

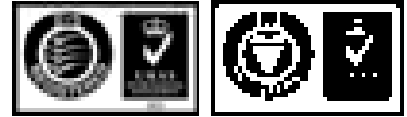
Safety management



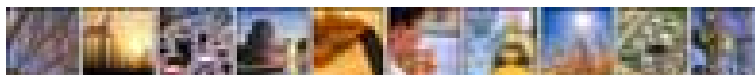
Capability statement

Entec

Entec is one of the UK's largest environmental and engineering consultancies. Our technical and business skills are dedicated to delivering strategic, technical and engineering solutions which bring commercial benefit to customers at home and overseas. This know-how is based on over 60 years' consulting experience in the public and private sectors.



Entec operates a Quality Management System in accordance with the latest requirements of the international standard BS EN ISO 9001 and an Environmental Management System compliant with BS EN ISO 14001. Both are audited by BSI Management Systems.



Health and safety management culture

Good health and safety management is good business

Carrying out business safely must be the highest priority for all organisations, and health and safety must be treated with the same rigour as all other critical aspects of the business. Failure to do this not only increases the risk of injury, ill health and damage to the organisation's assets and reputation, but also increases the risk of prosecution as a result of an accident or following regulatory inspection. Most organisations also recognise their corporate social responsibilities to a large group of stakeholders, and the need to be able to demonstrate that health and safety management is a key part of their risk management processes. There can be no doubt that successful health and safety management is good business practice.

Managing risks of major accidents

All businesses have a regulatory requirement to demonstrate that they have assessed the health and safety risks of their activities. Industries operating processes with the potential for major accidents need to go further and demonstrate that their safety management system results in all necessary measures being taken to prevent and mitigate accidents, and to avoid adverse health effects. In the UK these industries are governed by the so-called "permissioning regimes," requiring the production of a Safety Case or Safety Report.

Industries falling into these regimes include:

- Process and storage of explosive, flammable, toxic materials and other substances dangerous to the environment (oil and gas, petrochemicals, chemicals and some food and drink; subject to storage volumes). COMAH regulations require major accident prevention plans and top-tier establishments must also develop safety reports. These form the basis for ongoing inspection of operations involving major hazards.
- Offshore installations. Safety cases must be produced and accepted by HSE for all fixed and mobile installations. There is also a requirement to submit a safety case during the design phase of fixed installations.
- Nuclear installations. Facilities handling or storing radioactive substances must produce a safety case showing that safety measures are appropriate and risk levels are reduced to as low as reasonably practicable (ALARP) levels.
- Railways. Train operators, infrastructure controllers and others in the rail industry must produce a safety case showing that safety is properly managed and that risks to the public, passengers and staff are being managed (ALARP).
- Pipelines conveying hazardous materials require a major accident prevention document and gas pipelines or networks require a Gas Safety Case.

Some industries not regulated by the HSE (e.g. aviation and marine) also require a formal safety justification, administered by their respective regulators.



Safety management



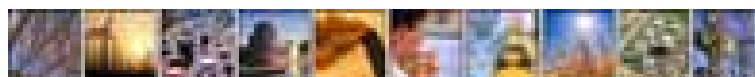
Importance of culture

A health and safety management system can only achieve its objectives if the organisation has a supportive and constructive culture that helps to address health and safety issues at all stages of the management process (i.e. from the top to the bottom of the organisation, for all activities carried out). This is especially the case given the prevalence of change in most businesses.

The need is greatest where the changes result in different roles and responsibilities and it applies equally to staff and managers. A process for the review of change is an essential element of any safety management system to ensure that change results in improved standards of health and safety, rather than a decline. The review of change has been recognised as a requirement for equipment and plant

for some time, largely as a result of major accidents in recent times, and most companies have systems in place. However, it is only recently that the impact of human and organisation change has been recognised, and safety management systems are less well developed in the review of these areas. So for most organisations the challenge is to demonstrate that changes to people's roles and the organisation are managed with the same rigour as change to equipment and plant.

Entec has developed several techniques and approaches to assist clients develop their safety management and culture. These include new methods for assessing the human inputs to safe control of hazardous operations as well as the standard hazard identification and risk analysis approaches to the assessment of process equipment, instrumentation and control.



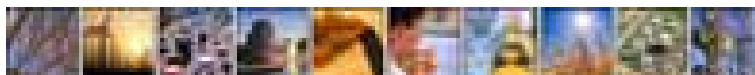
Entec's view of safety management

In order that the role of safety management in achieving good safety performance, was better understood, Entec analysed a number of commonly used safety management systems and models (13 in total). From this a set of nine principles have been identified that should be included in any system for it to be effective.

