Human Factors in Health and Safety
A professional development programme for the process industries
“Human factors refer to environmental, organisational and job factors, and human and individual characteristics, which influence behaviour at work in a way which can affect health and safety.”

UK Health and Safety Executive
Introduction

There is an increasing emphasis on the importance of managing human factors to achieve improved safety and business performance in the chemical process industries. Major accidents, including those at Texas City and Buncefield, have highlighted the importance of addressing this aspect of performance. However, many of the safety and operational professionals charged with managing human factors have no formal qualifications or training in the human and behavioural sciences.

*Human Factors in Health and Safety* provides modular training designed to meet the needs identified in the process industries. Designed by the Keil Centre and IChemE, the programme intends to develop an understanding of the core human factors issues and outline how to manage them to achieve improved safety performance.

*Human Factors in Health and Safety* consists of four intensive two-day modules, which together with pre-reading, provides a broad human factors educational programme.

Key features

- content covering human factors in process safety, health and safety, with links to other aspects of business performance
- a modular course design, with short residential events, also providing networking opportunities with like-minded professionals
- advice to help implement human factors solutions
- training is delivered by recognised human factors professionals with significant process industry experience

Course content

Topics are organised to cover the UK Health and Safety Executive’s top human factors issues in major hazard sites, but these topics are just as applicable and relevant to non-UK regulatory frameworks.

The content has been developed in consultation with IChemE’s safety and loss prevention specialists.

Who should attend?

The programme is specifically designed for those who want a comprehensive overview of the subject matter, access to practical research-based tools and approaches, and discussion in small groups with acknowledged industry experts. This may include:

- HSE managers and advisors
- operations managers
- safety engineers
- chemical/process engineers
- in-house human factors advisors

Specific engineering disciplines (eg control and instrumentation, piping, electrical, mechanical) may be interested in module 4 (*Human Factors in Design*).

Learning outcomes

- understand what human factors is and how it affects human performance, health and safety
- understand how human factors needs to be managed within an organisation, including the scope and involvement of different parties
- develop knowledge about specific topic areas related to major accidents and how to reduce the related risks
- understand and gain practical use of common tools and techniques used within human factors
- understand how to apply certain human factors tools
- UK participants – act as the COMAH operator’s intelligent customer for human factors*

* The COMAH delivery guide has a specific clause relating to technical competence in human factors, suggesting that COMAH operators should demonstrate proportionate access to HF expertise.

This can be supplied as external competent support (such as from a Chartered Human Factors Specialist accredited by the Chartered Institute of Ergonomics and Human Factors). However, it is emphasised that the COMAH operator must maintain an effective intelligent customer capability and secure local ownership of key HF standards and their implementation, developing and maintaining a suitable level of in-house HF expertise.

*Human Factors in Health and Safety* aims to develop a broad understanding of human factors in support of the in-house human factors advisor who acts as the COMAH operator’s intelligent customer.
All modules will be held in Edinburgh, UK.
You can join the programme at any point – modules can be completed in any order as part of a one-year programme.
You can sign up to complete the whole programme or just attend single modules to develop understanding of a particular area of human factors.

The modules

**Module One – Managing Human Factors**
Provides an introduction to the key human factors concepts within risk management, and examines how to manage organisational change, safety culture and behaviours, and safety critical communications.

**Module Two – Managing Human Failure**
Explores how to pro-actively manage human errors and non-compliances, analyse human failures contributing to incidents and manage performance under pressure.

**Module Three – Strengthening Organisational Performance**
Provides key pointers for strengthening organisational safety through effective management of training and competence, staffing and workload, supervision and safety, and fatigue-related risk.

**Module Four – Human Factors in Design**
Examines the key human factors issues to address at the design stage, looking at how to integrate human factors within engineering programmes, how to develop effective procedures, human machine interfaces, and process plant and control room design.

Their structure
Each two-day module will be strictly limited to 50 delegates and cover four key human factors topics. The total group will be split into two sub-groups, with each sub-group further split in to syndicates of six.

