

# International Journal of Advance Research in Computer Science and Management Studies

Research Article / Survey Paper / Case Study

Available online at: [www.ijarcsms.com](http://www.ijarcsms.com)

## *Evaluation of Approaches and Methods for Establishing a Good Safety Culture*

**Rajasekar.R<sup>1</sup>**

M.Tech Health, Safety & Environment  
University of Petroleum and Energy Studies  
Dehradun, Uttarkhand, India

**Dr. Nihal A Siddiqui<sup>2</sup>**

HOD Health Safety and Environment  
University of Petroleum and Energy Studies  
Dehradun, Uttarkhand, India

*Abstract: The purpose of this thesis is to evaluate different approaches and methods used in the oil industry, based on theory, research and industrial experience. An evaluation of three oil companies' safety culture approaches were therefore conducted; BP Oman, Oman Oil and Petroleum Development Oman, in order to suggest an approach suited for establishing a "good" safety culture according to the Royal Decree of Oman 32/2003 and Oman Ministerial Decree 286/2008. The Oman Society of Petroleum Services (OPAL) and ORPIC, Oman were also used to crosscheck the different organizations for similarities and differences to their safety culture approaches and methods, bringing in several aspects of the Oman oil industry.*

*The evaluation was mainly based on Hale's (2000) eight elements, which were used as rationale for a "good" safety culture, according to the Royal Decree of Oman 32/2003 and Oman Ministerial Decree 286/2008. The evaluation was carried out by seven in-depth interviews from the six organizations, with employees in or close to management in order to target the views from the upper management.*

*The results show that the oil companies have implemented many decent measures to establish a "good" safety culture, but still face some challenges to get the desired effect. The different safety culture approaches have managed to address many elements regarded as essential for establishing a "good" safety culture, however, to a various extent. For instance, the results confirm that the culture approach and the behavioural based safety (BBS) approach are better in some areas compared to others, each having their advantages. While the safety culture approach more easily create trust and a common starting point in the organization, the BBS approach is better with regards to involving their employees. Both approaches have, though, demonstrated that with several tools in place the creative mistrust is easily created, regardless of the path chosen. Finally, the results show that both approaches can give lasting changes to the safety culture, however, the culture approach has a better starting point as it provides a more extensive scope. Other research on safety culture has also confirmed this, and further highlights the importance of BBS elements, as it ultimately can pose an effect on the culture.*

*Regarding the desired effect, the assignment also demonstrates that implementation of a safety culture approach alone is not enough to get a desired effect, as many additional success factors also creates challenges, e.g. that successful implementation needs strong commitment from management, as this will positively encourage the employees to follow. Moreover, the result also confirmed that only observing statistical aberrance on safety performance gave no guarantee of a safety culture change. The reason for this is because safety culture is by meaning hard to detect, and it is therefore important to work qualitatively, e.g. by management observation and communication with employees.*

**Keywords:** Safety Culture. Safety Health and Environment, Petroleum Development of Oman (PDO), British Petroleum Oman, Oman Oil, Oman Society of Petroleum Services (OPAL)

## I. INTRODUCTION

Safety improvements have historically been approached by several different perspectives by giving focus on Man-Technology-Organization. Seen from earlier stages, focus was first directed towards blaming the accident prone individual. With time the focus has shifted towards technical safety, e.g. barrier philosophy to later on including organizational factors (Lund & Hovden, 2003). As a result from the increased complexity due to advanced technology (Perrow, 1999), several big accidents have occurred, causing severe damage and having put work carried out on safety in a negative light. A few examples of such major accidents are the Chernobyl accident in 1986 and, more recently, the Deepwater Horizon oil spill in 2010. Even though accidents happen in high-tech systems, its root causes are not always entirely technological. Investigations done in the Chernobyl accident showed a lack in safety culture that had become blind to hazards present at work (Antonsen, 2009).

In recent years increasing focus has been given to both behavioural and cultural safety, and implementing this in the safety thinking process. As a result, several companies have developed safety programs in attempt to create awareness and thereby improve the safety culture within their company. The ultimate target is thereby to reduce the number of accident and systematically work towards the company's vision (e.g. vision-zero) (Engen & Lindøe, 2008).