Safety management systems should:

- include all the processes considered to be core for effective safety management;
- facilitate issues to be addressed at all stages from identification or problem recognition through to planning, implementation, monitoring, review and revision;
- place sufficient weight on management factors shown to be important by previous incidents and related investigation;
- measure and track the key indicators and symptoms of safety management effectiveness;
- lead to risk from hazards being reduced to 'as low as reasonably practicable' (ALARP);
- be suitable for the range of organisational units it is applied to;
- avoid placing unnecessary constraints on how satisfactory levels of safety are to be achieved;
- be alert and adapt to the health and safety management issues associated with new ways of working; and,
- be sufficiently specific so as to facilitate consistent application.

These principles were first referred to at the Ladbroke Grove Rail Inquiry. Since then they have been applied in a number of other areas.

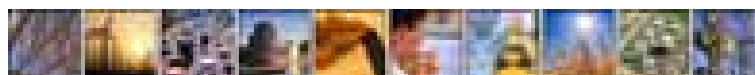


Entec's view of safety culture

Entec research has concluded that to develop (and therefore manage) its safety culture, an organisation should have a means of:

- defining a health and safety cultural ideology, norms and goals, which takes account of the opinions, perceptions and expectations of internal and external stakeholders. This should include a means of tracking the opinions, perceptions and expectations of stakeholders and assessing whether the organisation's norms need to be adjusted to reflect significant changes;
- communicating and demonstrating the organisation's commitment to these goals and norms, and maintaining this sense of commitment over time;
- facilitating the achievement of stated goals and norms, such as workforce participation, empowerment, staff-management-contractor communications, training, proper resource management, and;
- checking that the organisation's cultural goals and norms have been effectively achieved or at least the behaviour of people is consistent with these norms.

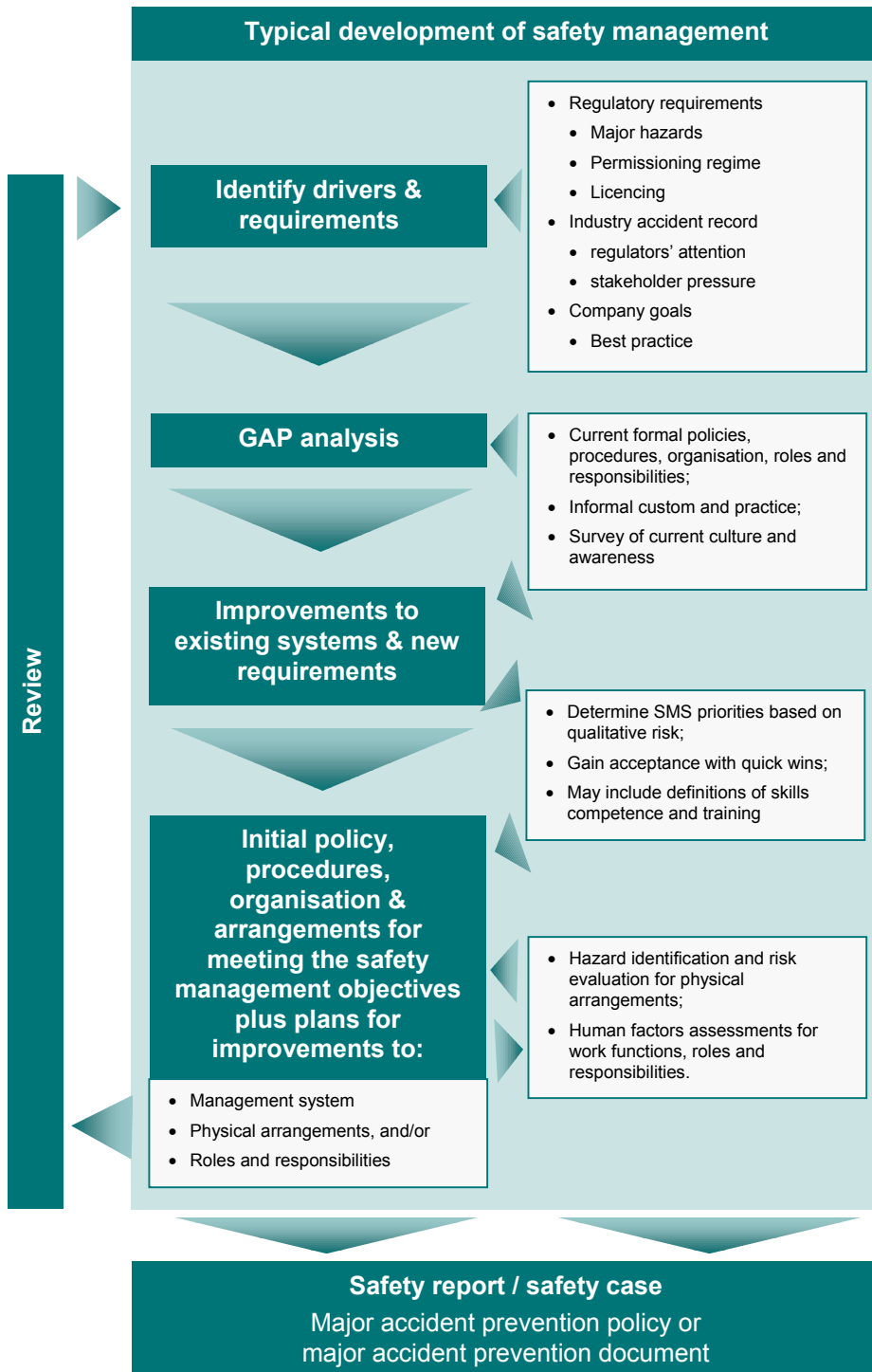
These principles have been referred to in a number of research projects carried out by Entec on behalf of the Health and Safety Executive (HSE). The involvement of the workforce in developing a strong safety culture is essential. The associated surveys and assessments should not be seen as an end in themselves but should be used to identify improvements and tangible benefits to health and safety performance. Entec has used the methodologies developed during various HSE projects to assist clients in understanding and improving their safety culture.



