



# How to carry out human factors assessments of critical tasks

## Guidance for COMAH establishments

### Appendix B: Recommended Good Practice Guidance

The main guidance on how to conduct the qualitative assessment approach described in this guidance is issued by the Energy Institute:

**Guidance on Human Factors Safety Critical Task Analysis**, February 2020, Available at:

<https://publishing.energyinst.org/topics/human-and-organisational-factors/risk-management/guidance-on-human-factors-safety-critical-task-analysis2>

The Energy Institute also provides a wide range of online guidance, including a set of **human factors briefing notes** covering the following topics:

- Briefing Note no. 1 – Introduction
- Briefing Note no. 2 – Alarm Handling
- Briefing Note no. 3 – Organisational Change
- Briefing Note no. 4 – Maintenance
- Briefing Note no. 5 – Fatigue
- Briefing Note no. 6 – Safety Critical Procedures
- Briefing Note no. 7 – Training and Competence
- Briefing Note no. 8 – Ergonomics
- Briefing Note no. 9 – Safety Culture
- Briefing Note no. 10 – Communications
- Briefing Note no. 11 – Task Analysis
- Briefing Note no. 12 – Human Error and Non-Compliance
- Briefing Note no. 13 – Human Reliability Analysis
- Briefing Note no. 14 – Behavioural Safety
- Briefing Note no. 15 – Incident and Accident Analysis
- Briefing Note no. 16 – Human Factors Integration
- Briefing Note no. 17 – Performance Indicators
- Briefing Note no. 18 – Leadership
- Briefing Note no. 19 – Pressure and Stress
- Briefing Note no. 20 – Occupational Safety vs Process Safety

See <https://publishing.energyinst.org/>

### Key sources of recommended good practice by UK Health and Safety Executive (HSE)

The HSE provide online guidance and links to references across the human factors topics relevant to managing major hazards, including the toolkits that the HSE inspectors use for inspecting human factors on site. See <https://www.hse.gov.uk/humanfactors/index.htm>

The HSE also publish section 12 of the COMAH Safety Report Assessment Manual 2015 - Human Factors criteria (PDF). This provides tabulated headline criteria for key Human Factors topics. See <https://www.hse.gov.uk/comah/sram/docs/s12d.pdf>

COMAH Competent Authority Inspecting Human Factors at COMAH Establishments (Operational Delivery Guide): <https://www.hse.gov.uk/comah/guidance/hf-delivery-guide.pdf>

## A further selection of relevant good practice sources

Topic	Guidance	Notes
General	<b>HSG 48: Reducing Error and Influencing Behaviour</b> 1999, HSE. Available at <a href="https://www.hse.gov.uk">https://www.hse.gov.uk</a>	General introduction to Human Factors and how they affect health and safety.
	<b>Developing and Maintaining Staff Competence</b> Railway Safety Publication 1, Nov2016. Available at <a href="https://www.orr.gov.uk/">https://www.orr.gov.uk/</a>	Key guidance for establishing and sustaining effective competence management systems
	<b>Approaches to Managing and Assuring Contractor Competence</b> , Energy Institute, Aug 2019. Available at <a href="https://publishing.energyinst.org/">https://publishing.energyinst.org/</a>	Provides a number of approaches to addressing contractor competence
Competence	<b>Guidelines for Competency Management Systems for COMAH Sites</b> Cogent Skills, July 2012 Available at <a href="https://cogentskills.com/publications">https://cogentskills.com/publications</a>	Provides an approach to developing a competence management system based on the COMAH requirements
	<b>Best Practice in Procedure Formatting</b> , HPOG, August 2021. Available at <a href="https://www.hpog.org">https://www.hpog.org</a>	Guidance in the design of effective and usable procedures
	<b>Revitalising Procedures</b> , HSE. Available at <a href="https://www.hse.gov.uk/humanfactors">https://www.hse.gov.uk/humanfactors</a>	Includes roles and responsibilities, training, testing, and special procedures.
Procedures	<b>HSG256: Managing Shift Work</b> , 2006, HSE. Available at <a href="https://www.hse.gov.uk">https://www.hse.gov.uk</a>	Good practice guidelines on how to reduce fatigue risks and practical advice on shift work, with guidance on work patterns design assessment.
	<b>Managing Rail Staff Fatigue</b> , Office of Rail Regulation, January 2012. Available at <a href="https://www.orr.gov.uk/">https://www.orr.gov.uk/</a>	Advice on good practice in managing fatigue. Although aimed at the rail industry, the guidance is applicable to all industries.
	<b>Managing Fatigue using a Fatigue Risk Management Plan (FRMP)</b> , Energy Institute, August 2019 Available at <a href="https://publishing.energyinst.org/">https://publishing.energyinst.org/</a>	
Fatigue & Shift Work	<b>HSG38: Lighting at Work</b> , 1997, HSE. Available at <a href="https://www.hse.gov.uk">https://www.hse.gov.uk</a>	Guidance on how lighting affects the health and safety of people at work, covering assessment and management of risk, good practice, and minimum recommended levels.
	<b>LG22: Lighting for Control Rooms</b> , 2022. Available at <a href="https://www.cibse.org/">https://www.cibse.org/</a>	Guidance for design of lighting arrangements in control rooms.
	<b>L108: Controlling Noise at Work</b> , 2021, HSE. Available at <a href="https://www.hse.gov.uk">https://www.hse.gov.uk</a>	Guidance on the control and management of risks from exposure to noise.
Environmental Factors		

