

Guidance Notes on Radiation Risk Assessment

Prior to commencing any new work practice involving a source of ionising radiation it is important that a realistic assessment of the radiation risks is carried out. This assessment will provide the necessary information for the drafting of good radiation protection and safety procedures. It will also identify areas where special protective measures should be implemented to reduce exposure to radiation. The risk assessment shall consider and address the possibility of exposures to workers and members of the public from foreseeable accidents involving the ionising sources used in the practice.

Article 9 (2) of the Radiological Protection Act 1991, (Ionising Radiation) Order 2000 (S.I. No. 125 of 2000) requires a radiation risk assessment to be carried out before commencing any practice involving a radioactive source or an apparatus capable of generating ionising radiation. It may also be required where a modification, that may affect the existing radiation protection, is sought to an existing licensed practice. Examples of such modifications are given at the end of this note.

The risk assessment must be forwarded to the Radiation Protection Regulation Unit of the EPA in support of an application for, or where applicable an amendment to, a licence. A sample form detailing the format of the risk assessment is attached to these notes

Although it is not mandatory, it is good practice for all licensees to review their risk assessment on a regular basis. Furthermore a review of the risk assessment may be required at the time of licence renewal or following an inspection by the Institute.

Procedure

A radiation risk assessment should take into account all the risks, both real and potential, of exposures to workers and members of the public. The steps listed below will assist this process. Further information can be found in the references provided at the end of this note.

Step 1 Identify all possible radiation hazards.

Step 2 Identify all workers and any members of the public who may be exposed to the radiation hazards identified in step 1 and the instances by which these exposures may occur.

Step 3 Evaluate the protective measures in place, such as safety procedures, local rules, protective materials and equipment. Identify areas where improvements may be made.

Step 4 Document the findings from steps 1 to 3.

Step 5 Review the assessment and amend if necessary.

Risks should be assessed in terms of the likelihood of the hazard occurring and the degree of harm that may result. The risks associated with sources of radiation are dependent on issues such as the type of work being carried out, the nature of the sources (type and energy of radiation emitted), radiation dose rates, working environment, security and safety measures in place.

In order to identify the possible risks consideration should be given to:

- Hazards arising from the routine operation and maintenance of the practice.
- Hazards arising from potential radiation accidents involving the sources of radiation.

The following list includes the major issues that should be taken into account when carrying out or reviewing a risk assessment:

- The nature of the sources of ionising radiation used, held or transported.
- Radiation dose rates to which anyone may be exposed.
- The likelihood of airborne and/or surface contamination in the work area and other locations.
- Access to working areas where dose rates or contamination levels are likely to be significant.
- The types and quantities of personal protective equipment required.
- Results of any previous personnel dosimetry or area monitoring relevant to the proposed work.

- Advice from the manufacturer or supplier of equipment about its safe use and maintenance.
- Engineered control measures and design features already in place or planned.
- Consequences of possible failures of control measures such as electrical, ventilation systems and warning devices.
- Consequences of failure to comply with work procedures or safety rules.
- Adequacy of inventory checks to confirm the presence of all sources of radiation.
- Adequacy of written work procedures and safety rules, including clear designation of responsibilities.
- Availability of advice on good practice from suitable qualified professionals.

Outputs from the Assessment

The risk assessment should enable the employer/licensee to identify the actions to be taken to ensure that the radiation exposure of all persons is kept as low as reasonably achievable. Consideration should be given to:

- The use of engineering controls, design features, safety devices, warning devices and the undertaking of suitable tests.
- The availability of appropriate personal protective equipment.
- The designation of specific areas as controlled or supervised areas.
- The preparation of radiation safety procedures and safety rules.
- The working conditions of any female employee upon declaration of pregnant or who may be breast-feeding.
- The training needs of workers.
- A suitable programme of dose monitoring for employees.
- The possible need to classify some workers as Category A and provision of appropriate medical surveillance for them.
- The assigning of responsibilities for ensuring that all regulatory and licensing conditions are adhered to.
- A self-assessment programme which may include internal auditing of work procedures and safety rules.

Examples of licence modifications that would require a review of the risk assessment:

- The introduction of a new radioactive source of a much larger activity, or a source which emits a different type or quality of radiation, to that for which a licence was previously held.
- The introduction of new work practices which require new radioactive sources or irradiating apparatus e.g. radiotherapy, nuclear medicine, non-destructive testing etc.
- The use of new electrical apparatus which produces X-rays of much higher energy than previously generated.
- The introduction of unsealed sources in an area where only sealed sources have previously been used.
- Plant modification, including engineering controls and safety features.
- Changes to processes or methods of work.
- Addition of the practice of “transportation” to the scope of the licence.

Reference List

1. Radiological Protection Act, 1991 (Ionising Radiation) Order, 2000, S.I. No. 125 of 2000.
2. Guidelines on Preparing Your Safety Statement and Carrying Out Risk Assessments, Health and Safety Authority, October 1999.
3. A-Z of Health & Safety Risk Assessment in Ireland, Michael McMahon et al., October 1999, Thompson Professional Information, Gee Publishing Ltd, ISBN 1-85800-134-X.
4. Code of Practice for Radiological Protection in Dentistry, Radiological Protection Institute of Ireland, March 1996.
5. Code of Practice for Radiological Protection in Veterinary Medicine, Radiological Protection Institute of Ireland, November 2002.



RISK ASSESSMENT FORM

Company Name:

Assessment completed by:

Company Address:

Hazard	Persons at risk	Method of reducing risk from hazard	Risk from Hazard		
			high	medium	low

Signature:

Date:

Position: