

Process safety and risk management in the petrochemical industry: A cultural perspective

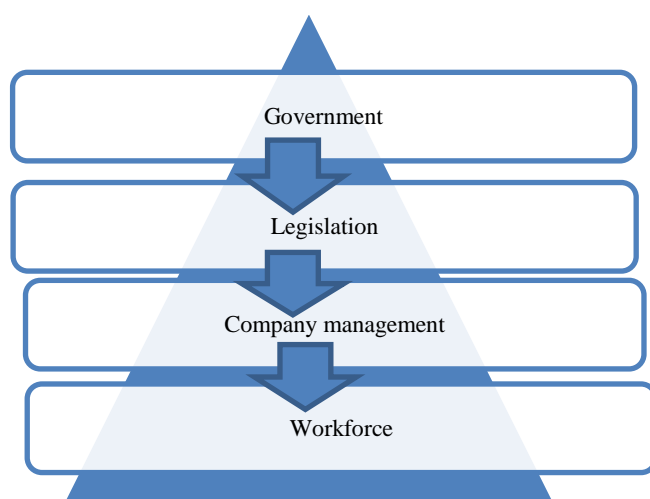
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Described as the lifeblood of the Saudi economy, the petrochemical industry in Saudi Arabia is considered an international sector with over 40,000 employees. Through years of hard work, Saudi Arabia now provides a complex, comprehensive and highly structured approval process as part of its process safety and risk management systems in the petrochemical industry. This makes Saudi Arabia the most advanced country in the Gulf region in terms of how seriously it takes process safety and risk management in the petrochemical industry. Yet, the industry is still bedevilled with various process safety and risk management challenges often associated with damage to assets, pollution, interruption to business, and injury to employees. As a result, process safety and risk management in the Saudi petrochemical industry has attracted significant attention and recognition in the recent past; partly because of regulatory pressure and the need to develop favourable working environments; and partly because of the need to avoid litigation. The industry is also currently faced with treats of terrorism and cyber-attacks. Specifically, the paper will highlight three key issues: firstly, how Saudi culture impacts on training; secondly, how Saudi culture affects the continuous focus on good process safety practice in the petrochemical industry and thirdly, the impact of Saudi culture on non-Saudi employees. The paper is based on the presenter's experiences in process safety and risk management in the Saudi petrochemical industry with the aim to help build a safer industry. The presenter is an instructor at King Fahad Security College with over 15 years of experience. Over the years, the presenter has experienced how the wider Saudi culture affects the safety culture in his day-to-day working life. This paper seeks to share the experiences of the presenter on the process safety and risk management in the petrochemical industry in Saudi Arabia through a cultural lens.

Key words: culture, industry, petrochemical, process, safety

Introduction

Regardless of the industry, there are arguably as many, if not more, occupational accidents that are caused by people, than by unsafe working environments and/or technology failures (Ajzen, 2005). While research in the past has sought to place responsibility on one of the above components or the other at any given time in history, there is growing consensus that industrial accidents are caused by a combination of all these factors – in other words, the culture at the workplace (Ajzen, 2005; Ahmed and Gibb, 2003). Culture is a complex idea, defined differently by different people. It can be defined as a system of values and norms that are collectively shared between a group of people (Adeyemi-Bello and Kincaid, 2012). Thus, the culture of a people represents a mix of their way of thinking, saying, and making, their costumes, traditions, language, art, literature, attitudes, feelings and values (Alvesson, 2012). Fundamentally, culture is transmitted from one generation to the next and covers traditions, customs and values, written and non-written rules (Anderson, 2011). All cultures are dynamic, yet, form the foundation of the way of life of a particular group of people at any given time. In present day Saudi Arabia, while the older generation are amenable to maintain the status quo, the younger generation is pushing for rapid cultural change. In the Saudi petrochemical industry, the process of cultural change is illustrated in the diagram below.



Saudis experience at the workplace is still disjointed and top down as illustrated above. The significance of culture in the day-to-day lives of a people including the workplace cannot be overemphasised. It is in this light that this paper shares the experiences of the presenter in process safety and risk management in the petrochemical industry in Saudi Arabia through a cultural lens.

Legislative framework

Process safety management (PSM) is the application of management principles to the identification, understanding, and control of process hazards to prevent process-related incidents (OSHA, 2013). It involves the development and implementation of programmes or systems to ensure that the practices and equipment used in hazardous processes are adequate and are maintained appropriately. Although nearly the entire industry agrees that implementing PSM is the right thing to do, interpreting and converting PSM requirements into practices is country specific with the majority of countries choosing the minimalistic standard (OSHA, 2013). Countries also choose to interpret the requirements differently usually based on local needs and culture. It also means that countries have different starting points which are dependent on a number of factors including the national culture.