From the increased focus on safety culture it is stated in the Oman Ministerial Decree 286/2008:

*“A sound health, safety and environment culture that include all phases and activity areas shall be encouraged through continuous work to reduce risk and improve health, safety and the environment.”*

Even with so many good intentional safety programs, reports and use of resources, one has not been able to conclude what is the best suited method to establish a “good” safety culture

This thesis will, therefore, focus on the research on safety culture together with evaluating different approaches and methods, to assess various organizations' perception of safety culture and see whether there can be created a common approach suited to establish a “good” safety culture in the Oman oil industry. The theme of this thesis was proposed by PDO-Oman and the assignment was composed by the author in collaboration with PDO-Oman.

The increased interest and focus given to this area makes this a very interesting topic to work with. Even with a lot of already conducted research and spent resources, there still has to be done a fair amount of work on the area. This makes the task challenging, yet more interesting.

## II. OBJECTIVE

The purpose of this assignment is to evaluate different approaches and methods used in the oil industry and assess Petroleum Development Of Oman's safety program in order to suggest an approach suited for establishing a good safety culture according to the Oman Ministerial Decree 286/2008, based on theory, research and industrial experience. The main issues of this assignment are therefore to:

- » Review the health, safety and environment (HSE) culture programs in different oil companies and relevant literature on safety culture.
- » Develop criteria for evaluating the goodness of reviewed HSE culture programs.
- » Conduct qualitative analysis and to assess and compare HSE culture programs, i.e. by interviewing key persons in oil companies/contractors, authorities and unions and undergo accessible statistics of relevant performance indicators on safety culture.
- » Based on the previous points, assess whether HSE culture programs give the desired effect.
- » Suggest which method is suited to establish a good safety culture according to the Oman Ministerial Decree 286/2008.

### III. SCOPE & LIMITATIONS

Data gathering for this assignment is mainly divided into two main parts. The first part represents the theoretical part and is primarily done exploring the internet and other reports on safety culture. Other relevant information provided by Petroleum Development Oman HSE Manager Mr. Christopher Fox and case company BP Oman will also be assessed. The second part includes information collected through interviews, documentation and observations, and is the most important part of this master thesis, representing the empiricism.

Safety culture has a lot of interpretations. A “grey zone” can be seen between the understanding of safety culture and behavioural based safety as these areas are in some cases mistakenly taken as one. This project will only look at the concept of safety culture, and will not include the part of strict behavioural safety. However, an explanation of the differences will be presented in order to separate the two terms. Likewise, an explanation will also be given to separate the terms of safety culture from the terms *safety climate*, *safety performance*, and *HSE culture*, in order to avoid misunderstandings between these fields.

As this thesis takes hold of safety culture approaches and methods, the thesis will primarily include safety cultural approaches only. However, if some of the case organizations have different approaches or methods it will be presented as their measures, and discussed in light of safety culture.

When presenting the different approaches and methods that are conducted recently, I have chosen to delimitate this to three oil companies. However, I have chosen to include the authorities, trade union and a collaboration project in order to get a full overview of what other parts in the oil industry think about these approaches and methods. Furthermore, the interviewees chosen only represent the management level, and as such, these interviewees are the foundation of how the organizations perceive and act towards the different aspects.

### IV. METHODOLOGY

- Research Design
  - Comparative research design
- Research Approach
  - Review of Literatures ( Google Scholar, Science Direct)
  - Interviews
  - Review of HSE Programs
  - Review of Documentation and written materials

### V. RESULTS AND DISCUSSIONS

Management are given the main responsibility, e.g. by setting framework conditions. Employees have the responsibility to follow and act accordingly.

- » Management needs to be good role models. Follow organizations safety policies. Management programs may be developed to make them more prominent role models.
- » Acceptance requirement in relation to intervene can be a challenge in every organization. Various tools can work as a contributive factor to help to help employees in the “sharp end”. However, it is important to assess whether the acceptance requirement is not only words, but practice, as one cannot be sure if employees dare to speak out against their management.

- » Ambivalent understandings on whether employees perceive safety culture as culture or compliance. Two challenges are identified related to management being good role models, and the number of rules and procedures in order for employees to not to rule-compliant.
- » Best practices cannot be defined for all the companies, as the companies have too many different tools. A mixture is possible as it can narrow the scope, but still includes own thoughts. A superior framing can be established, but needs to fit according to hazards and dangers at specific company.

## VI. CONCLUSION

Based on the various findings in this research, a “good” safety culture approach is presented by the following table:

### **Understanding**

A common framing must be in place before starting, e.g. visions, common slogans and meaning of safety. This is vital, in order to ensure that everyone knows the necessities and advantages of the program. It will ultimately provide an opportunity to establish common values and beliefs, and in turn, pose an influence on employees’ basic assumptions.

