

# The relationship between training, competency and suitability

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## Abstract

The need for adequate and relevant training is a cornerstone at all levels in radiation protection. The endpoint of the training process should be an effective workforce, but to achieve this the workers need to have developed a satisfactory level of competency in the roles they undertake. Their knowledge and skills also need to be suitable for the industry in which they work. This paper explores the relevance of competency in radiation protection, and considers the systems in place in the UK for the assessment and recognition of competency in specific radiation protection roles. It also discusses the relationship between competency and suitability, and the role of training in the development of competency.

## 1. Introduction

Generally, a great deal of effort goes into determining the aims and objectives of any training scheme; the content and structure will depend on the trainee group and there are many options available with respect to the mechanism of training delivery. However, this thought process is often approached from the point of view of "information provision", that is, the package of information and instruction that the trainer wants, or intends, to deliver. Arguably, there perhaps isn't enough consideration given as to the "end product" that the training is, or should be, trying to achieve. It is fair to say that the expected outcome, or endpoint, of any training is an effective workforce; in the discussion below consideration is given to the parameters that influence "effectiveness" with respect to radiation protection matters and whether or not these are fully addressed within conventional training programmes.

## 2. Ability, competence and suitability

An effective workforce is one in which the individuals are *competent* in the roles that they undertake. In practice, what an employer requires (and this may or may not be a regulatory requirement) is that an individual is competent in the role or function that he is required to undertake and is *suitable* for appointment in that role.

Competency and suitability are key issues. Both terms are often used in connection with radiation safety training - sometimes interchangeably - but they are distinct criteria. Competence means, "being able to do" so demanding competence means demanding "ability"; an individual can only be able if he is armed with the relevant knowledge and skills. Suitability, however, cannot be assumed from competence as there are factors other than ability that influence suitability, some of these being inherent attributes of the individual. A particular individual, who is deemed to be competent to, say, use a contamination monitor in a school laboratory, may not be a suitable choice to undertake contamination monitoring in a high activity facility on a nuclear site. In effect, determining competence is consideration of ability; suitability is clearly dependent on competence but must also include consideration of circumstance and the experience of the individual.

From the employer's perspective, certainly at the level of the Radiation Protection Officer (RPO) and the radiation worker, many employers assume that all they need to do is ensure the provision of training (for example by sending an employee on a radiation safety course). Little conscious thought is given to the issues of either competence or suitability. The criterion that has been satisfied is that the individual has been "trained" and therefore that must be sufficient. Is this naïve, albeit unintentionally so? Do trainers adequately address competency and to what, if any, extent can suitability be addressed within the framework of training?

The following sections look at these issues in more detail with respect to the current approach to radiation safety training and qualifications within the UK.

### 3. Required competence: training provided

For the purposes of this discussion only three categories of trainees will be considered; radiation workers, Radiation Protection Supervisors (RPS) [the equivalent of the RPO in the UK] and Radiation Protection Advisers (RPA) [the interpretation of the Qualified Expert in the UK] these representing the three main categories to which training is traditionally provided. Table 1 provides a breakdown of the function or responsibility assumed by individuals in each of these categories along with the key regulatory requirements that relate to the specification of the role. Also included in the table is the level of competence *implied* from those specifications.

CATEGORY - FUNCTION/RESPONSIBILITY	REQUIREMENTS (IRR99) <sup>1</sup>	DEGREE OF COMPETENCE IMPLIED
<p><i>Worker</i></p> <p>- to work in safe manner, in accordance with the employer's procedures.</p>	<p><i>Employer</i> must ensure worker knows</p> <p>i) Risks to health ii) Precautions to be taken iii) Importance of compliance</p>	<p>Individual must be able to</p> <ul style="list-style-type: none"> <li>• Work in a safe manner</li> <li>• Follow instruction/procedures</li> </ul>
<p><i>Radiation Protection Supervisor (RPS)</i></p> <p>- supervision; the RPS has an important role to play in ensuring observance and adherence to the Local Rules.</p>	<p><i>Employer</i> required to appoint "suitable" RPS, ie one that</p> <p>i) Knows and understands regulatory requirements ii) Understands the precautions to be taken and the extent to which these will restrict exposures iii) Knows what to do in the event of an emergency iv) Commands sufficient authority to supervise effectively</p> <p><i>Employer</i> required to provide training as necessary to ensure (i) – (iii)</p>	<p>RPS must be able to</p> <ul style="list-style-type: none"> <li>• work safely and follow instruction</li> <li>• assess and understand the degree of radiation hazard in his work environment</li> <li>• analyse a situation and make a decision on an appropriate course of action</li> <li>• supervise others effectively</li> </ul>
<p><i>Radiation Protection Adviser (RPA) QE</i></p> <p>- to advise the employer</p>	<p><i>Employer</i> required to consult a "suitable" RPA with regard to satisfactory observance of IRR99</p>	<p>To be "suitable" an RPA must –</p> <ul style="list-style-type: none"> <li>• possess the knowledge, experience and competence required in order to advise with respect to the employer's circumstances</li> </ul>