The main body overseeing the legislative framework for process safety and risk management in Saudi Arabia is the Higher Commission for Industrial Security (HCIS). As a body, the Saudi HCIS is the main organisation responsible for legislation in Saudi Arabia. Essentially this body has responsibility for the supervision of safety, security and fire protection in Saudi Arabia. All these three departments also have links to governmental bodies such as police, security, investigations, civil defense, border guards and the ministry of labour. The Saudi HCIS coordinates and communicates with and reports to these government agencies. The challenge for the HCIS however is that it currently lacks a comprehensive and integrated system that guarantees safety in the workplace.

Discussion

In this section, the intention is to discuss the three key issues that serve as challenges to process safety and risk management in Saudi Arabia. These challenges include training, good practice and the impact of culture on non-Saudi employees. The impact of Saudi culture on training and how it affects the continuous focus on good process safety practice in the petrochemical industry is also discussed.

Training and the impact of Saudi culture on training

The need for training in the petrochemical industry cannot be overemphasised. Ideally, training of the labour force should be standardised and should follow international standards (Hofstede, 2001). However, the training of employees in Saudi Arabia is often influenced by a number of cultural considerations including: the lack of collaboration for safety, incident reporting, and communication, colleague commitment to safety, safety support and general resistance to process safety. These considerations are further explored below.

The lack of collaboration for safety: This dimension refers to group attitudes and activities for safety management, and the significance of collaboration between employees within the petrochemical industry (Ajzen, 2005). In Saudi culture, people tend to be more comfortable with individual opinions that often contradict the standards required within the petrochemical industry and that might potentially compromise their safety or that of other employees. It is common knowledge that Saudis do not want to be constrained by protocols and procedure and they are less likely to follow these at the work place even if put in place by management (Ajzen, 2005; Idris, 2007). This lack of collaboration does not encourage the development of new ways of working between management and employees within the Saudi petrochemical industry and compromises the safety of employees.

Incident reporting: This is another significant cultural component that affects the training of employees within the petrochemical industry in Saudi Arabia. Basically, incident reporting refers to the extent to which employees feel psychologically safe to report safety related incidents. Research on the Saudi national culture shows that activities that deviate from the norm and potentially indicate poor performance - reporting mistakes for instance - tend to cause a lot of anxiety among workers and are therefore not complied with at the work place (Alvesson, 2012).

Communication: This is most significant because it refers to the extent to which stakeholders are informed and engaged in system-related changes in the Saudi petrochemical industry. In this regard, most petrochemical companies in Saudi Arabia have poor communication systems in place and tend to be more constrained by protocol (Bridges & Clark, 2011). Thus, the system does not encourage open communication between employers and employees within companies.

Colleague commitment to safety: This refers to beliefs about the reliability of colleagues' safety-related behaviour. In Saudi Arabia, people tend to be more tolerant of behaviours and opinions different to their own, and less concerned about the activities of others and the risks that may compromise their safety at the work place (Zin & Ismail, 2012). Similarly, employees are less concerned about the reliability of their colleagues' safety-related behaviour.

Safety support: This refers to the availability of resources and information for safety management. The evidence out there in practice suggest that there is greater flexibility for petrochemical companies to provide resources and information for safety among Saudi companies (Neal & Griffin, 2006).

General resistance to process safety: It is much more difficult to get interest started in process safety in countries that do not have regulations that require implementation of a process safety system (like OSHA or HSE). Since it is not required by the government, companies are not doing it because they think it is not possible to implement process safety and remain competitive since customers will not pay for process safety. Due to lack of regulations, most companies in Saudi Arabia do not monitor the development of standards and recommended practices (Anderson, 2011). PSM is generally still a "Safety" responsibility, not part of the operational discipline of the facility in Saudi petrochemical companies.

Confusion between PSM and personal safety: Process Safety is harder to understand and explain than personal safety, especially in countries without process safety specific regulations. Most people understand personal safety (slips, trips, falls, personal injuries), but far fewer people understand process safety (preventing loss of containment, fires, explosions, etc.). The benefits of a good process safety system/programme may not be easy to calculate on a cost benefit basis, and benefits are generally longer term (preventing large process safety incidents). Among Saudi petrochemical companies, there are isolated, but still strong pockets of Senior Management insisting that "it hasn't happened yet" or that "the company responsible for safety monitoring has not told us this is/could be a problem" ((Ahmed & Gibb, 2003; Bhaskaran & Gligorovska, 2009). These companies therefore leave the knowledge, skills, and training of their workforce at levels that are inadequate by international PSM standards. Additionally, there is a limited supply of appropriately-skilled personnel in the country to conduct studies, write procedures, and train personnel. There is also a lower percentage of employees among the Saudi workforce who qualify as technical staff with process safety expertise.

