

Why human factors are an essential element in preventing major accidents

Managing human failures is essential to prevent major accidents, occupational accidents and ill health, all of which can cost businesses money, reputation and potentially their continued existence. Successful businesses achieve high productivity and quality while ensuring health and safety. Many recent examples of major accidents that have occurred across the world at high hazard sites have been contributed to by human failures.

Human factors has been a hot topic for the Health and Safety Executive (HSE) for several years; however, many companies are only just starting to consider them. The term 'human factors' refers to the environmental, organisational and job factors, and human and individual characteristics, which influence behaviour at work. Almost all major accidents are caused by human failure in some way, whether that is due to poor leadership and management, design, operation, or maintenance. By applying proven human factors techniques, grounded in the principles of human and organisational psychology, you can reduce human error to deliver improvements in safety and operational performance overall.

A human factors approach recognises this and focuses on how to make the best use of capabilities; by designing jobs and equipment which are fit for people. This not only improves their health and safety but often ensures a better managed, more effective organisation. Sites can expect significant business benefits from lower downtime, fewer incidents and better operational performance if human factors and the associated behaviours are fully embedded in the organisation.

Staffing issues at high hazard sites

Staffing issues have been at the forefront of many operators minds throughout the recent pandemic and is a key area for consideration in a human factors approach. Safe operation and maintenance of plant will rely upon a core skillset and specific staffing levels to ensure adherence to safety critical procedures. When gaps in competence appear due to absence, or because of limits placed on staffing volumes on site, this presents a significant problem. Equally, as those on site are spread more thinly and begin to suffer fatigue, the problem is compounded. Fatigue in staff can lead to reduced vigilance and attention, and to errors and accidents causing ill health and injury. Assessments should be made as to what can be safely achieved with a reduced capacity of staff in place and then determine whether in a worst-case scenario,

some operations may have to be discontinued until they can be safely resumed. The first step would be to refer to your management of change processes, which such risk assessments would fall under.

Choosing a Suitably Qualified and Experienced Person (SQEP)

Where reliance is placed on people for safe operation, the COMAH Competent Authority's expectations are for operators to address human factors including human reliability with the same rigour as technical and engineering measures. The HSE's Human Factors Roadmap [1] provides a practical framework for managing human factors at COMAH establishments by linking major accident hazards to processes for improving the performance of those undertaking safety critical tasks. This includes tasks where human failure could result in a major accident to the environment (MATTE).

The following topics are considered key to managing human factors at COMAH establishments:

- Managing human performance
- Human factors in process design
- COMAH-critical communications
- Design and management of procedures
- Competence management systems
- Managing organisational factors

The HSE has suggested that from experience, inadequate technical competence is a significant barrier to human factors integration at COMAH establishments, and operators are being challenged to demonstrate that they have access to appropriate human factors expertise.

Guidance for inspectors [2] states that 'COMAH operators may choose to draw on external, competent support to help inform and direct certain aspects of human factors integration (e.g., a Chartered Ergonomist or a Chartered Human Factors Specialist accredited by the Chartered Institute of Ergonomics and Human Factors)'. However, in doing so they should still maintain an effective process to maintain oversight and coordination of safety critical activities.

In order to meet these requirements, SLR provide Suitably Qualified and Experienced Personnel (SQEP) and Chartered Human Factors Consultants, who have extensive experience in leading HRA studies across a wide range of hazardous industries including Defence, Aerospace, Chemicals, Nuclear and Oil and Gas. They are fully conversant with the COMAH Competent Authorities' expectations in relation to human factors.

References:

- [1] <http://www.hse.gov.uk/humanfactors/resources/hf-roadmap.pdf>
[2] <https://www.hse.gov.uk/comah/guidance/hf-delivery-guide.pdf>

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