Services

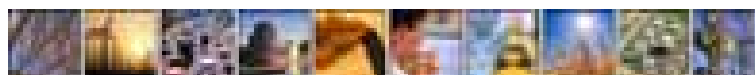
Entec offers a range of services to support the development of safety management systems and safety culture. These services include approaches and tools for assessing your organisation's current level of achievement and facilitating further improvements in ways that will improve overall business performance.

- Establishing a formal safety management system (to HS(G) 65, OHSAS 18001, or other suitable standards);
- Advising on structure and content of systems to ensure they are user friendly and easy to update and maintain;
- Performing GAP analyses to identify where improvements or additions are required to meet specific requirements, such as COMAH for onshore major hazard operations;
- Drafting major accident prevention policies (as required by COMAH);
- Developing procedures for specialist aspects of the SMS, such as management of change, permit to work and emergency planning
- Preparing safety reports or safety cases;
- Carrying out human factors assessments to identify and evaluate the causes of potential human errors and associated risks, and to develop strategies for their prevention;
- Applying ergonomic approaches to procedure and competence development;
- Carrying out assessment of safety culture and individuals' safety awareness, followed by improvements through workforce involvement via management leadership; and,
- Carrying out staffing assessments to determine the adequacy of manpower levels, skills and systems for maintaining safe control).



Case studies

The following pages demonstrate Entec's capabilities in the area of safety management, using case study examples. ►



Assistance with Safety Management System to Satisfy Seveso 2 Requirements Confidential Gas Transport Company

The client had several sites which would qualify as 'top-tier' establishments if considered under the EU Seveso 2 Directive (known also as COMAH) as well as a high pressure gas pipeline system. Although the national government had not introduced the requirements of the directive into national law the safety and environmental authorities were pressing for early completion of safety reports and other requirements of the regulations. Some draft national guidance was available but within the country there were no consultants experienced in fulfilling the requirements of the directive.

The company already had a safety management system with appropriate procedures for the various processes under their control but wished to upgrade to conform with Seveso 2 at the highest level

Entec carried out a gap analysis to identify improvement of existing systems and thus advise the company on the overall requirements of a safety management system to address major hazards as part of an integrated health, safety, environment and quality management system. Entec gave detailed guidance on the content of the key procedures to cope with the major hazard installations of the company to satisfy Seveso 2; after consulting with staff in the parts of the company affected.

Individual sites covered the requirements in different ways and the company required a suitable set of corporate policies and guidelines to ensure that each site (or project design team) followed the requirements of the directive. At all times it was necessary to consider the existing systems within the various departments of the company that were already addressing these issues. Particular advice was given at the corporate level on:

- Management of change: identification and evaluation of the safety effects of engineering or other changes and the process of approvals at various stages of a project.
- Notification of proposals for new Major Accident Installations or modifications to existing ones.
- Monitoring: including management responsibilities and data for performance indicators.
- Audit: in this case, internal audits of all aspects of the safety management system.
- Management review of the performance of the safety management system.

- Training: job descriptions, responsibilities, training requirements, records, performance review.
- Management of safety reports: Preparation, review and updating.
- Emergency response: linking site emergency plans with corporate crisis response procedure.

The framework for all of the above was the Corporate Major Accident Prevention Policy which Entec helped to draft and presented to the Corporate Health and Safety Committee and which was subsequently adopted.

The client commissioned further work on the procedure for the identification and evaluation of major hazards and Entec provided a facilitator to assist the teams at each plant when they first tried out the new process.

