable at a greater distance.

So do we need to start panicking? Well, not specifically about Po-210. It is, as already mentioned, very rare. It's a nuclear product that is strictly licensed and robustly controlled. The likelihood of someone other than a government official (?) getting hold of some is pretty remote. What about other radioactive substances? It is not inconceivable that someone could utilise such material with intent to harm people. The threat of 'dirty bombs', for example, has been heavily publicised. What can be done? One advantage we have is that unlike Po-210, most readily obtainable radioactive materials are relatively easy to detect and identify with the right equipment. So recognising that there is a threat, various security and protection agencies are now becoming more vigilant, as is the radioactive material user community in general. Some organisations have begun taking precautions against radioactive material being sent in the mail. So the likelihood is that in the future we'll get better at keeping radioactive material secure, and detecting it in places where it shouldn't be, thus preventing incidents. So, to quote a certain TV catchphrase, "don't have nightmares"!

Our very best wishes to all of our customers



Simon Wright
PRINCIPAL RPA



Steve Boocock
ASSISTANT RPA