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| ONR Guidance Document  Applying for IRR17 consent - Information and guidance for safety assessments relating to industrial irradiation |



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Applying for IRR17 consent - Information and guidance for safety assessments relating to industrial irradiation

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Table 1 - Revision Commentary

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| 1 | New document. |

# Introduction

1. The Ionising Radiations Regulations 2017 (IRR17) provide a framework for ensuring that exposures to workers and other persons to ionising radiation arising from work activities are restricted so far as is as reasonably practicable and do not exceed specified dose limits.
2. Included within this legal framework is a ‘graded approach’. This is where the degree regulatory control over practices is proportionate to the size and likelihood of radiation risks resulting from the work.
3. The graded approach aspects of IRR17 refer to:

* Regulation 5 – Notification of certain work involving ionising radiation to HSE/ONR
* Regulation 6 – Registration of certain work practices involving ionising radiation to HSE/ONR
* Regulation 7 – Consent from HSE/ONR to perform specific work practices.

1. The introduction of the graded approach in IRR17 represented a change from the previous system of notifications and prior authorisations in the previous Ionising Radiations Regulations (IRR99) and included a requirement, with corresponding flat fee, for registrations and consents. In accordance with government policy changes to the process of applying for and gaining consents were made in order to better align with the International Atomic Energy Agency’s (IAEA) standards and guidance on application of the graded approach.
2. This document gives the content required for a Safety Assessment relating industrial irradiation as stated in Regulation 7(1)() of IRR17 along with guidance on what information should be provided.