Further work on the development of procedures for management of change, including HAZOP and a company-wide procedure for accident investigation are ongoing.

Helping fulfil directive requirements through safety management expertise



Top Tier COMAH Safety Report Preparation for Regulator Submission Confidential Resin Production Plant

The Seveso II Directive, implemented in the UK as the Control Of Major Accident Hazards Regulations, separates chemical process sites into two categories; lower and top tier. Those classified as top tier sites are required to prepare and submit a safety report detailing their operation, management and control procedures, and a quantified assessment of the risks inherent in operating the process to people on and off the site and to the environment.

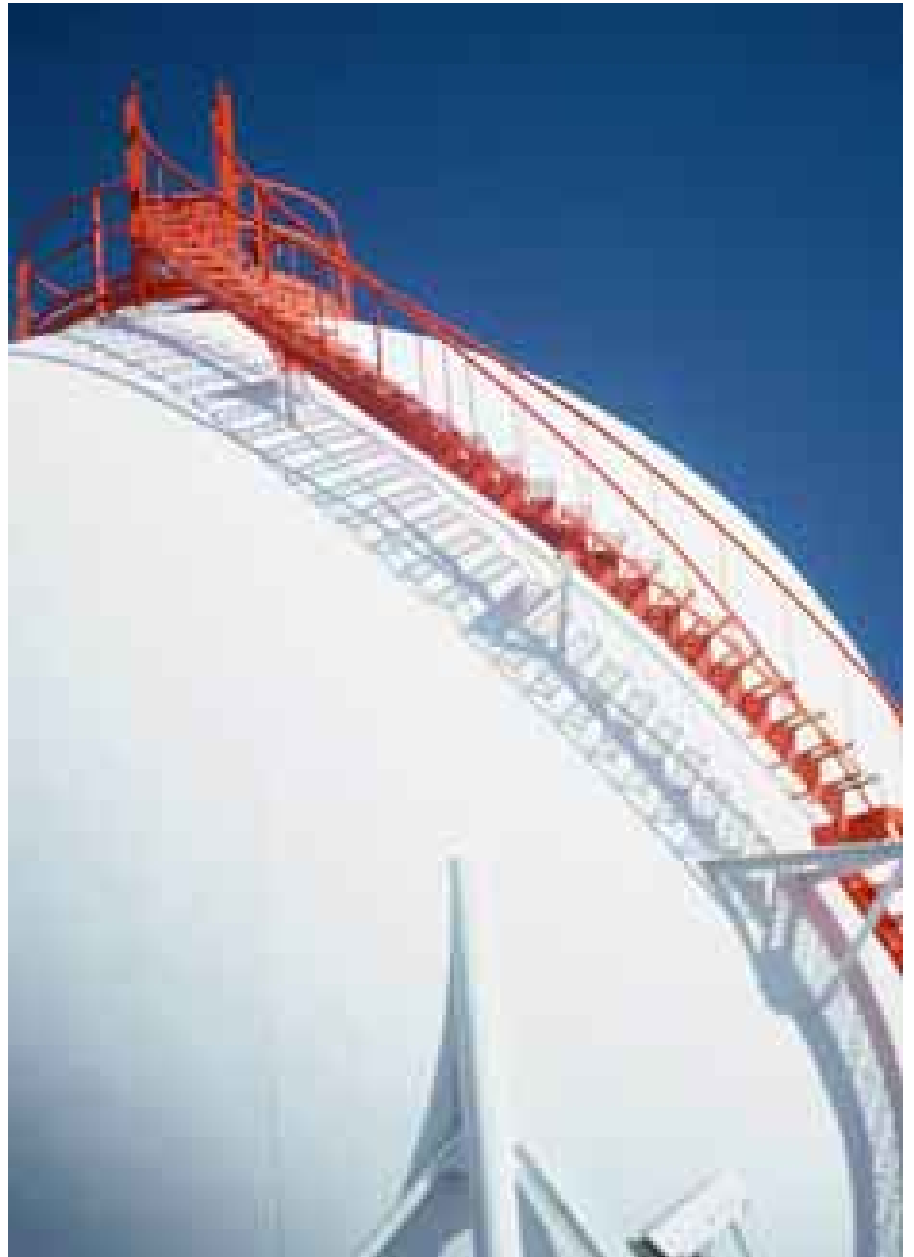
Entec has assisted a resin producing client in all aspects of the preparation of their report. The report entails a number of sections detailing: dangerous substances used; the surrounding environment; the establishment and its activities; management systems in place; potential major accident hazards; measures to prevent or limit the consequence of major accidents; and emergency response arrangements.