Table 1. Functions and Responsibilities

### 4. Radiation Worker

The only responsibility held by the radiation worker is that he works in a safe manner. This is not only with respect to his own safety, but also to that of his colleagues and does imply a degree of basic competence. "Working safely" means adhering to relevant radiation safety procedures. While the complexity of the latter will depend on the application, provided the individual knows and understands the consequences of not adhering to instructions and procedures, then the training provided has been effective. In general, the extent of the required ability is that the individual is able to recognise atypical and/or potentially dangerous situations and know what the next step is; however, an understanding of the magnitude of the hazard and the degree of risk presented is vital.

There is a wide range of radiation safety training available for the radiation worker in the UK. Such training usually goes under the banner of "awareness" training and can range from simple instruction on a one-to-one basis to formal courses of typically 1 or 2 days duration. In the main, formal courses all follow a similar format, that being a mixture of classroom presentations combined with an element of practical work (although the latter is not always included). The majority of courses do not include any form of assessment of understanding or ability on the conclusion of the course and there is generally no follow-up in the workplace. In general a certificate of attendance (or record of instruction provided if the training was more informal) is taken as proof of "adequate" training.

With respect to the more minor applications of ionising radiation, any perceived weaknesses in the above approach to training, rarely impact on the end product. In other words, the fact that competence may not actually have been addressed (or suitability considered) doesn't, in the main, influence safety in practice. However, the situation changes as the complexity of the application and/or the magnitude of the radiation risk increases.

Take, for example, the situation of an industrial radiographer of some years experience who refuses to enter a radiography compound to assist in the recovery of a source that has jammed in the exposed position; a reasonably foreseeable situation and one which a practising radiographer would be expected to cope with. The radiographer's reason for refusal is that he is "afraid" of the radiation, or that he doesn't know what to do to make the situation safe. This could well be the result of weak or inadequate training that has resulted in misunderstanding leading to a lack of basic competence. In retrospect the individual is clearly not suitable for the role he holds, not being fully competent, but it could be that he has always been an inherently unsuitable character to work in potentially hazardous situations.

## 5. Radiation Protection Supervisor

In the UK there are no standards for RPS training although the UK Health and Safety Executive (HSE) has published a general "Core of Competence"<sup>(2)</sup> which reflects a basic level of knowledge and expertise. The onus is on the employer to ensure that "adequate" training is provided (see Table 1) but there is little published guidance for the employer as to what actually constitutes adequate training for an RPS in a given application. There is a large number of training providers offering both application-specific and general RPS training but a wide range of approaches to the provision of such training. The majority of courses reflect the HSE Core of Competence (although there is significant degree of interpretation in this) although no comment is provided on the degree of competence attained by the trainee. Some training providers go as far as claiming that attendance "qualifies" the attendee to take on the role of RPS. Apart from being misleading, such claims discourage the employer from actively considering either the competence or the suitability of potential RPSs as it is assumed that attendance at such courses will address all needs.

The issue of competency is one that is currently being addressed with respect to RPS training provided by RPD. For a number of years RPD (as NRPB) offered a written examination on completion of RPS courses. This was originally introduced, in part, in response to employer demand; employers wanted some evidence that a) employees "gained" from attendance at the course and b) that they, the employers, had fulfilled the requirement for the provision of training under IRR99. Certainly the introduction of the examination added some gravitas to the RPS course but there are reservations about the perceived status of the examination. The very nature of a written test means that assessment is limited to assessment of knowledge and understanding (and the latter with some difficulty); it is very difficult to gauge competence on this basis. Given this weakness, RPD is concerned that employers tend to view a "pass" in the examination as endorsement of the attendees' ability and suitability to be an RPS and, conversely, a "fail" as an indication of lack of suitability for the role. Neither is true.

In order to try and address this issue development is underway to replace the current examination format with a system that provides attendees with an assessment of a degree of competency in certain areas. In practice, this means making the transition to a simple (written) test of knowledge combined with practical assessment of understanding and ability. With regard to the latter, a student might, for example, be required to undertake one, or more, of the following tasks:

- chose and use the correct radiation monitor
- interpret a set of monitoring results
- demarcate a controlled area
- recognise when contingency plans should be implemented
- plan a source recovery

Obviously, clear assessment criteria are required but a key factor here is that these should be tests of basic ability. Consequently, the assessment process should be simple and straightforward. The intended endpoint is that on completion of the training the student and employer are provided with a "marker" of competence in certain areas; this can then be used as a tool by the employer when judging overall competence and suitability. Such an approach should provide a better product for the customer and better reflects the spirit of the legislative requirement. A point to note here is that such a change in approach to the assessment will not increase the degree of complexity of the training event - courses will not be any longer in duration nor the content more difficult - but it will require some re-direction of training effort.