A shift in the understanding of the safety culture has shown a development from being a safety aspect, to focus on the whole HSE notion.

### **Commitment and communication**

Upper management together with middle leaders must take the bigger responsibility to make sure safety comes before all other conflicting goals. Need to be visible and act as good role models, by following the organizations vision, safety policies and goals. A management program can be established for top management and leaders, in order to enhance their understanding and commitment. Provide individuals with essential support and training. Must not overlook the importance of own employees involvement.

Establish direct communication between HSE personnel and employees offshore, to ensure less complexity. This will reduce difficulties in the flow of information, ensure proper feedback and make employees legitimate partners in safety communication. Management and HSE personnel must be a vital part in the operational teams.

### **Involvement and encouragement**

Various arenas must be established in order to involve every worker in the company, e.g. employee participation in meetings, development of culture modules and tools. This will create a sense of ownership, where everyone can share the purpose of safety. Vital to ensure that contractors also are included, as they constitute a vital part of the operations, bringing other a variety of cultures and work methods.

Development and meetings should include personnel from management, safety representatives, “sharp end” (both permanent employees and contractors). The remainder stakeholders and affected parties should also be included in collaborative arenas.

Opportunity e.g. where employees can come with new ideas for safer work practice, should be developed in order to encourage and secure relearning in the organization. This brings in elements from the BBS approach, giving an influence on the culture.

### **Trust and creative mistrust**

Include tools for both observation and reporting. Important to create two types of tools for observation. Firstly, for members to observe own work practice in order to constantly be aware hazards at work place. It should also provide employees the ability to lower their acceptance requirement for stopping hazardous operations and unwanted actions. Secondly, for

management to systematically observe work and create a dialogue with employees in order to assess the culture, maintain barriers and promote good practice.

Reporting tools should also be available as it will ensure continuous risk awareness, and hence, relearning about other incidents. This will ultimately ensure that employees do not get conceited and remain sceptic to work performed.

Development of common slogans, visions and tools increases trust between employees, as a common foundation is established. This also helps the acceptance requirements in relation to speak out, when employees are comfortable and trust each other.

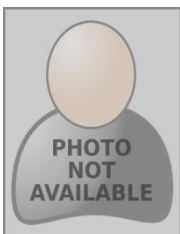
### Continuous improvement

The importance of developing and establishing an understanding to safety and that safety thinking should be in every aspect so it is seen as an inseparable part of every work practice (ensuring organizational learning). The introduction of common slogans, reporting tools, role plays and other follow-up tools, can be used to create a lasting change. This will ultimately reduce the number of accidents and ensure continuous reflection, where continuous improvement can be characterised by the ability to identify and react to danger signals.

### References

1. Antonsen, S. (2009). Safety Culture Theory, Method and Improvement. Surrey: Ashgate Publishing Company.
2. Beck, U. (1992). Risk Society: Towards a New Modernity. London: Sage.
3. Bryman, A. (2008). Social Research Methods. 3rd Edition. New York: Oxford University Press.
4. Cooper, M. D., & Phillips, R. A. (2004). Exploratory analysis of the safety climate and safety behavior relationship. Journal of Safety Research 35 , pp. 497– 512.
5. DeJoy, D. M. (2005). Behavior change versus culture change: Divergent approaches to managing workplace safety. Safety Science 43 , pp. 105-129.
6. Glendon, A. I., & Stanton, N. A. (2000). Perspectives on safety culture. Safety Science 34 , 193-214.
7. Guldenmund, F. W. (2000). The nature of safety culture: a review of theory and research. Safety Science 34 , 215-257.
8. Hale, A. (2000). Editorial: Culture's Confusions. Safety Science 34 , pp. 1-14.
9. Hopkins, A. (2009). Thinking about process safety indicators. Safety Science 47 , pp. 460-465.
10. Hopkins, A. (2011). Risk-management and rule-compliance: Decision-making in hazardous industries. Safety Science 49 , pp. 110-120.
11. Hovden, J., & Larsson, T. (1987). Risk: Culture and Concepts. In Risk and Decisions (pp. 47-59).
12. Kjellén, U. (2000). Prevention of Accidents Through Experience Feedback. London: Taylor & Francis.

### AUTHOR(S) PROFILE



**Rajasekar R**, received an M.Sc degree in Chemistry from Bharathiyar University, Coimbatore, Tamilnadu in 2004. Through 2005 he is engaged in the management of health, safety and environment in Oil and Gas Industries.