Entec provided appropriate specialists to assist the client in preparing each of the sections of the report. Data was gathered about the surrounding environment, the process and its operation - both technical and procedural. This information was reviewed systematically and short comings or areas for functional improvement was highlighted. A qualitative risk assessment was conducted with representatives of the site to determine the mechanisms and consequences for potential major accident hazards. From this information the scenarios with the greatest consequences were identified and a more detailed quantified risk assessment performed. Where the residual risks were high, actions that would reduce the risk were proposed. These actions need not be expensive or time consuming to implement, yet

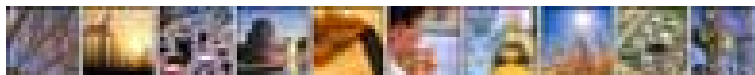
nonetheless can have a significant effect on the safety of the site.

The client has benefited from the services of Entec in preparing their Safety Report in a number of areas of operation. The

process highlighted several opportunities to improve its management structure, strengthened procedural control on the site, and development of an emergency plan.



*Improved management
and operational
control*



Workforce Health and Safety Benchmarking Balfour Beatty Rail

Owing to the increased accent upon health and safety in the rail industry and the focus upon rail maintenance and renewals operations in the light of industry events, Balfour Beatty Rail's management wanted to benchmark its health and safety performance against current best practice across industry. Particular focus was given to the maintenance and renewals organisations and how they operate, and the findings from the study fed into a fast track performance improvement programme, which was piloted in one of the maintenance regions.

Entec has wide experience of the application of risk and health and safety management techniques / tools, to a variety of business sectors. Entec's health and safety benchmarking tool incorporates an objective grading system for

performance against best practice measures, and a scoring system which may be used by organisations for setting health and safety performance improvement targets.

Based on total quality management (TQM) principles, the benchmarking tool incorporates the analysis of recognised performance parameters, such as effective risk management, attitudes to risk, resourcing (human, financial and hardware), communications and learning by the organisation. A 'slice' was taken through Balfour Beatty Rail's organisations from top to bottom. By interview, review of health and safety documentation and observation of work being carried out 'on the ground', the organisation was benchmarked against best practice parameters that are pre-set into the

questionnaire framework. The output from the benchmark process was a report detailing issues and action points, which was intended to form the basis of improvement action plans. The tool provides a 'ready reckoner' on performance and can be revisited as action plans are executed, to compare past and present performance.

The fast track improvement programme took outputs from the benchmarking study. With the co-operation and input of staff at all levels in one of the regional organisations of the maintenance division, some 'quick win' improvements were generated that could be rolled-out across the organisation, to encourage both workforce involvement and consistency of health and safety performance improvements.

The features and benefits of this approach were that:

- the management and 'men on the ground' questionnaire formats highlight different attitudes down and across the organisational structure;
- the combination of interview, observation and system / documentation review provides a robust mechanism for highlighting and cross-referencing issues;
- outputs are easy to interpret and act upon;
- the tool provides a scored result to gauge past and present performance; and
- the tool can be used across business units or departments within an organisation, or to benchmark against competitors in an industry.



Benchmarking Balfour Beatty Rail's health and safety performance against current best practice



Provision of Expert Reports, Opinion and Expert Witness to the Ladbroke Grove Rail Inquiry Lord Cullen's Inquiry Secretariat



Independent expertise for the public inquiry into major railway disaster

Lord Cullen's Inquiry into the Ladbroke Grove accident retained Entec in October 1999 to provide independent expert advice and opinion on wide-ranging aspects of safety in the railway systems throughout the UK.

Four specific reports were commissioned and presented in expert witness form to the inquiry. A summary of findings is as follows:

- **The Railway Safety Case Regime:**
The approach in the UK to regulation of the privatised railway industry, involved the production of 'safety cases' to demonstrate safe operation by the infrastructure controller (Railtrack) and each train and station operator. In the past, the train and station operators' safety cases were accepted by Railtrack, under a system described in its safety case. Each operator retained responsibility for its own safe operation, and Railtrack was responsible for safety of the track and signalling systems, plus the stations it operates. Entec has reported on what a safety case should do, and on how its contents may be validated and verified by internal and external audit. An addendum report was produced on the contents and use of a selection of railway safety cases and the compliance audits carried out on the same operating companies, illustrating both good practices and deficiencies in the current regime.

- **Safety Management and Culture:**
The railway industry has the clear potential to kill or injure many people, amongst employees and the public alike. In common with other hazardous industries that are governed by stricter safety regimes, such as oil, gas, chemicals and air transport, safety should also be paramount in railway operations. Individual and collective safety responsibilities need to be clear, and not clouded by commercial considerations. The principle of 'safety first and last' should pervade the whole industry; all personnel need to be aware of their responsibilities, and have a clear appreciation of human factors. In practice, financial penalties and adverse publicity associated with delayed or cancelled trains may be perceived as more important than the consequences of failure to maintain the highest standards of safety. Nevertheless, operational safety tends to go hand-in-hand with reliability and efficiency, and vice versa, so emphasising the basic imperatives for effective integration of safety and operational management systems.
- **Group Standards System:**
The UK has set up a goal-based safety regime, the primary regulatory instrument being the safety case to demonstrate safe operations. There is a need for common standards, particularly where a number of rail

operators interact with each other and with the infrastructure controller. In the UK, these standards have been controlled by a directorate, related to Railtrack. Some parts of the industry believe that the directorate has not always acted in the best interests of all participants, and that there has been evidence of the potential for conflict between the goal-setting safety case approach and prescriptive standards.

- **Accident Investigation:**
The primary purpose of accident investigations should be to learn lessons to prevent recurrence of similar incidents. In a fragmented industry, such as the rail system, investigation can be led into apportioning blame and unloading corrective actions onto others. In this situation, improvements are not made, and the same mistakes do recur. This is not to say that people or organisations are not to blame for accidents, but the investigation should probe deeply enough to uncover the fundamental causes, and not merely lay blame for behaviour which had its roots in a defective system of operating safety and safe working practices.

The inquiry also commissioned our experts to attend specialist seminars on the employees' perspective on safety, and an experts' meeting on risk assessment, to assist the inquiry in these detailed and controversial areas.



Generic Nuclear Safety Management Model Health & Safety Executive (HSE)

Entec has undertaken a contract research report for the HSE to determine a generic nuclear safety management model. The executive summary from this report is reproduced here with HSE permission. Further information may be obtained at:

http://www.hse.gov.uk/research/crr_htm/index.htm

This study considers whether management models used by licensee's provide a comprehensive review of Safety Management Systems and whether HS(G)65 provides an adequate test of the robustness of the industry models. It goes on to develop a Generic Nuclear Safety Management model for use by NII inspectors in guiding their approach to assessing licensees.

The study first identifies the models used by licensees and assesses them against a set of 12 criteria. The top ranked (best) models are IAEA50C, HS(G)65, MSNI and BS8800. However, none of the models reflect in full the particular needs of nuclear safety. On the other hand, none of the other models provide a superior structure or process to the one contained in HS(G)65. Also, feedback from licensees and the NII indicates that, in the absence of evidence indicating flaws in HS(G)65, that the retention of this model is advantageous. Therefore, it is appropriate to retain HS(G)65 as the basis of assessing licensee's safety management systems. However, to ensure it fully reflects the particular needs of nuclear safety, especially the implementation of licence conditions, it is necessary to augment, re-weight and elaborate some aspects of HS(G)65. The resulting Generic Nuclear Safety Management model should provide a systematic conceptual process for tracing the implementation of licence conditions at the same time as testing satisfaction of HS(G)65. This combines the strengths of HS(G)65 and the particular inspection needs of nuclear site licensing.

This report and the work it describes were funded by the Health and Safety Executive (HSE). Its contents, including any opinions and/or conclusions expressed, are those of the authors alone and do not necessarily reflect HSE policy.

Background

The interest in nuclear safety management has increased in recent years due to public and regulatory concern about the level of organisational change. At the same time the introduction of "new ways of working" and new management models (such as flatter management structures) have raised the issue of whether "traditional" hierarchical models of safety management are compatible with these systems, and whether they provide a valid test of new styles of management. On the other hand, there is concern that traditional management models do not provide a robust or rigorous test of new styles of management. Finally, arguments (supported by the HSE) have been put forward for "integrated health, safety, environmental and quality (HSEQ) systems" being the most effective and efficient way forward.

Accordingly, licensees, and safety professionals in many other sectors, have developed and used models of management as a basis for assessing the adequacy of safety management. In some cases these models have been based on models of business management, such as the Total Quality Management and Business Excellence Model. Business models have been used as a reference point for safety management for a number of reasons. For example, the facets of good quality management are thought to be similar to those of good safety management and safety should be an integral part of general management and hence should be based on a compatible model of "good" management.

However, whilst a range of models have been developed and applied there is no general agreement on the advantages and disadvantages of each model.

Aims and Objectives

This study is aimed at:

- a) providing an understanding of whether assessment carried out by licensee's using these models



provides a comprehensive review of licensee's SMSs (including compliance with nuclear site licence conditions);

- b) assessing whether the use of HS(G)65 provides an adequate test of the robustness of the industry models and allows inspections to be directly related to the industry models, and;
- c) developing a Generic Nuclear Safety Management model for use by NII inspectors in guiding their approach to assessing licensees.

