

# **Radiation Safety Audit System – Safety Perspectives**

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## **Abstract**

In 2005 Safety and Health at the University of Western Australia (UWA) implemented a system of Radiation Safety Audits. The aim was to ensure each section of the University using radiation was audited annually. The audits cover those aspects of radiation safety regulated in the Radiation Safety Act of Western Australia and include high powered lasers, UV emitting devices, radioactive materials and x-ray machines. In relation to these there are regulated considerations, under the Radiation Safety Act WA, in the form of Registration and Licensing. Registrations are required for radiation equipment and radioactive materials and their locations of use and storage. Licensing is required for individuals using radiation. The Act also requires training, documentation, working rules, personal monitoring, calibrations and supervision. The University has implemented in house systems to control radioactive materials and radiation equipment coming onto and leaving the campus.

A Protocol Form/Application is required for each new project or type of work to control all aspects of processes involving the use of radioation. It was developed in-house and it incorporates both Risk Assessment and a Method Statement.

UWA Safety and Health has an active role in delivering control of radiation safety and ensuring that safety systems are appropriate relevant and used in an immediate and useful manner.

Safety and Health has importantly built a network of key people on campus and made sure they are assisted and valued. Key to the system design is that it is seen by Section Radiation Safety Officers (SRSOs) as a way to improve efficiency by delivering real, relevant and useful radiation safety outcomes. The system includes uniform documentation across campus, clear expectations and an ongoing interest from Safety and Health to ensure the systems remain used and relevant. This has allowed the audits to become efficient and effective both for the Sections involved and for Safety and Health.

## **Introduction**

In 2005 Safety and Health (S&H) at the University of Western Australia (UWA) implemented a system of Radiation Safety Audits. The aim was to ensure radiation safety was maintained in an effective and efficient manner consistent with best practice, the Radiation Safety Act and Occupation Health and Safety Legislation. To achieve this, and being cognisant of the limitations imposed by the realities of resourcing both within Safety and Health and in each Section of the University, a number of criteria needed to be met to ensure the system would function effectively and usefully.

SRSOs receive no specific remuneration for the work required to perform this function and it is not mentioned on their Position Description Statements. SRSOs are either academics or technical staff and generally have a full schedule from lecturing to preparing grant applications or managing Schools / Sections and little time to spare on what often appears to be non-core business. The natural result of this arrangement is:

They are genuinely busy with competing priorities which may result in radiation safety falling behind.

They must see the annual audit as the best way to keep radiation safety on track.

They need to be assisted with the role where ever possible.

They must see that the process is the most efficient and sensible it can be.

They must see that it will save them time and effort.

They need to realise that they are responsible for radiation safety and that it is core business.

They must to some extent own the audit process.

The question is how should the system be designed to address each of the above issues.

## **System design**

### **Communication**

After some thought and even some experimentation it was decided an annual audit would achieve many of the objectives the University needed. The design of the system, in particular its implementation, is critical to its success. Communication is the key, and the process must be kept alive and immediate to survive the rigours of an under resourced University.

By making the audits annual we ensure we visit every SRSO at least annually and often much more frequently. These visits importantly allow for immediate face to face contact with the SRSOs which strengthens personal trust between SRSOs and the S&H Officer. This process cannot be underestimated in its importance.

A personal relationship is established with the client SRSOs. This facilitates good communications, makes the SRSOs feel at ease encouraging them to bring forward issues related to compliance, misunderstandings and how the process can be improved. It also makes the job much more interesting and pleasant for the S&H Officer. The SRSO feels valued in that the S&H Officer has made the effort to visit them and shown an interest in their management of radiation safety. Further it ensures the radiation safety management systems can never get too far out of order so that they never become something to feel embarrassed or guilty about.

### **The Audit File**

A Radiation Audit File was produced by S&H for each relevant Section in the University. The aim of this document was to make the records systems for each Section uniform across campus – this meant the files had to be produced centrally in S&H. The files are kept in the SRSO's offices. They have pages printed from a central database maintained by S&H – the files are very neat and ordered in appearance and actuality. When information changes the database is updated and revised pages are printed directly from the database, posted to the relevant SRSO who replaces the old version of that page with the new.

Sections are provided in the files for

- Administration – management structure, records of receipt and disposal
- Induction and Training – training materials, induction, records
- Registration – radioisotopes, x-rays, UV, lasers
- Licenses – copies of licenses, expiry dates
- Protocols and Risk Assessments – copies of protocols and risk assessments

- Personal Monitoring – TLD badge records and correspondence
- Monitors & Equipment – calibration certificates
- Wipe Testing - wipe testing, biological monitoring
- Audit Checklists – inspection checklists and reports
- Working Rules and Procedures – copies of procedures and rules

### **The Audit**

The audit process amounts to arranging an appointment to see the SRSO and then visiting them. This is more often quite a social process rather than a policing exercise - the main aim is communicate, assist and build trust. The first stage in the audit is to go through the audit file with the SRSO to identify any changes that maybe recorded in the S&H Office database but not in the SRSOs file or changes that may have occurred in the Section but are not yet recorded. Detail like License, Protocol and monitor calibration expiry dates are checked. Impending changes in the Section are usually discussed as well as problems or recalcitrant staff/students and what might be the most appropriate course of action. Changes to the database are noted so that the database can be updated and new sheets mailed back to the SRSO to replace outdated sheets.