## 6. Radiation Protection Adviser (RPA)

The requirement in the European Basic Safety Standards Directive <sup>(3)</sup> for the recognition of qualified experts has resulted in the creation of a number of certification schemes in the UK for Radiation Protection Advisers. The RPA is the qualified expert for occupational exposure issues and the RPA role is defined in the UK Ionising Radiations Regulations 1999 <sup>(1)</sup>. The predominant certification scheme, which is operated by RPA 2000, an assessing body recognised <sup>(5)</sup> by the UK Health and Safety Executive (HSE), is designed to assess both the adequacy of the knowledge of the individual (in effect the level of training he has received) and his level of competence.

To obtain an RPA certificate from RPA 2000, individuals must be able to demonstrate to that Body's satisfaction that they have:

- (a) sufficient evidence, from education, training and/or experience, to demonstrate:
  - (i) knowledge and understanding of the basic syllabus given in Annex 1 (derived from the 'basic syllabus for the qualified expert in radiation protection' set out in paragraph 2 Annex 1 of the Official Journal of the European Communities C133; 30.4.98); and
  - (ii) a detailed understanding of the UK Ionising Radiations Regulations 1999 and its Approved Code of Practice <sup>(4)</sup>, also other related non-statutory guidance; and
  - (iii) practical radiation protection experience; and
- (b) sound knowledge of general methods which might be typically used to deal with operational problems, including interpreting and applying radiation protection data, and supervising or carrying out practical measurements and control procedures for work involving potential for significant exposure to radiation; and
- (c) the ability to advise management effectively on the implementation of relevant regulatory requirements and radiation protection practices for work involving potential for significant exposure to radiation.

While (a)(i) and (ii) are assessing knowledge and training, (a)(iii), (b) and (c) are assessing competence, and the applicant is required to submit evidence in 9 areas of competency. It should be noted that these competencies are not practice-specific and hence a suitably experienced applicant should be able to provide evidence of competency in these areas regardless of the practice in which he works.

A range of training courses are available that are specifically designed to cover the basic syllabus, and these include both conventional training courses and distance learning packages. These training events have been found to be very effective in providing the relevant range and level of knowledge. However, they make no attempt to address suitability.

This certification system has been in place for 5 years and has proved to be very successful, with over 500 RPAs achieving certification. It should be noted, however, that the certification mechanism does not address the suitability of the person to provide advice for different practices. The determination of suitability is the responsibility of the employer, who needs to choose a certificated RPA with the appropriate experience and understanding of the practice that the operator carries out. Practice-specific training covering the radiation protection issues relevant to the practice will enhance the suitability of an RPA, although the achievement of suitability is generally the result of extensive experience and understanding of the issues in the relevant practice.

The RPA certificate is valid for 5 years and then must be renewed. RPA 2000 has recently developed a renewal scheme that requires renewing RPAs to demonstrate that they have kept their knowledge and experience (competency) up to date. This is done by accumulating points for a range of activities, including attendance at appropriate training events and the provision of advice, and submitting the points record to RPA 2000. This is in effect a focussed Continuous Professional Development Scheme and is intended to provide a simple and straightforward route for RPA certification renewal. As with initial certification the focus remains very much on demonstration of competency.

## 7. Conclusions

Knowledge, competency and suitability are key personal factors for persons working with radiation and there is a danger that training events concentrate just on knowledge provision, while competency and suitability are not addressed. Radiation workers at all levels need to be competent to work safely, and

competence can be assessed, either as part of a training event or as part of a certification process. Suitability, however, cannot be achieved just by attendance at a training course. It is an attribute that incorporates knowledge, competency ability and experience, and in the UK assessment of suitability is considered to be the responsibility of the employer.

Training can go a long way to address competence, but generally tends to be focussed on information provision and seeking to provide some level of understanding. Facilitating the attainment of competence is rarely a primary consideration, and assessing competence is rarely addressed. HPA is currently reviewing its own RPS training courses with a view to introducing some form of competency assessment that could be used by an employer as a marker of a person's level of competence. The situation is better defined for RPAs in the UK, where levels of knowledge and competency are specified and taken into account in the formal certification process. The updating of competencies has also been addressed in the recently introduced recertification scheme for RPAs.

It is important that employers and those responsible for training development and course design fully understand the concepts of competency and suitability. The training provider can provide a level of knowledge and develop a basic level of competency, but it is up to the employer to assess the adequacy of both and make judgements on the suitability of an employee for a role he is to be given.

### References

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