Each module will have the same basic structure:
- all sessions delivered by a recognised human factors professional, with significant process industry experience
- a mix of theory, case study, discussion and practical exercises in small syndicates
- identification of key success factors in implementation

Delegates are encouraged to keep a learning log throughout the programme.
Course prize

Delegates who complete all four modules are eligible to enter for a course prize for best application of human factors knowledge. Previous winners of this award include:

**2010/11**
David Herd, Living Safety Advisor, GlaxoSmithKline, UK

**2012/13**
Stuart Hill, UK LNG Assurance Manager, National Grid, UK

**2013/14**
Andrew Brown, Rachel Brownlow and Andy Letheren, Nuclear and Safety Assessment Section, Springfield Fuels Ltd, UK

**2014/15**
Roger Newton, Principal Engineer, JBA Engineering, UK

**2016**
Phil Morris, Engineering Manager, EDF Energy Gas Storage, UK

**2017**
Ron Ramshaw, Head of HSSE, Interconnector, UK
## Module One
### Managing Human Factors

**Day One**
- Human factors in risk management
  - overview of programme
  - what is ‘human factors’?
  - why is it important for health and safety?
  - managing and measuring the company’s performance in relation to human factors

- Managing safety critical communications
  - what is effective communication?
  - a model of communication failures
  - approaches to making communication robust
  - how to assess shift handover communications arrangements
  - assessment and improvement
  - control of work case study

**Evening**
- Course dinner and networking

**Day Two**
- Managing safety culture & behaviours
  - what is safety culture?
  - models of safety culture
  - considerations for measuring culture
  - developing culture and overcoming blockers

- Managing organisational change
  - what is organisational change
  - effects on safety
  - some examples from serious incidents
  - typical problems encountered
  - interventions

**Module Two**
### Managing Human Failure

**Day One**
- Reducing human error
  - what makes error more likely?
  - how can we make people safer?
  - identifying safety critical tasks
  - analysing tasks
  - conducting human reliability analysis

- Managing non-compliance
  - the significance of non-compliant behaviour in incident causation
  - different types of non-compliance
  - factors that provoke non-compliance
  - ABC analysis – a tool to understand decision making in the context of non-compliant behaviour
  - what can be done to reduce the likelihood of non-compliance

**Evening**
- Course dinner and networking

**Day Two**
- Human factors in incident investigation
  - human factors in the investigator
  - common human failings in investigators
  - interviewing skills – best practice
  - human factors in the investigation
  - key steps
  - recent best practice guidance
  - case study

- Managing performance under pressure
  - understanding stress and its consequences
  - causes of stress: chronic and acute
  - managing pressure at work
  - improving resilience

**Module details**

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www.icheme.org/human-factors
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<th>Module Three</th>
<th>Strengthening Organisational Performance</th>
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| **Day One**  | **Managing fatigue** | - the consequences of fatigue for human performance  
- managing fatigue using a Fatigue Risk Management Plan  
- fatigue-related performance indicators  
- investigating fatigue-related incidents |
|              | **Staffing & workload** | - staffing, workload and process safety  
- methods for workload measurement and prediction  
- HSE staffing assessment method CR8348/2003  
- case study practical |
| **Evening**  | **Course dinner and networking** | |
| **Day Two**  | **Training & competence** | - impact of competence on safety  
- competence management systems  
- developing and assessing competence  
- competence assurance |
|              | **Effective supervision and safety leadership** | - effective supervision: its role in performance management and improvement  
- supervision models: understanding when flexibility is needed and how to achieve it  
- supervision and culture: exploring the links between supervisory behaviour and team and organisational culture |
| **Module Four** | **Human Factors in Design** | |
| **Day One**  | **Integrating human factors in design** | - key human factors issues to address within design  
- key HFE activities at different life cycle phases  
- HFE roles, responsibilities and competencies  
- risk screening for HFE  
- setting up a corporate standard for HFE in capital projects |
|              | **Developing effective procedures** | - introduction: to err is human  
- procedures and risk – when things go wrong  
- creating safety – when procedures are safety critical  
- procedures as part of risk management  
- how to develop good procedures  
- how to write usable procedures  
- putting procedures to work and managing change |
| **Evening**  | **Course dinner and networking** | |
| **Day Two**  | **Human machine interface** | - Human machine interface design  
- displays and controls  
- principle of compatibility  
- control panel design  
- software interfaces and alarm handling  
- case study review of a major accident |
|              | **Plant and control room design** | - plant design: work area design and access, design for maintenance, materials handling, environmental ergonomics  
- building and control room design: building arrangement, control rooms, workstations, consoles, environmental ergonomics |

www.icheme.org/human-factors
Practical information

About the organisers

The Institution of Chemical Engineers (IChemE) is the global professional membership organisation for people with relevant experience or an interest in chemical engineering. We are the only organisation to award Chartered Chemical Engineer status and the Professional Process Safety Engineer registration. Founded in 1922 as a professional institution for chemical and process engineers, IChemE has grown to its current status of over 44,000 members across 120 countries. We are committed to supporting the professional development of chemical and process engineers worldwide and are a market leader in process safety training.