	<b>Human Thermal Environments: The Effects of Hot, Moderate and Cold Environments on Human Health, Comfort, and Performance</b> , Parsons, K., Ed. 3, 2014. Published by CRC Press	A systematic treatment of thermal environments and how they affect humans in real-world applications.
	<b>Chartered Institute of Building Services Engineers (CIBSE)</b> . Available at <a href="https://www.cibse.org/">https://www.cibse.org/</a>	Detailed guidance on different aspects of the built environment
Design	<b>ISO 9241-210:2019: Ergonomics of human-system interaction — Part 210: Human-centred design for interactive systems</b> . Available at <a href="https://www.iso.org/">https://www.iso.org/</a>	Covers how hardware and software components of interactive systems can enhance human–system interaction.
	<b>ISO 11064 Parts 1 to 7: Ergonomic design of control centres</b> , Available at <a href="https://www.iso.org/">https://www.iso.org/</a>	Parts 1 to 7 cover control room design, control suites, control room layout, workstations, displays and controls, environment and their evaluation.
	<b>ISO 6385:2016: Ergonomics principles in the design of work systems</b> . Available at <a href="https://www.iso.org/">https://www.iso.org/</a>	Establishes the fundamental principles of ergonomics as basic guidelines for the design of work systems.
	<b>Report 454: Human Factors Engineering in Projects</b> Energy Institute, June 2020, Available at <a href="https://publishing.energyinst.org/">https://publishing.energyinst.org/</a>	Provides a practical, cost-effective and balanced approach to applying Human Factors Engineering to projects.
	<b>Human Factors in Highly Automated Systems</b> CIEHF White paper, April 2022. Available at <a href="https://ergonomics.org.uk/resource/human-factors-in-highly-automated-systems-white-paper.html">https://ergonomics.org.uk/resource/human-factors-in-highly-automated-systems-white-paper.html</a>	The paper is based around nine principles that provide an easy to follow guide to human factors issues which need to be addressed when developing and implementing highly automated systems.
	<b>EEMUA Publication 201, Control Rooms: A Guide to their Specification, Design, Commissioning and Operation</b> , EEMUA, Ed 3, 2019. Available at <a href="https://www.eemua.org/">https://www.eemua.org/</a>	The EEMUA guide covers control room workspace size and layout, workstation design, temperature, humidity, noise, lighting, air quality as well as Human-Machine Interfaces.
	<b>EEMUA Publication 191, Alarm Systems - A Guide to Design, Management and Procurement</b> EEMUA, Ed 3, 2014. Available at <a href="https://www.eemua.org/">https://www.eemua.org/</a>	Guidance on designing, managing and procuring an effective alarm system.
Maintenance Error	<b>Capability Maturity Model for Maintenance Management</b> , Energy Institute, Oct 2007. Available at <a href="https://publishing.energyinst.org/">https://publishing.energyinst.org/</a>	An overview of asset management and related initiatives.
	<b>Maintenance System Assessment: Guidance Document, RR237</b> , 2004, HSE. Available at <a href="https://www.hse.gov.uk">https://www.hse.gov.uk</a>	Advice and guidance on fundamental structural and organisational elements involved in a maintenance system and methods to establish their existence, their degree of sophistication and their effectiveness.
	<b>Managing Maintenance Error: A Practical Guide</b> Reason, J. and Hobbs, A. 2003. Published by Ashgate.	A practitioner’s guide to managing maintenance error.
Staffing and Workload	<b>Assessing the Safety of Staffing Arrangements for Process Operations in the Chemical and Allied Industries (CRR 348/2001)</b> , HSE, 2001. Available at <a href="https://www.hse.gov.uk">https://www.hse.gov.uk</a>	Presents a practical methodology to assess the staffing levels, particularly for the control room operation, for response to major accidents.
	<b>Safe staffing arrangements - user guide for CRR348/2001 methodology: Practical application of Entec/HSE process</b>	Practical guidance on implementing the CRR348/2001 methodology.