Review of Management Models

Entec identified the models used by licensees by directly contacting BNFL-Magnox, British Energy, UKAEA, Nycomed Amersham, DML and Atomic Weapons Establishment. The review also covered a range of models used in other sectors to identify any lessons learnt from these. The criteria used to review management models were be linked to the particular requirements of nuclear safety and site licensing.

The Generic Model of Nuclear Safety Management

The overall conclusions from the review stage are:

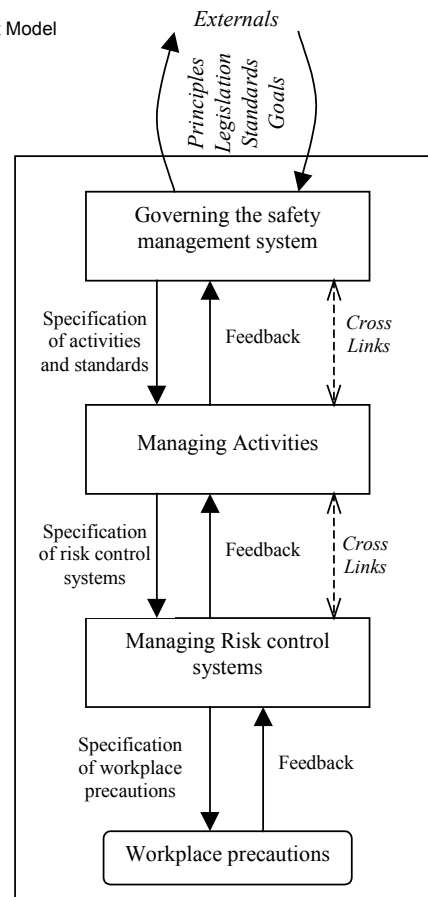
- HS(G)65, MNSI, BS8800 and IAEA50C provide equally valid models of safety management;
- none of the alternative models provide an obviously superior structure or process to the one contained in HS(G)65;
- none of the models reflect in full the particular needs of nuclear safety.

Therefore, a conceptual "process" (or system) model has been formulated, based on HS(G)65. The "process" comprises the iterative sequence of interpreting licence conditions and other relevant legislation, defining standards, developing arrangements to meet these standards, monitoring their achievement and revising standards/arrangements as appropriate. The model outlines the issues, factors and decisions entailed in this process. As part of this, the specific needs and demands of nuclear safety are highlighted along with how they fit into this process.

Description of GNSM

The GNSM has four tiers (Figure i). Each tier has a role to play in an organisation's safety management system. At the lowest level are the 'workplace precautions' and at the top level is the 'governing' process, which acts as the directing mind of the safety management system. These four levels are placed within a box to represent the 'organisation' and to highlight that it is an open system and there is interaction with external bodies.

Figure i - Overview of the Generic Nuclear Safety Management Model



Conclusions

This study has successfully assessed the extent to which current management models address the particular demands of nuclear safety management. It is concluded that HS(G)65, BS8800, IAEA50C and MSNI all provide reasonable models. However, they do not necessarily address all of the particular needs of nuclear safety. On the other hand, feedback from licensees and the NII indicates that, in the absence of evidence indicating flaws in HS(G)65, that the retention of this model is advantageous. Therefore, it is appropriate to retain HS(G)65 as the basis of assessing licensees safety management system. However, to ensure it fully reflects the particular needs of nuclear safety, especially the implementation of licence conditions, it is necessary to augment, re-weight and elaborate some aspects of HS(G)65. The resulting Generic Nuclear Safety Management model should provide a systematic conceptual process for tracing the implementation of licence conditions and other legislation at the same time as testing satisfaction of HS(G)65. This combines the strengths of HS(G)65 and the particular inspection needs of nuclear site licensing.



Development of a Business Excellence Model of Safety Culture Health & Safety Executive (HSE)

Entec has undertaken a contract research report for the HSE to develop a business excellence model of safety culture. The executive summary from this report is reproduced here with HSE permission. Further information may be obtained at:

http://www.hse.gov.uk/research/crr_hm/index.htm

This report gives the results of a study carried out by Entec UK Ltd to provide a comprehensive review of research on how to assess and develop safety culture, and thereafter produce a safety culture improvement matrix (SCIM). Due to the adoption of the Business Excellence Model (BEM) by certain nuclear licensees consideration was given to whether it would be valid and useful to structure the tool according to the BEM framework. Having concluded that the BEM provided a reasonable framework a SCIM was developed. The SCIM was trialed in a series of six desktop applications by NII inspectors, in the context of sites under their inspection. The trials, whilst revealing points requiring refinement, indicated that the BEM framework and our safety culture version was useful and practical.

This report and the work it describes were funded by the Health and Safety Executive (HSE). Its contents, including any opinions and/or conclusions expressed, are those of the authors alone and do not necessarily reflect HSE policy.

