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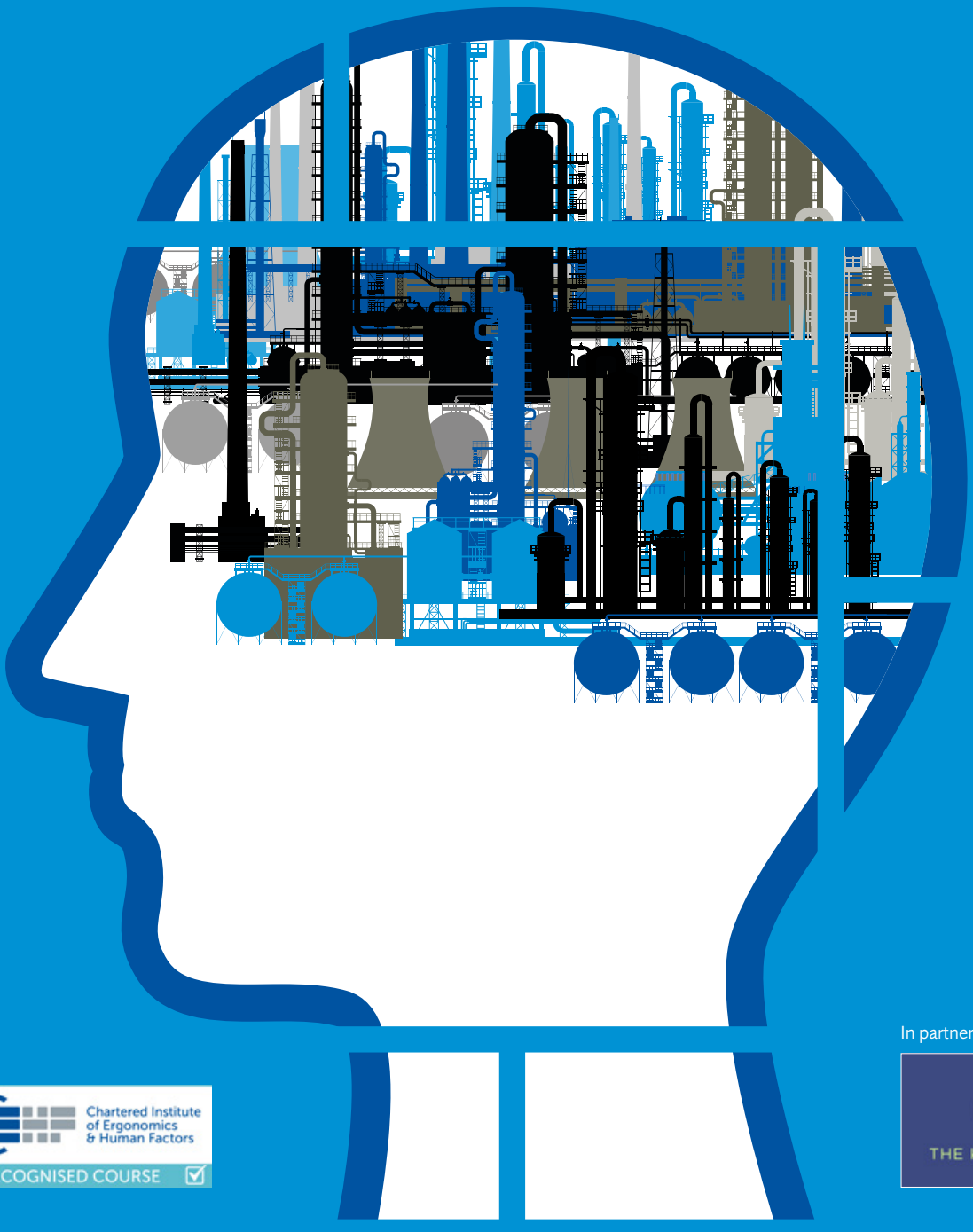
Human Factors in the Chemical and Process Industries

Modular human factors training



Chartered Institute of Ergonomics & Human Factors
RECOGNISED COURSE

In partnership with:
THE KEIL CENTRE

Human Factors in the Chemical and Process Industries

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 the Chemical and Process Industries provides modular training designed to meet the needs identified in the process industries. Established in 2009 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.

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.

Key features

- Content covers human factors in process safety, health and safety, with links to other aspects of business performance
- A modular programme
- Advice to help implement human factors solutions
- Training is delivered by recognised human factors professionals with significant process industry experience

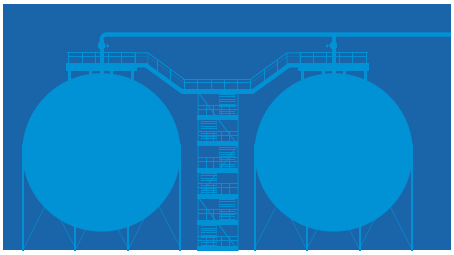
The modules

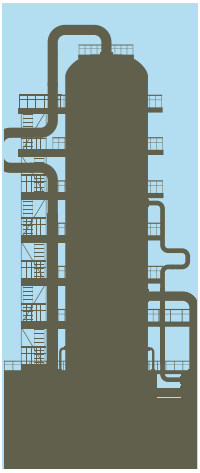
Human Factors in the Chemical and Process Industries consists of four modules which, together with independent study, provides a broad human factors educational programme :

- Managing Human Factors
- Managing Human Failure
- Strengthening Organisational Performance
- Human Factors in Design

Modules include a mix of theory, case studies, discussion and practical exercises in small groups.