	<p><b>operations staffing assessment methodology and its extension to automated plant and/or equipment</b>, Energy Institute, May 2004. Available at <a href="https://publishing.energyinst.org/">https://publishing.energyinst.org/</a></p>	
	<p><b>Guidance on Ensuring Safe Staffing Levels</b>, Energy Institute, Dec 2021. Available at <a href="https://publishing.energyinst.org/">https://publishing.energyinst.org/</a></p>	<p>Guidance to determine safe operational and maintenance staffing levels for both normal operations and emergency response for different stages of the operational life cycle.</p>
	<p><b>ISO 10075 Parts 1-3: Ergonomic Principles Related to Mental Workload</b>. Available at <a href="https://www.iso.org/">https://www.iso.org/</a></p>	<p>Establishes principles and requirements for the measurement and assessment of mental workload and guidance on the design of work systems.</p>
Organisational Change	<p><b>Organisational Change and Major Accident Hazards (CHIS7)</b>, HSE, 2003. Available at <a href="https://www.hse.gov.uk">https://www.hse.gov.uk</a></p>	<p>Guidance on how to manage the impact of organisational change on control of major accident hazards.</p>
	<p><b>Managing Major Accident Hazard Risks (People, Plant and Environment) during Organisational Change</b>, Energy Institute, Mar 2020. Available at <a href="https://publishing.energyinst.org/">https://publishing.energyinst.org/</a></p>	<p>Guidance and techniques to assess and manage the risks of change to major accident hazard operations.</p>
Incident Investigation	<p><b>Learning from Adverse Events</b>, CIEHF White paper, June 2020. Available at <a href="https://ergonomics.org.uk/resource/learning-from-adverse-events.html">https://ergonomics.org.uk/resource/learning-from-adverse-events.html</a></p>	<p>Provides a human factors perspective to investigating and learning from adverse events and the key principles which organisations can apply to capture the human contribution.</p>
	<p><b>Learning from Incidents, Accidents and Events</b>, Energy Institute, Aug 2016. Available at <a href="https://publishing.energyinst.org/">https://publishing.energyinst.org/</a></p>	<p>Guidance on understanding the human and organisational causes of an incident through appropriate investigation approaches through the whole incident management process.</p>
	<p><b>Demystifying Human Factors: Building Confidence in human Factors Investigation</b>, IOGP, Oct 2018. Available at <a href="https://www.iogp.org/bookstore/">https://www.iogp.org/bookstore/</a></p>	<p>Document to support those involved in the investigation process incorporate human factors into investigations.</p>
Leadership and Supervision	<p><b>Safety Leadership in Practice: A Guide for Managers</b>, IOGP Report 453, Oct 2019. Available at <a href="https://www.iogp.org/bookstore/">https://www.iogp.org/bookstore/</a></p>	<p>Advice for supervisors, managers, and leaders to be more effective in their role as leaders in safety.</p>
	<p><b>Supporting Safety Decision Making in Companies: Briefing Notes for Board members, Managers and Other Leaders</b>, Energy Institute, Aug 2016. Available at <a href="https://publishing.energyinst.org/">https://publishing.energyinst.org/</a></p>	<p>Practical guidance on management decision making affecting health and safety.</p>
	<p><b>Safety Supervision – Creating and Environment for Effective Supervision</b>, WorkSafe Victoria, June 2011. Available at <a href="https://worksafe.vic.gov.au/resources">https://worksafe.vic.gov.au/resources</a></p>	<p>Guidance outlining how workplaces can set up effective health and safety supervision.</p>
Culture	<p><b>Human Factors – Safety Culture</b>, NOPSEMA Information Paper, May 2020. Available at <a href="https://www.nopsema.gov.au">https://www.nopsema.gov.au</a></p>	<p>Presents a model of safety culture as a means of understanding how it develops to drive improvements in safety outcomes.</p>
	<p><b>Hearts and Minds Safety Culture Toolkit</b>, Energy Institute. Available at <a href="https://heartsandminds.energyinst.org/">https://heartsandminds.energyinst.org/</a></p>	<p>A range of tools which can be used to support a change in safety and organisational culture.</p>