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Life long learning for Health and Safety Risk Management for JIGSR Institution members

A paper provided by the **Joint Institution Group on Safety Risk - JIGSR**



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Joint Institution Group on Safety Risk

The mission of the group is to work together by consensus to promote action and enhance awareness and knowledge of health and safety risk issues in the interests of the engineering profession.

The aims of the group are:

- To raise awareness of health and safety risk issues of interest to the profession - in particular acting as a forum for the exchange of information between members
- To promote and support more widely initiatives and activities originating in member organisations where engineering benefits the wider community
- To promote joint action on agreed topics of mutual concern and interest where there are agreed benefits to the wider engineering community

This group was formally know as the Inter-Institutional Group on Health and Safety.

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(now known as the **Joint Institution Group on Safety Risk - JIGSR**)

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Cover images (clockwise from top left)

- Petrochemical plant
- McArthur River uranium mine, Saskatchewan, Canada
- Baluarte Bridge, Mexico (image from Grupo Tradeco)
- Shard, London Bridge (image showing construction)

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1. Introduction

- i. Managing health and safety risks effectively is a vital requirement for technicians, engineers and managers whatever their engineering disciplines. They have a key role in ensuring that the safety and health of the workforce and the public is given prominence in all that they do - whether this is in ensuring day-to-day safety, dealing with hazards to health, or minimising the potential for major accident-events affecting society. This requires understanding of, and competence in, the key issues underpinning high standards of health and safety risk management from design, through to operations and the management of projects, and in relation to the entire engineering life cycle of a process, product or project. It includes an understanding of legal requirements, good practice and the organisational and cultural issues that need to be addressed to ensure high standards - such as leadership and communication skills.
- ii. The requirements to achieve this as part of accredited academic programmes in engineering, and Initial Professional Development (IPD) phases (i.e. up to professional qualification) are set out in the requirements of engineering institutions and other engineering professional bodies. These comply with the requirements of the Engineering Council as contained in UK-SPEC (<http://www.engc.org.uk/professional-registration/standards/uk-spec>). The Inter-institutional Group (IIG) on Health and Safety and member institutions continue to work with the Health and Safety Executive (HSE), academe and industry to develop teaching materials that will improve the capability of academic bodies and institutions to meet these requirements.
- iii. However, it is vital that the capability to understand and manage health and safety risks continues to receive attention as technicians and engineers progress through their careers - whether their role is primarily in an engineering capacity or that of a manager or senior manager. The importance of this is reflected, for example, in the Engineering Council's Guidance on Risk for the Engineering Profession (<http://www.engc.org.uk/standards-guidance/guidance/guidance-on-risk/>).
- iv. Beyond IPD, although Continuing Professional Development (CPD) must be demonstrated, some engineering bodies do not issue explicit guidance in respect of continuing learning in health and safety risk management in their discipline. The IIG, in discussion with the HSE, has therefore produced the attached short document ('schedule') in order to provide a broad framework for discussion, offering guidance and describing in broad terms the continued learning that is likely to be required as part of CPD in relation to this subject.
- v. A version of this schedule was first developed some years ago as a discussion document within the health and safety committees of the Institution of Civil Engineers and Institution of Structural Engineers. As the topic has gained greater prominence in discussions between the IIG and the HSE, it was felt to be helpful to re-consider the original document in the broader context of all of the professional bodies which constitute the IIG. The attached document has been developed against this background and in this context. It reinforces and expands upon the requirements of UK-SPEC as we interpret it.
- vi. It should be noted that there are legal requirements relating to 'competence' in health and safety matters and the schedule does not deal with specific guidance in respect of these. Requirements for 'competency' encompass learning, experience, currency, attitude and education and are often task-related and thus cannot be reduced to a high-level document. Furthermore, the schedule does not attempt to deal with specialist skills.
- vii. The intention of the attached schedule is therefore to initiate a discussion as to whether individual professional bodies have fully recognised the need to define continued learning requirements for health and safety risk management over a notional career. It has been written in such a way as to prompt discussion in individual bodies - and also among engineers and managers more widely - as to whether the suggested key CPD requirements outlined in the schedule are currently being adequately addressed and, if not, what more can and should be done by the engineering profession.
- viii. As a first step in this process, it is suggested that the relevant groups concerned with health and safety risk management and membership/CPD in the engineering bodies consider the points made in the schedule. To facilitate this discussion, the IIG suggests that the following questions are discussed. It is hoped that the output of this discussion will indicate what, if anything, needs to be done by individual bodies and by the profession more widely:
 - a. Do you agree that the issues identified in the attached schedule broadly reflect the requirements for CPD in the area of health and safety risk management over a notional engineering career?
 - b. In general terms, at the level of detail intended to be addressed in the schedule, are there other potential requirements for continued learning in this area that should be addressed?
 - c. Within your professional body, do you believe that the issues identified (and any others that you regard as potentially important) are currently being adequately emphasised in your guidance to members and addressed (as shown by your verification procedures)?
 - d. What practical steps might be taken to address any potential shortfalls?
 - e. In considering the areas raised in the schedule, are there good practices within your professional body that might advantageously be shared with others who are considering this issue?
 - f. Are there any issues which require further consideration or guidance more widely across the profession? If so, do you have any recommendations on how these might be addressed?
 - g. What would Member Institutions see as next steps to improve CPD in this area and would that be at the IIG level or within Member Institutions?

John Carpenter
Chairman: Life-long Learning

January 2013

2. Schedule: Life Long Learning for Health and Safety Risk Management

This Table is intended to reflect our interpretation of the requirements of UK-SPEC. Although 'IPD' is shown following 'Education' (for simplicity) in practice there may well be an overlap. The Education/IPD phases are included for completeness: the essence of the Table lies in the CPD section. The levels of attainment are intended to be cumulative during the progression of a career.

	Career Level	Typical level of attainment (cumulative throughout notional career)	Typical means to attain required level
IPD Phase	Education	As set out in the relevant discipline's accreditation documents and complying with UK-SPEC learning outcomes	Via accredited degree course (CEng, IEng); via work experience, completion of an appropriate apprenticeship, and/or an approved qualification e.g. Level 3 BTEC (EngTech).
	Trainee Engineer and Trainee Engineering Technician	<p>CEng, IEng, EngTech</p> <ol style="list-style-type: none"> Has knowledge and understanding of current legislation and best practice relevant to area of work including knowing limits of own knowledge and where to find information. Understands and is able to apply the hierarchy of risk control including ALARP/SFARP during design and over the whole life-cycle. Understands personal and collective responsibilities and liabilities relevant to the industrial sector, and the relevance of lessons from others. <p>CEng, IEng</p> <ol style="list-style-type: none"> Understands the critical importance of minimising the risk of catastrophic events and the particular measures required to prevent this occurring. Is aware of current initiatives and industry concerns in respect of health and safety risk - including occupational ill-health, ergonomics and the need to take a systems/holistic view of risk. Understands the interaction of safety/health risk with other business related risks 'and is able to maintain a learning and questioning approach to the maintenance of high standards of health and safety within this framework. 	<p>Experience and training (CEng, IEng, EngTech)</p> <p>In line with requirements of Institution's 'Core Objectives' (excluding items such as First Aid and Fire Warden training) whilst ensuring that a broad capability is established.</p> <p>Includes an element of formal training (to industry recognised standards where available).</p> <p>Utilising mentoring and supervision from qualified/senior engineers to enhance the learning experience.</p> <p>Where possible, maximising opportunities to work in a range of different areas before specialising.</p>
CPD Phase	Qualified Engineer and Qualified Engineering Technician	<p>CEng, IEng, EngTech</p> <ol style="list-style-type: none"> Is fully familiar with and able to routinely apply, means to eliminate hazards and reduce risks in own area of work/ expertise. Able to manage and apply safe systems of work. Aware of good practice and current concerns. Is able to communicate effectively with others. <p>CEng</p> <ol style="list-style-type: none"> Able to undertake monitoring of relevant safe systems of work. Seeks to improve systems. Able to relate health and safety risk management to wider benefits of effective management and its relationship to business success. Knows when and how to obtain specialist advice and input. Leads by example and through effective communication with staff and stakeholders. 	<p>CEng, IEng, or EngTech</p> <ol style="list-style-type: none"> Achieves on-going CPD on health and safety risk matters. Ensures CPD training is specifically obtained on new or revised regulations and for industry developments. Achieves self-development in this area.
	Senior Engineer and Senior Engineering Technician	<p>CEng, IEng, EngTech</p> <ol style="list-style-type: none"> Able to advise less experienced engineers/technicians in health and safety risk matters. Able to identify H&S training needs of their staff. Provides positive role model in health and safety risk management matters. <p>CEng, IEng</p> <ol style="list-style-type: none"> Will be capable of identifying the need for health and safety reviews and audits where appropriate, and initiating these within his/her areas of responsibility. Actively promotes the relationship between good health and safety risk management and good business risk management. 	<p>CEng, IEng, or EngTech</p> <ol style="list-style-type: none"> Achieves on-going CPD on health and safety risk matters. Ensures CPD training is specifically obtained on new or revised regulations and for industry developments. Achieves self-development in this area. Interacts with practicing engineers in own team, across their organisation and beyond, as appropriate.

	Career Level	Typical level of attainment (cumulative throughout notional career)	Typical means to attain required level
CPD Phase	Manager (or equivalent)	<p>CEng, IEng, Eng, Tech</p> <ol style="list-style-type: none"> 1. Able to inculcate a health and safety culture within team. Ensures anyone reporting to them has the opportunity to maintain competence. 2. Understands the need to benchmark and review progress and performance. 3. Understands the wider occupational health and safety responsibilities of managers and the importance of a holistic approach to risk management. 4. With support, able to implement and maintain a comprehensive health and safety management system. 5. Understands the need to demonstrate commitment to good practice and continuous improvement in health and safety management and demonstrates this in practice and by personal example. 6. Encourages learning and a questioning attitude in relation to health and safety concerns. 7. Ability to listen and recognise when engineers are raising health and safety concerns and deal with them appropriately. 	<p>CEng, IEng, or EngTech</p> <ol style="list-style-type: none"> 1. Achieves on-going CPD on health and safety risk matters. This should encompass the wider issues of managerial responsibility. 2. Ensures CPD training is specifically obtained on relevant new or revised Regulations. 3. Achieves self-development in this area. 4. Interacts with practicing engineers in own team, across their organisation and beyond.
	Director or Partner (or equivalent)	<p>CEng, IEng, EngTech</p> <ol style="list-style-type: none"> 1. Capable of formulating health & safety policy with advice from a competent source. 2. Has good understanding of current legislation, necessary to fulfil role as Director. 3. Understands the responsibility of Directors towards health & safety risk management. 4. Is aware of good practice in health and safety management relevant to the business and promotes this as a business objective. 5. Ensures that sufficient resource is available to achieve objectives and promotes the case that a successful business requires high standards in health and safety risk management performance. 6. Understands the need to lead from the front and to support staff, and does so. CEng, IEng, EngTech 	<p>Achieves on-going CPD on health and safety risk matters encompassing the wider issues of senior managerial responsibility (which should include a formal element for this level).</p> <p>Maintains suitable Interaction across the organisation and with peers within the sector.</p>

Miscellaneous specialist roles such as CDM Co-ordinator, Inspector etc. are for individual institutions to add, building on the above.

3. Members of Working Group

John Carpenter (Chairman)	Consultant, Institution of Civil Engineers
Allan Bain	Royal Institution of Naval Architects
John Brazendale	Head of Corporate and Operational Specialist Unit (C16), Health and Safety Executive Institution of Engineering and Technology
Hazel Harvey	Director Membership, Institution of Occupational Safety and Health
Andy Mackiewicz	Ampa Associates, Institution of Chemical Engineers
Deborah Seddon	Head of Policy and Standards, Engineering Council
Reg Sell	Institute of Ergonomics and Human Factors
Brian Wimpenny	Loughborough University, Safety and Reliability Group, Institution of Mechanical Engineers

The **Joint Institution Group on Safety Risk - JIGSR** (formally known as the Inter-Institutional Group on Health and Safety) is made up of representatives (members and staff) from the following organisations:

- Hazards Forum
- Institute of Ergonomics and Human Factors
- Institute of Marine Engineering Science and Technology
- Institution of Chemical Engineers
- Institution of Civil Engineers
- Institution of Engineering and Technology
- Institution of Mechanical Engineers
- Institution of Occupational Safety and Health
- Institution of Structural Engineers
- Royal Institute of British Architects
- Royal Institution of Naval Architects
- Safety and Reliability Society
- Health and Safety Executive
- Engineering Council

Additional information can be found at the JIGSR webpage hosted by the IChemE

- <https://www.icheme.org/resources/joint-institute-group-on-safety-and-risk.aspx>

Documents produced by JIGSR can be downloaded from the IET website

- <http://www.theiet.org/factfiles/health/general-health.cfm>

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