You can sign up to complete the whole programme or just attend single modules to develop understanding of a particular area of human factors. Modules can be completed in any order.





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 the Chemical and Process Industries 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.

CIEHF Technical Member Grade

Completion of all four modules enables delegates to develop at least an awareness of more than 50% of the competency areas specified by the Chartered Institute of Ergonomics and Human Factors (CIEHF). This is one of the key eligibility criteria required for successful achievement of the Technical Member grade of CIEHF. Additional 'at work' application of the theories and tools being taught on the course will be required, as will the need for delegates to be applying human factors for a significant part of their work. *Human Factors in the Chemical and Process Industries* therefore provides a sufficient foundation through which the Technical Member grade of CIEHF can be achieved.

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.	
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
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
Explores how to pro-actively manage human errors and non-compliances, analyse human failures contributing to incidents and manage performance under pressure.	
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

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 Three	Strengthening Organisational Performance
Provides key pointers for strengthening organisational safety through effective management of training and competence, staffing and workload, supervision and safety leadership, and fatigue-related risk.	
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 CRR348/2001 ■ case study practical
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
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 rooms.	
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
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

Delivery format and dates

Modules are available both online and in-person.

Our online modules are delivered across four live sessions (approximately three hours in length each) on consecutive days. There are a choice of session times to accommodate different time zones. The live sessions with the trainers are supported by pre-course reading and independent study using pre-recorded videos.

Our face-to-face modules are held in Rugby, UK over two days. Pre-course reading is issued beforehand.

Visit www.icheme.org/human-factors to see scheduled dates.

The Keil Centre

Human Factors in the Chemical and Process Industries is delivered in partnership with The Keil Centre, a private consultancy practice of chartered psychologists and chartered ergonomics and human factors specialists based in Edinburgh, UK and Perth, Australia. Established in 1983, The Keil Centre has longstanding links with the process industries through its international commercial consulting activities and involvement in IChemE safety events, and the European Process Safety Centre's activities.

All the trainers are highly experienced human factors professionals with significant process industry experience.

Visit www.icheme.org/human-factors to learn more.

More details

Visit www.icheme.org/human-factors

In-company training

We can also deliver customised human factors training to in-house teams, face-to-face or online.
Contact courses@icheme.org to discuss this option.

Just some of the many companies who have enrolled delegates on the *Human Factors in the Chemical and Process Industries* programme since it began in 2009:

Air BP
Air Liquide
Akzo Nobel
Amec Foster Wheeler
Anglo American
AstraZeneca
Atkins
Babcock International
BAE Systems
Baker Hughes
BASF
Bechtel
Bilfinger UK
BOC
Borealis Polymers
BP
Calor Gas
Capenhurst Nuclear Services
Centrica Storage
CF Fertilisers
Chemoxy International
Conoco Phillips
Costain
Croda
Danone Baby Nutrition
DNV GL
Dow Corning
EDF Energy
Essar
Esso
Evonik
Exolum Pipelines
Exxon Mobil
Fennovoima
Finnish Safety And Chemicals Agency
FMC Chemicals
Fujifilm Imaging Colorants
Futamura Chemicals UK
Gassco AS UK
Glaxo Smithkline
Harbour Energy
Health & Safety Executive
Hellenic Fuels & Lubricants
Hexion UK
Huntsman
Imerys
Ineos
Interconnector UK
Invista
Jacobs
Johnson Matthey
KCA Deutag
Kemira
Lanxess Solutions UK
Lenzing Fibres
LyondellBasell
Maersk Oil & Gas
Mexichem Fluor
MWH Treatment
National Grid
National Nuclear Laboratory
Neste
Novartis
Office for Nuclear Regulation
Oil and Pipelines Agency
OMV
Perenco
Petrofac
Pfizer
PM Group
Premier Oil
Procter & Gamble
PX Group
Repsol
Rhodia
Rolls Royce
SABIC Petrochemicals
Saudi Aramco
SBM Offshore
Scottish Environment Agency
Scottish & Southern Energy
Sellafield Ltd
Shell
Sinclair Oil Corporation
Solenis
Springfield Fuels
Statoil
Syngenta
Synthomer
TAQA Bratani
Tate & Lyle
Total
Urenco
Vale Europe
Valero Energy
Valtris Speciality Chemicals
Veolia
Versalis
Vertellus Specialities
Victrex
Whyte & Mackay
Wood

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