Process Safety: Human Factors

Operators are required to demonstrate how they manage human failure in order to reduce the risk of major incidents.

Past incidents (Bhopal 1984, Chernobyl Disaster 1986, Piper Alpha 1988, Texas City 2005) have shown that human error is a contributing factor to between 64% - 80% of major incidents in the chemical and petrochemical industries. This highlights the need for companies to consider and manage human factors as robustly as other, more apparent, process safety aspects.

Human factors should be considered at all stages of the asset or project lifecycle, from initial design through to construction, commissioning, and operation. To achieve this, human factors must be fully integrated within a company's Safety and Process Safety Management Systems. Operators must consider the potential for human error in the design of equipment and processes, as part of their management of change process, in the development of procedures, and when making organisational changes.

Human factors studies consider how people work, the culture and physical environment they work in, and the equipment that they work with. Understanding human behaviour and how individuals may respond when exposed to particular situations in the context of the working environment is key to putting in place safeguards to reduce and effectively manage the risk of human error.

For COMAH sites, the regulator requires the operator to identify those tasks that, when not performed or performed incorrectly, may lead to or fail to prevent a major accident hazard.

How can AXIOM help with this service?

AXIOM can support operators in identifying the appropriate methodology for your project and can provide competent people with experience specific to your industry to facilitate these studies. Our services include:

- COMAH Critical Task Identification and Prioritisation
- Human Reliability Assessment & Safety Critical Task Analysis
- Support Writing of Safety Critical Procedures
- Develop Safety Critical Communication processes.
- Identifying COMAH Critical Roles
- COMAH Safety Report Review and Update
- Support Competency Management
- Management of Organisational Change
- Training – Human Factors Awareness & Management of Human Factors

Approach

AXIOM's services are aligned to the HSE's key Human Factors Topics, as well as their delivery guide for the management on COMAH assets.

Our consultants follow recommended good practice to carry out human reliability assessments, including the Energy Institute's "Guidance on Safety Critical Task Analysis", February 2020 and the HSE guidance document HSG 48 "Reducing Error and Influencing Behaviour". We also follow guidance provided by the Chartered Institute of Ergonomics and Human Factors on a wide range of related topics, such as Management of Organisational Change, Fatigue Management, Competency and Procedure writing.

Our services typically involve an initial review of client-provided documentation, followed by activities such as site visits and task analysis workshops, involving those responsible for completing the tasks. The purpose is to better understand the safety critical aspects of your operations and to provide a comprehensive report detailing the findings, including detail such as hierarchical task analysis (HTA), performance influencing factors (PIFs) and recommendations for human centered or technical measures to improve human reliability.

Capabilities

AXIOM has experts with extensive knowledge and experience of managing human factors on high-hazard, upper-tier COMAH sites.

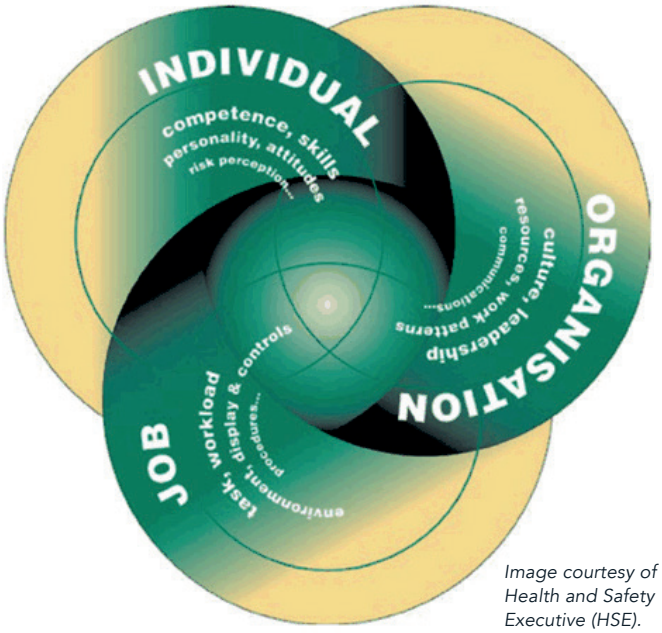

Image courtesy of Health and Safety Executive (HSE).

Benefits of Human Factors management

- Enhanced time efficiency & productivity through ergonomic, user-centered design.
- Reduced likelihood human error.
- Improved employee morale, job satisfaction, and decreased turnover rates.
- Supports correct decision making.
- Regulatory compliance.
- Reduced OPEX through less accidents, less error, and improved productivity.

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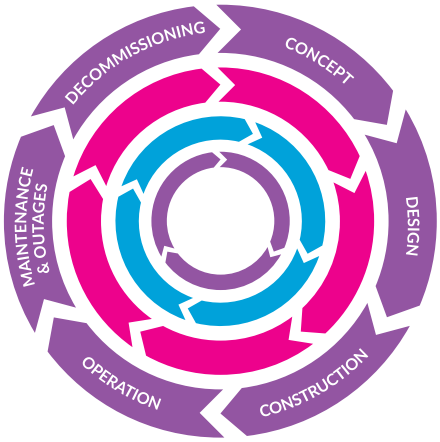

Supporting the Asset Life Cycle

AXIOM

MAXIMISING ASSETS - MINIMISING RISKS