Aims and Approach

This project aimed to develop a Safety Culture Improvement Matrix based on the Business Excellence Model (BEM) for use by Nuclear Installation Inspectors. The ultimate goal is to develop a tool that helps licensees improve safety culture rather than simply measure safety climate. Therefore, the tool needs to incorporate guidance on progressive improvements and be sufficiently detailed for users to ascertain what is required to improve safety culture.

The study comprised a number of stages, namely:

- identification of the key elements of safety culture and those factors that promote or
- inhibit achievement in the area of safety
- assessment of whether BEM provides a suitable framework for the assessment and
- improvement of safety culture;
- drafting of a safety culture improvement matrix (SCIM);
- trialing the SCIM with a group of NII inspectors;
- concluding whether the SCIM is useful and, after responding to trial results,
- producing a final version for use by inspectors.

The review of previous research and publications, has been used to answer the following questions:

- do the nine elements in the Business Excellence Model capture the critical safety culture factors?
- do the statements contained in the Business Improvement Matrix address, at a micro level, the key safety culture sub-factors?
- what are the advantages and disadvantages of delineating safety culture in this way?



We have used the ACSNI report on Organising for Safety (HSC, 1993) as a starting point of the review as it is based on a comprehensive review of safety culture research completed in the period up to 1993. We then identify and summarise research completed since the publication of the ACSNI report. The more recent work is used to check whether the view of safety culture has changed or the weights attached to various elements have altered, due to either new findings or changes in management structures in the nuclear sector, such as contractorisation.

In addition, the study examines:

- the extent to which it is valid to read across from an assessment of the quality of business management to the quality of safety management, and;
- the conditions under which it is likely that there will be a congruent style of business and health and safety management.

The goal here is to examine whether it is “safe” to read across from one area of management performance to another.

Trial results

Overall reaction

- The SCIM was felt to be relevant, gets down to the practical level and adds to the understanding of safety culture.
- The ladder version needs revision.
- There were no major concerns with the practicality of the SCIM. An inspector could form a judgement against each question. The benchmarking questions in element 9 would be the most difficult to answer.
- The SCIM could be applied to any size of organisation. Inspectors did not have to alter their viewpoint of their licensee to apply the SCIM.
- Time taken to complete the SCIM was not considered to be a problem.

- Only one of the issues raised, that of how the SCIM handles contractors, could be considered to be a structural problem. Otherwise there were no concerns and no obvious enthusiasm for adopting another structure, such as that of HS(G)65.

Improvement Areas

Only the issue of contractors was brought up by nearly all inspectors. Most other points were raised in only one pilot session.

- Contractors: These are seen to be different from other stakeholders, certainly not in the same bracket as customers. Where questions overlap they should be separated. It is anticipated that elements will need specific questions on contractors.
- Compatibility with nuclear safety philosophy: Some questions, are perceived to hint that staff initiative can take precedence over procedural controls.
- The perspective on risk assessment. The use of risk assessment in the evaluation of nuclear safety risk should be separated, from ‘risk assessment’ used to support other operational and business decisions is probably required.
- Avoid direct compliance questions: It is preferred that the features / sub-points not be binary yes/no compliance with legal requirements.

It was also suggested that the inclusion of some negative points as well as positive ones per issue and sign posting to reference material would be helpful.

Finally, editorial issues such as consistency of the wording of the scales were raised.

The draft SCIM was modified to address these points.

Conclusion

This study set out to develop a tool that would assist NSD inspectors in assessing licensee safety culture and advising licensees on how to improve culture. This has been achieved by structuring a body of guidance covering a process of continuous improvement within the BEM framework. The trial indicates that the SCIM is practical, useful and enhances inspectors work in this area. Some areas that may benefit from further work include:

- Applying the SCIM across a series of sites to (1) acquire benchmarking data and (2) testing correlation of SCIM results with site safety performance.
- Collating “real life” examples and guidance on how to select and implement improvement methods and strategies.
- Researching how alternative types of contractor and staff remuneration and reward schemes influence behaviour.



Safety management

Sample client list

Health and Safety Executive
Exxon Mobil
TotalFinaElf
Campact
Centrica
BP
Balfour Beatty
Fluxys (formerly Distrigas)
Nuclear Installations Inspectorate
Millennium Inorganic Chemicals
Associated Octel
Nalco
National Grid
Huntsman
Syngenta
Synthomer
Cabot Carbon
Acordis
Haltermann
Lucite
Akzo Nobel
Dow Corning
ConocoPhillips

*For a detailed view of Entec's capability
in staffing assessment methodologies,
see our separate capability statement
[Staffing Assessments](#).*



Safety management

Entec

*For further details on
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