The Audit naturally forms two parts: those aspects of safety which are common to all areas of radiation use and those that change from area to area. For example, the common features are registration, licensing, protocols, training, documentation systems etc. The particular details of the radiation use or the particular lab use, work done, details of working rules that are unique to an area. For those aspects that remain common across campus we insist on uniform process and importantly documentation and records system. For those that are not unique documentation and procedures are maintained specific area and work. All this information is neatly and clearly set out in the Radiation Audit file.

Common features of the Audit file are:

Registration	Orders	Personal and area monitoring
Licensing	Waste disposal	Working rules
Protocols	Training	etc

Unique features are:

1. Records of radioactive materials - receipt and disposal
2. Laboratory design and services
3. Designated radiation areas and labelling
4. Radiation monitoring equipment
5. Radiation surveys
6. Personal monitoring procedures
7. Wipe testing
8. Equipment and shielding
9. Waste disposal
10. Emergency procedures – radiation

The laboratory areas are then visited with the SRSO. This is generally a very quick process with frank and open discussion about business, facilities and attitudes. Generally we are examining changes that have occurred during the year, the other detail should be in order following the previous year's audit. The first year of the audit the process is necessarily draw

out by the need to carefully examine areas and record long standing deficiencies. It is critical to the process that the SRSO feels comfortable enough with the S&H Officer to provide information freely. This requires a sensible and pragmatic attitude from the S&H Officer. Often we find ourselves in the position of being able to direct improvements where the SRSO would have difficulty due to the need to retain a cohesive working relationship with colleagues in their Section – essentially we can do their dirty work from an impartial position.

Occasionally we have to direct unpopular or expensive changes. We can however trade real benefits from S&H to encourage the SRSO or other staff in the Section to implement the changes we need. S&H has the benefit of a routine allocation of Radiation Safety Minor Works money (usually \$15,000 per year) to allocate as we see fit and this is most useful in this trading process. It is a very modest allocation but its value is highly leveraged in terms of goodwill generated.

### **The Radiation Database**

An in house database is used to record all aspects of radiation use on campus. It is also used to print pages for the Audit file, to check orders against Protocols, Protocols against License details and License details against Registration details, Monitor calibrations, personal monitoring records etc. The database is used in real time, for instance, if a person rings in an order for radioactive material the database is sufficiently useful to assist with printing the order and in the process checking the protocol details under which the order is being made. This is done in immediately while the person is on the phone, by the time the call is finished the complete task is done – it does not need to be revisited. Similarly when a protocol application is received, training, license, registration, radiation monitoring records can all be checked in a few minutes to confirm they are in order. Queries from staff or students on campus can be checked while they are still on the phone. Course booking can be made and booking letters and invoices printed before the phone conversation finishes.

This makes S&H look efficient and useful in the eyes of our clients and it saves us from building lists of trivial tasks to be done later.

### **The Web Site**

The web site is designed as a resource for information, documentation and training. The Audit details and radiation safety functions of the SRSOs, students and staff are available on the web. Many of the forms – for example Protocol forms can be downloaded from the site.

Working rules are also available on the site. Many of these are designed to be generic but they are also used as the basis for generating site specific rules where required.

Courses are also advertised on the website.

### **Training Courses**

Radiation safety training courses are run routinely throughout the year. Some of this training is designed to be self paced courses via web based training. We have found the value of training in a class room environment has a number of significant advantages and is our preferred option. In class we can introduce ourselves to our clients – it is the starting point for building trust and understanding between clients and S&H officers. From this trust comes good communications and with this comes efficiency and relevant systems.

Training courses are promoted via targeted emails to SRSOs and potential radiation users and via the monthly Safety and Health newsletters

### **Conclusion**

The audits cover those aspects of radiation safety regulated in the Radiation Safety Act of Western Australia and include high powered lasers, UV emitting devices, radioactive materials and x-ray machines. The audits ensure radiation safety control systems are being used, are relevant and are kept up to date. The University has implemented in house systems to control radioactive materials and radiation equipment coming onto and leaving the campus and to control the use of these items via risk assessment tools - Protocols.

UWA Safety and Health has an active role in delivering control of radiation safety and ensuring that safety systems are appropriate relevant and used in an immediate and useful manner.

Safety and Health has importantly built a network of key people on campus and made sure they are assisted and valued. Key to the system design is that it is seen by SRSOs as a way to improve efficiency by delivering real, relevant and useful radiation safety outcomes. The systems include uniform documentation across campus, clear expectations and an ongoing interest from Safety and Health to ensure the systems remain used and relevant. This has allowed the audits to become efficient and effective both for the Sections involved and for Safety and Health.