For more details visit www.icheme.org

The Keil Centre, established in 1983, is a private consultancy practice of chartered psychologists and chartered ergonomics and human factors specialists based in Edinburgh, UK and Perth, Australia. The Keil Centre has long-standing links with the process industries through our international commercial consulting activities and involvement in IChemE safety conferences, seminars and symposia, and the European Process Safety Centre.

For more details visit www.keilcentre.co.uk

Venue

Norton House Hotel
Ingliston
Edinburgh
EH28 8LX
Tel: +44 (0)845 072 7468
www.handpicked.co.uk/hotels/norton-house

Fees

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<th>Fee Type</th>
<th>Year</th>
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<tr>
<td>Single module</td>
<td>2018</td>
<td>£1,300 + VAT</td>
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<tr>
<td>Single module</td>
<td>2019</td>
<td>£1,350 + VAT</td>
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<td>All four modules</td>
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These fees include attendance at all sessions, all conference documentation, lunch and interval refreshments and group dinner.

All four modules must be booked at the same time to qualify for the discounted rate.

How to book

Register online at www.icheme.org/human-factors
Call +44 (0)1788 534430
Complete and return the registration form by email to ar@icheme.org or by fax to +44 (0)1788 560833

More details

Visit: www.icheme.org/human-factors
Tel: +44 (0)1788 534431
Email: courses@icheme.org

Accommodation

Accommodation is not included in the delegate fee. Please contact the hotel directly to make a reservation, quoting IChemE

CPD 12.5hrs per module
CPD 50hrs for total programme

In-company training

If you have several colleagues interested in this course, why not consider running it in-house?
For a quote or to discuss your requirements contact courses@icheme.org
Workshop leaders

Chiara Amati is a Chartered Occupational Psychologist who specialises in management and leadership assessment and development. Chiara has been associated with The Keil Centre for 17 years and has experience of supporting clients in various industries, including high hazard, in relation to the assessment and development of safety culture and safety leadership. She has considerable experience of delivering training that generates insight and brings behavioural change. Chiara is a registered Occupational Psychologist with the HCPC and an Associate Fellow of the British Psychological Society.

James Bunn is a Principal Consultant Ergonomist with the Keil Centre. He is qualified to master’s degree level in ergonomics and is a highly experienced human factors specialist and industrial accident investigator. He has a broad experience base, having worked for the UK health & safety regulator and the energy sector in Norway. James was the human factors specialist member of the multi-disciplinary team that investigated the terror attack on the In Amenas Tigantourine gas facility site in Algeria. This was a major incident which received international media coverage and resulted in a public inquest in the UK. He is also an experienced human reliability analyst.

Janette Edmonds is the course director of the Human Factors in Health and Safety programme in the UK and Europe. Janette is a director of The Keil Centre, a Chartered Ergonomics and Human Factors Specialist, a Fellow of the Institute of Ergonomics and Human Factors and a Chartered Member of the Institution of Occupational Safety and Health. She has a BSc in Psychology, an MSc in Ergonomics, and 25 years of practitioner experience within various industries. In particular, her experience includes chemical processing, oil and gas, rail, emergency services, defence, telecoms, but also medical and consumer product design. Janette has experience in most aspects of human factors practice, but her main areas of specialism include human factors in engineering design, development of procedures, human factors in incident investigation and human reliability analysis. Janette was the lead author and editor for the Elsevier book ‘Human Factors in the Chemical and Process Industries: Making it Work in Practice’.

Ken Gray is a Chartered Psychologist and a director of The Keil Centre, leading their clinical, assessment and development services. He applies powerful psychometrics, facilitation and coaching techniques that inform both personal development choices, and help to strengthen and sustain productive team working relations. He also works with client organisations to develop behaviour standards, competencies, robust selection, development and performance review systems. As well as being responsible for The Keil Centre’s StressTools® stress risk assessment survey, Ken oversees the company’s suite of ‘managing psychological wellbeing’ and personal resilience offerings. In 2010 Ken was shortlisted for the British Psychological Society Practitioner of the Year Award. He is a registered Occupational Psychologist with the HCPC and an Associate Fellow of The British Psychological Society.