# Safety Assessment Content and Guidance

| Section | Content | Guidance |
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| 1 | A general summary of the type of industrial irradiation to be performed and the premises(s) at which the practice is to be performed | Applicants should provide information on the type of industrial irradiation to be performed. Details of the types of radioactive sources to be used, the radionuclides and their maximum activities should be given. All radiation generators should be listed together with their type and energy ranges. |
| 2 | A summary of the arrangements for managing radiation\* protection  (\*radiation refers to ionising radiation throughout this document) | The radiation protection responsibilities and duties of management must be specified with clear lines of reporting established. Reliance on the RPS and RPA for the management of radiation protection is not sufficient. Evidence should be provided to show that the applicant manages radiation protection at a senior level. Details of how Radiation Protection Supervisors (RPS) will be given sufficient time and resources to supervise the work so that it done in accordance with local rules should be given. |
| 3 | A. Details of the likely frequency of use of the industrial irradiation sources of radiation to be used, or likely to be used,  B. Details of the nature of other sources of radiation in the working environment   * Information on the accumulation of radon in the working environment * Information on other sources of radiation exposure that industrial irradiation employees may be exposed to. | 1. The projected maximum number of occasions industrial irradiation will be carried out per year at each location should be given.   B. (i) The results of the risk assessment for radon  (ii) Details of other sources of radiation those engaged in irradiation are likely to be exposed to |
| 4 | Estimates of the radiation dose rates which anyone other can be exposed   * The maximum dose rates outside any shielding to which employees and members of the public can be exposed to at each location * The maximum dose rates employees and members of the public can be exposed to at each location if an accident occurs * All of the above should include all relevant exposure categories – effective dose, and equivalent dose (extremities, skin, eyes) * Estimates of annual doses in all relevant categories for employees and other persons. | Applicants must provide reasoned estimates or measurement of the dose rates to which employees and others can be exposed during both routine operations and in the event of any reasonably foreseeable radiation accident. This will include the maximum accessible dose rates to which employees and members of the public could be exposed to at each location. (In normal conditions and in the event of failure of control measures) These estimates must show that dose rates will not exceed 7.5Svh-1 outside any shielded enclosure or at the boundaries of controlled areas established around irradiation activities. In all cases estimates of all the relevant exposure categories (effective dose, equivalent dose [extremities, skin, eyes]) must be given as well as estimates of annual exposures in all relevant categories to employees, other persons and members of the public. Evidence that these are ALARP must also be given. Consent will not be granted if HSE do not consider these ALARP |
| 5 | A summary of the engineering control measures and design features already in place, or planned, to comply with the requirements of IRR17 Regulation 9 (Restriction of Exposure), associated with the work practice | Engineering control measures and design features include but are not limited to mechanical and electrical interlocks, barriers, control panels, emergency stop arrangements, access restriction or prevention measures, monitoring stations, warning lights and signals and video equipment. In all cases their type, number, mode of operation etc. should be given and their location marked on a sketch plan of the facility(s) These plans must also show the type and nature of any radiation shielding and the location of where the work will take place. For most engineering controls and warning lights and signals their failsafe nature must be illustrated and confirmed.  The procedures for any radioactive source changes should be described including the engineering controls etc. to be adopted to ensure that exposures during source changes are ALARP.  Where engineering controls and/or safety systems are not yet installed an indication of the timescale for installation should be provided. Designated controlled and supervised areas should be indicated on the sketch plan. |
| 6 | Summary of the maintenance and testing schedules for all engineering controls, safety critical controls such as interlocks, warning devices and other safety features | All the proposed maintenance schedules and testing regimes should be summarised for all the items referenced in Section 5. If annual checks are not performed a justification should be given. |
| 7 | A summary of and results of Critical Examinations that will be or have been conducted in accordance with Reg 32(2) of the IRR17 | A summary of the results for the critical examinations must be supplied. A summary of any planned critical examinations and their pass/fail criteria must also be given. |
| 8 | Summary of the planned radiation dose rate monitoring regime for irradiation areas and their surroundings including any areas to which the public may have access. | The planned radiation dose rate monitoring regimes should be summarised. Of particular importance is the monitoring which confirms the shielding and control methods are adequate and maintained and shows that on each occasion irradiation is undertaken, dose rates do not exceed 7.5 Svh-1 outside any controlled area. Information is required on how the monitoring results will be reviewed as well as how the records will be kept and for how long. Monitoring records must be available during the inspection |
| 9 | Summary of the personal dosimetry to be used including types, wear periods, approved dosimetry services. Includes the use of electronic personal dosemeters, where relevant. | A summary on the personal dosimetry provided to employees must be provided. The type of dosemeter(s) must be given and details of the employee groups to whom they are issued and the wear periods – monthly, quarterly etc. The name(s) of the Approved Dosimetry Services used for assessment and record keeping should be supplied. Dosimetry management processes – issue, return, supervision, results review should be stated.  Any use of electronic personal dosemeters should be detailed. Dosimetry records must be available during the inspection |
| 10 | The rationale for designating employees as Classified Persons | The classification rationale ensuring compliance with Regulation 21 of IRR17 should be described. Classification is dependent upon routine likely exposures and/or the likely exposures as a result of an accident or incident. Due to the nature of the work, it is HSE’s opinion that all those involved in work with large scale industrial irradiators should be classified. If this is not the case the applicant must provide an adequate justification |
| 11 | Summary of the radiological protection training that will be or has been provided to employees and other persons, including planned frequency and refresher training. | A summary on how the requirements of Regulation 15 of IRR17 for information, instruction and training are met must be provided. This must be sufficient to ensure that all those carrying out industrial irradiation or likely to be affected by it have received the appropriate information, instruction and training to enable them to restrict their exposures to levels which are ALARP. A summary of how the results of risk assessment, local rules, contingency plans and other relevant procedures are brought to the attention of employees should be provided. How the effectiveness of training is evaluated will be relevant as are plans and arrangements for refresher training. |
| 12 | Summary of the information supplied to employees concerning their work with ionising radiations in connection with pregnancy and breast feeding | Summary of how you communicate this requirement to your employees |
| 13 | A summary of possible radiation accident situations as identified in the radiation risk assessment, their likelihood and potential severity. This will include   * Information on the consequences of possible failures of control measures – such as electrical interlocks, ventilation systems and warning devices – or systems of work. | All of the possible accidents identified as part of the Radiation Risk Assessment should be summarised. Their likelihood should be stated and estimates of their potential severity given. The latter will include reasonable estimates of exposures to employees and members of the public in the event of the accident and the likely exposures to those engaged in accident mitigation. |