

The role of HSE management systems

Historical perspective and links with human behaviour

by

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Early safety initiatives

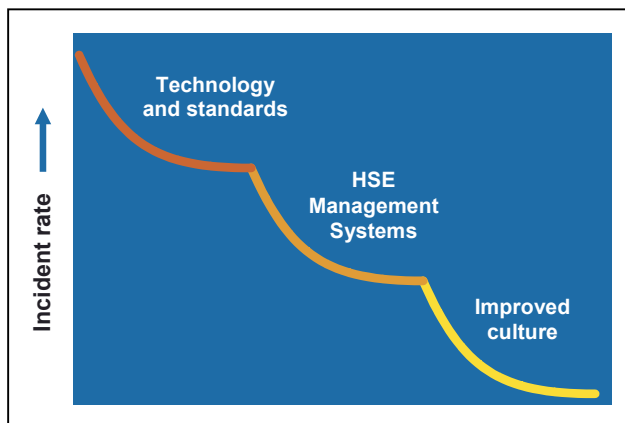
In 1984 Shell gave a new impulse to the management of safety in its companies by adopting a set of Enhanced Safety Management principles, which were derived from DuPont's methods. This led to a sharp decline of incident rates in the second half of the eighties. In that same period quality management systems were introduced in the industry and, following the Piper-A disaster, it was realised that safety should be managed more rigorously and systematically and that it should be extended to manage also Health and Environment. HSE management systems in the format that we know at present became a fact and were introduced in E&P in the early nineties.

Development of HSE MS

Many of the concepts developed in those early years, such as the structure of an HSE MS, bow-tie diagrams, risk assessment matrix, HEMP, ALARP etc. have become the pillars of a kind of universal language and standards (documented in EP 95000 manuals) used by Shell E&P, many of its JV partners, contractors, and, through industry associations, by the E&P industry. The introduction of HSE MS has provided better assurance that technology and standards were applied consistently, that hazards were thoroughly identified, analysed and managed, in an organisation with competent people and thorough "checks and balances". Throughout the nineties significant reductions in incident rates have occurred and the systems

Recent developments

Recently it became apparent that the performance improvement was levelling out, especially for more serious incidents. Over the years the injury rates have seen steeper falls than the fatality and serious incident rates. Continuous improvement requires a deeper embedding of the management systems, which



should lead to a culture in which people are intrinsically motivated to operate the elements of the HSE MS, because they believe in it, rather than that they are being forced.

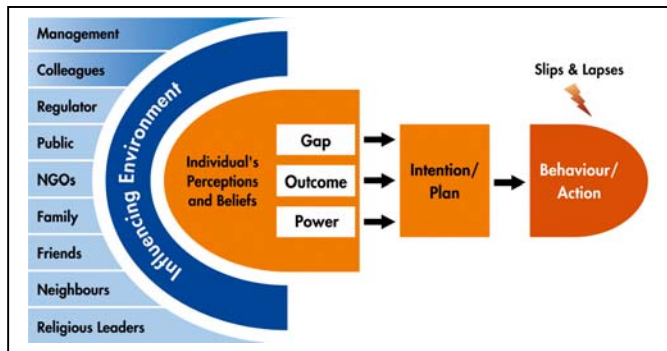
The picture shows these developments over the years. It is essential to realise that these waves are building in each other e.g. the HSE MS provides assurance that technology and standards are applied, and the improved culture creates total buy-in by all parties to making the HSE MS work.

Culture and Human behaviour

Creating and embedding such an improved culture requires a full understanding of human behaviour. In 1986 Shell E&P already involved the universities of Leiden and Manchester to come to a better understanding of human behaviour and its relation to incident causation. This led to the development of the Tripod accident causation theory and the Tripod DELTA (diagnostic tool) and Tripod BETA (incident analysis) tools, which have been published widely and are available to the industry through licensed providers. Research was continued up till now on topics such as rule-breaking, quality of supervision, change processes etc. Early this century all the insights were captured in a "Hearts and Minds" toolkit which is now also made available to the industry. The tools deal with a wide range of problems and concepts and provide in simple terms the required knowledge to run small meetings and workshops with the people involved to improve the culture. All tools are based on widely acknowledged research and follow a well-tested change process.

Model of Human Behaviour

The model used to understand human behaviour builds on the concepts that people's actions are based on (usually good) intentions. The plan that people make in their mind centres around questions related to the expected outcome of their actions (reward, recognition, or punishment), the perceived "gap" between



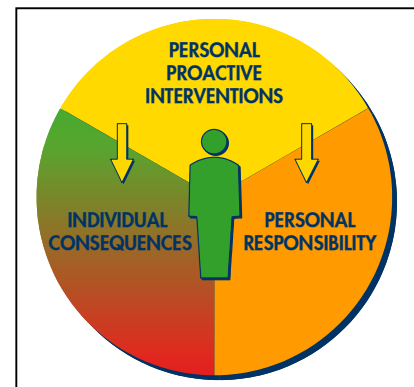
present and ideal status, and the perceived ability, "power", to bring the task to a good end. The individual's reactions to these questions depend on their beliefs and perceptions, which are the result of the interaction with people around them, which create the "influencing environment". The essence of the model is that improvement actions should address the influencing environment rather than just the individual that created an accident. This model implies that management's words and actions (the

questions you ask, the priorities you set, the time you make available) have a major impact on the behaviour of people in your organisation. Changing the culture starts with changing the "influencing environment".

The Road Map

Creating an improved culture starts with applying the above concepts in three main areas:

1. Personal responsibility starts from making the management expectations crystal clear, verifying whether the action party understands the job and has the competence and resources to do the task. Only then can a person be held accountable!
2. The consequences of actions and behaviours, both positive and negative, have to be clear.
3. Personal Pro-active intervention through the application of "Hearts and Minds" tools to create "believers" that have the desire to do a task well.



Our View of the future

Shell E&P management remains committed to continuous improvement and HSE as the top priority. Firmly building on the systematic approaches outlined above, improvements are made to take into account changes in our workforce (demographics and experience), the organisational structure, relations with JV partners and contractors (including small indigenous ones) and societal expectations. A clearer focus on high-risk activities, in combination with the aim of simplification and standardisation across Shell EP has shifted emphasis from goal setting objectives to more prescriptive standards. Global standards will be issued imminently for road safety, lifting and hoisting, air transport, HSE competence, performance monitoring supported by modern global IT applications, etc.

Shell EP dedicated a recent leadership event to the role of leadership in managing HSE. The effect of leadership's words and actions on the influencing environment was fully accepted and actions have been agreed to improve through:

- Setting clear expectations by adoption of global standards
- Fully implementing the 3 elements of the Hearts and Minds Roadmap listed above
- Being appraised on HSE commitment by peers and sub-ordinates and working on improvements
- Continue to give priority to HSE in decision-making

Summary

Standardisation, HSE MS and Hearts and Minds (our behaviours) hold the key to HSE and business performance improvement.