In summary, it may seem obvious that implementing process safety and risk management in countries that are not regulated or less regulated, such as Saudi Arabia, is no different from in highly regulated countries. However, there are some unique challenges and barriers peculiar to these countries. Yet, some of the best examples of process safety and risk management may in fact be found in these countries that are less regulated. The keys to effective implementation of process safety and risk management are the same in all instances: effective and tangible leadership, active employee participation, solid technical competencies in process safety activities, keen attention to optimizing all controls of human factors, and thorough risk assessments. These elements are not to the best of standards in Saudi Arabia.

How Saudi culture affects the continuous focus on best process safety practice in the petrochemical industry

The term best practice could be defined simply to mean a standard way of doing things or complying with legal or ethical requirements. This involves the use of methods or techniques that have been generally tried, tested and accepted as relatively superior compared to any available alternatives. This is necessary in every industry but particularly in the petrochemical industry because it is used to maintain quality as an alternative to mandatory legislated standards and can be based on self-assessment or benchmarking (Bretschneider, Marc-Aurele and Wu, 2005). The particular Saudi cultural practices that have implication for continuous good practice in the petrochemical industry based on personal experience are presented below.

Oversight: Supervising the safety of petrochemical industry must be made a statutory duty to be carried out by government and managers of petrochemical companies in Saudi Arabia. There is the need for general oversight at the governmental level and a comprehensive supervisory structure at the organisation level. Both structures are necessary because while governmental oversight might involve mainly of periodic inspections of petrochemical companies conducted either annually, biannually or every five years; at the organisation level, supervision should be on a day-to-day basis between managers and the workforce.

Awareness of regulatory requirements: This borders on how well companies in the petrochemical industry recognise their legal obligation of ensuring the safety of their workers; and how changes to these legal obligation are monitored. For instance, in order for a company to fulfil its statutory obligations, it must be familiar with the legislation related to its operations. Awareness of the regulatory requirements is essential for good compliance and for ensuring that this task is carried out by appointed members of staff.

Management and personal commitment: An essential factor in gaining personal commitment is the degree of interest that the management demonstrates towards safety. One way for management to advance safety is to take part in safety tours. Communication also plays a significant role in committing personnel to safety. It has to be open and information should be readily accessible to everyone. It is important for the personnel to be able to monitor safety indicators and the progress of actions and initiatives related to development. Everyone should have the opportunity to influence safety. In addition to in-house staff, external service providers should also be taken into account in safety issues.

Risk assessment and decision-making: This is closely related to the preceding factor and requires petrochemical companies to assess the process safety risks related to its operations and how safety issues are taken into account in decision-making. Petrochemical companies should have a proactive process of identifying dangers and risks and this should be integral to the company's everyday operations. Employees should also be encouraged to actively identify risks and report any observations. Good practice exists when risk assessments are updated regularly, and immediately when necessary.

Instructions for and assessment of operations: Safety can only be advanced if instructions for the safe performance of work tasks are in place. Likewise, everyone working on the company premises must be introduced to safety procedures. It is crucial that agreed procedures and instructions are followed and any deviations are actively addressed. In order to maintain safety, it is important that procedures and instructions are reviewed and updated on a regular basis.

Competence and training: Acquiring an understanding of safety issues requires that new employees and service providers are well-trained. Refresher courses and further training should be arranged for existing employees as well. One way of taking care of staff training is to maintain a training plan and to monitor its progress. It is good practice to include service providers in the plan as well. It is also important to support competence-based training and training related to the development of work tasks.

Managing emergencies and deviations: It is essential that staff know how to act during emergencies. For this reason, regular training in emergency procedures should be arranged. It is also recommended to include service providers in the training sessions. Staff and service providers should be encouraged to report near-miss situations. These reports help when it comes to identifying risks and determining what action should be taken where necessary. Potential accident scenarios should be investigated and the resulting data used to improve operations.

The impact of Saudi culture on non-Saudi employees

In any workforce, ignoring cultural differences can be a serious cause of misunderstanding and, as a result, conflict. All organisations function within a national cultural context, irrespective of whether that context is defined in terms of shared meanings, values and assumptions or observable rites and rituals (Burke, Chan-Serafin, Salvador, Smith & Sarpy 2008). It is therefore important to consider process safety and risk management issues in the context of different cultural backgrounds. This is particularly important to the Saudi context given the proportion of the workforce in the petrochemical industry who are non-Saudis.

Conclusion

There has been much discussion in recent years as to how to develop new and improved cultures to take care of process safety and risk management issues within the petrochemical industries. This seems to be against the backdrop that companies within the industry are struggling with the problem of either maintaining or creating new process safety and risk management cultures. This paper explored the process safety and risk management in the petrochemical industry in Saudi Arabia through a cultural lens based on the experiences of the presenter. While some individual companies have good guidelines but that is no substitute for a national culture. The nagging question that remains unanswered is how do organisations build good workplace cultures in a national culture that seems not quite good enough? The answer I think lies in the formulation of stronger legislations and guidelines for companies and ensuring these are implemented to the later.

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