Ian Hamilton is a partner at ERM and is responsible for the human factors global practice. He began his career in human factors in the defence sector in 1984 and then moved to air traffic management. Ian has been practising for 34 years and for the past 26 years he has worked in consultancy. He has expanded his areas of interest to include most aspects of human factors practice, although he maintains a particular interest in workload modelling, human performance prediction, and human factors integration. Previously, Ian was a founding partner in Human Engineering Associates, a consultancy that works with safety-critical organisations to manage work in the defence, air, rail, utilities and oil and gas sectors. Most recently his work has focused on the management of major accident risk and process safety culture. He has a BSc in Psychology, an MSc in Ergonomics, is a Chartered Psychologist and a Chartered Fellow of the Institute of Ergonomics & Human Factors.

Dr Paul Jackson trained as a psychologist, obtaining his PhD from Imperial College, London. For the last 19 years his work has focused on human performance impairment, and in 2005 he set up Clockwork Research, the London-based consultancy that works with safety-critical organisations to manage the risks associated with fatigue. Paul and his team have designed fatigue management training programmes for a range of clients including BP, Shell and Newmont Mining, and recently completed development of BP’s online fatigue training programme which is now being rolled out around the world. Previously, Paul was a research manager at the Department for Transport (DfT) where he was responsible for impairment research, looking at the effects of illicit drugs, medications, alcohol and fatigue on driving. In addition to his work on fatigue, he has worked closely with the DfT in the development of new legislation on drug driving.
Richard Scaife is a director of The Keil Centre and a Chartered Occupational Psychologist. He is also a Chartered Ergonomics and Human Factors Specialist, a Fellow of the Institute of Ergonomics and Human Factors and a Chartered Scientist. He has a BSc in Applied Psychology, an MSc in Occupational Psychology, and 29 years’ of practical ergonomics experience within various industries. Richard spent six years working for National Air Traffic Services, latterly as the head of human safety in their human factors unit. He also spent four years working on the design of military sensor systems, primarily for aircraft, before joining the Keil Centre. Richard specialises in all aspects of human factors, particularly organisational safety, human safety analysis (including human error) and incident investigation. He has cross-industry experience, providing consultancy expertise and training. Richard was awarded the British Psychological Society Practitioner of the Year Award in 2006.

Charles Shoesmith is a Chartered Psychologist who has many years’ international experience consulting in the area of individual and organisational behaviour, cultural development and learning, often with an emphasis on health and safety. He has particular expertise in the design and development of innovative and effective solutions to complex organisational and people performance issues. He is an extremely effective presenter and trainer, applying his background in learning and educational theory to tailor courses to meet specific needs.
Registration form

Human Factors in Health and Safety

Complete this form and return it by email to ar@icheme.org or by fax to +44 (0)1788 560833

I wish to book a place on:

| Module One – Managing Human Factors | 3–4 April 2019, Norton House Hotel, Edinburgh, UK |
| Module Two – Managing Human Failure | 5–6 June 2019, Norton House Hotel, Edinburgh, UK |

| Module Four – Human Factors in Design | 5–6 December 2018, Norton House Hotel, Edinburgh, UK |

| Module Three – Strengthening Organisational Performance | 18–19 September 2019, Norton House Hotel, Edinburgh, UK |
| Module Four – Human Factors in Design | 4–5 December 2019, Norton House Hotel, Edinburgh, UK |

I am a member of IChemE □ Yes □ No Membership number

Last name

First name

Title (Dr/Mr/Miss/Mrs/Ms/Prof/Eur Ing)

Gender □ Male □ Female

Work details – company

Job title

Department

Country

Post/zip code

Address

Town/city

County/state

Direct telephone

Email

Special dietary requirements

Promotional code

Method of payment (payment must be received in full before the event date otherwise admission cannot be guaranteed)

✓ Cheque enclosed (made payable to Institution of Chemical Engineers).
Send to IChemE, accounts department, Davis Building, Railway Terrace, Rugby, Warwickshire, CV21 3HQ, UK

✓ Debit my credit/debit card: (payment in GBP only)

Cardholder name (as it appears on the card)

Billing address (if different from above)

Cardholder’s signature

Telephone number

- Visa - Visa Debit - MasterCard - UK Maestro - AMEX

Card number:

Valid from date:

Expiry date:

CVC code*:

* CVC code: (3 digits on reverse of (debit card only) card or 4 digits on the front of AMEX) This is mandatory for VISA and MasterCard

✓ Invoice my company quoting purchase order number*

Contact

Invoicing address

*Cancellation policy

Cancellations received in writing 28 days prior to the event will be subject to an administration charge of 10% of the fees plus VAT where applicable. No refunds will be given for non-attendance or cancellations received less than 28 days prior to the event. Substitutions are welcomed at any time. We reserve the right to cancel or alter the programme.

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