

ALLEYES ON HSEQ

How successful has the region's oil and gas industry been in integrating HSEQ policies and is there a need to further standardise work practices and training systems? Heba Hashem reports on the key challenges and how these are being addressed

H health, safety, environment and quality (HSEQ) standards in oil and gas operations are becoming an increasingly collaborative concern, cutting across various business units and impacting organisations big and small. Around the globe, national oil companies are investing heavily in HSEQ programmes as are international oil companies. Additionally, in the UAE, environmental legislation is now applied through the federal law.

There is no doubt that public awareness of HSEQ issues and concerns topics has increased in recent years, which according to Bahrain's energy minister, Dr Abdul Hussain bin Ali Mirza, is fuelled by modern communication systems. "This enables situations, problems and incidents that occur in one place to be seen live around the world at the same time, placing more pressure on all the people to do more than ever before to avoid [HSE] incidents," said Dr Mirza, speaking

at a conference in Manama, Bahrain in 2010.

Managing HSEQ in day-to-day operations is also more complex than ever before, with one important issue being today's increasingly multicultural working environments, where behavioural issues are identified as key barriers to applying HSEQ policies.

Personalising safety

"Non-compliance with HSE policies due to individual behavioural issues is one of the greatest challenges I have encountered in my 27 years in oil and gas," states Dr Atul Srivastava, senior SEQ systems engineer at Qatargas. He believes HSE non-compliance at work stems from different sources such as cultural and educational background and the company's HSE disciplinary policy.

In the GCC region, where expatriates account for more than half the population, the industry is uniquely challenged with a diverse mix of cultures and different workforce behaviours, coupled with employees who

work with complex chemicals and machinery. "The increasingly multi-cultural workforce due to the rapid rate of expansion remains the biggest challenge. There is a need to keep technical education programmes fresh and interesting," says Alan Izzard, vice president for corporate HSE, Borouge.

New-age challenges

Gordon McDonald, head of the hazardous installations directorate at Health and Safety Executive (HSE), the UK's national independent watchdog for work-related health, safety and illness, believes convincing people that every worker is an HSE officer is yet another challenge.

He says the insights that workers can bring to health and safety issues are crucial: "Senior executives have an overview of what's happening, but at the bottom, what is actually happening?"

His comments are echoed by Qatargas's Dr Atul: "Some people still think that safety

is the responsibility of the HSE department. They fail to realise that if they do their work safely, they benefit. Employees should not feel they are working to or for somebody, but with somebody.”

Nevertheless, most pressure falls on top management, who are expected to invest in the necessary tools and to foster a culture of transparency and open communication. By supporting personnel when they bring HSE issues to the attention of management or even stop the work due to genuine HSE concerns, management will go a long way in strengthening safety culture.

Controlling chemical reactions

In the management of safety and environment, identifying hazards through qualitative and quantitative data will always play a crucial role, but this does not change the fact that risks lie in things we cannot see or smell, such as hydrogen sulfide (H₂S). The only solution in such cases is eliminating and



Abdul Munim Al-Kindy, CEO, ADCO

minimising hazardous elements.

Although it has important commercial and medical uses, H₂S – a colourless, poisonous and flammable gas also referred to as sour gas – challenges the region’s entire hydrocarbon value chain. From a safety point of view, contact with H₂S in its gas form is toxic and is fatal at specific concentrations. To

combat the problem, No Heat Resources, a company specialising in chemical solutions, has brought the HydraScav technology from Asia, a water-based additive that can remove H₂S and mercaptan in a single process.

“The oil and gas industry is inherently hazardous by the nature of its operations, chemicals and materials handled. Safety procedures and rules are meant for managing various types of risk safely, such as day-to-day operations, without any incidents,” states Abdul Munim Al Kindy, CEO of ADCO.

One of these chemicals is mercury, which is widespread in the region, especially in Saudi Arabia, Oman and the UAE. But what risk does mercury pose to oil and gas operations? “Apart from the financial issues arising from an off-spec end product due to high mercury content, mercury embeds itself into the walls of pipes and vessels and reduces the working life of a company’s assets from the well-head to the flare tip,” says David Snodgrass, managing director at No Heat Resources.

Many new gas plants in Central Asia are being designed to include mercury recovery units and mercury traps attached to vessels, as they expect to see mercury at some stage in the life of the facility. On a regional level, Petroleum Development Oman (PDO) has set a benchmark with a sophisticated Mercury Management Plan they have outsourced to Oman Industrial Coating Company (OICC) on a substantial tenure, for mandatory use across all facilities.

Abu Dhabi and Bahrain lead the way

The two Gulf countries have also made some of the Gulf region's most notable efforts so far in improving HSEQ standards. In the last five years, Bahrain managed to complete several oil and gas-related environmental projects, including a US\$150 million refinery gas desulfurisation project in 2009 and a low sulphur diesel project worth US\$700 million in 2007.

More recently, Bahrain's Gulf Petrochemical Industries Company (GPIC) commissioned one of the Middle East's first carbon dioxide recovery plants: a US\$55 million unit that captures 450 metric tonnes of carbon dioxide per day from reformer flue gases, contributing to a reduced carbon footprint in the region.

"In my experience with organisations such as Kuwait Petroleum Corporation, BAPCO and GPIC, the HSEQ standards which are being put in place are in line

with industry standards elsewhere in the world. However, there are still some challenges remaining," says Barry Holt, director of policy & research at the International Institute of Risk and Safety Management (IIRSM).

Speaking on the consequences of HSEQ failure, GPIC president Abdulrahman Jawahery warns it can cost a great deal not only to the company, but to the country as a whole. "To the company,



Barry Holt, IIRSM

higher insurance premiums, substantial fines, low workforce morale and accident costs, including lost production time, can destroy otherwise good productivity. In serious cases in some countries, it can lead to corporate manslaughter prosecution, involving directors and senior managers"

Abu Dhabi has similarly excelled in implementing HSEQ policies. Environmental legislation in the emirate's offshore petroleum industry is enforced by federal law, which comes under the Protection and Development of the Environment Act and requires monitoring and reporting of environmental performance.

Through its subsidiary ZADCO, ADNOC has shown considerable sensitivity to the environment. For example, Zirku Island, which act as ZADCO's main base for the processing, storage and loading of crude oil, is home to hundreds of species, many of which are rare or endangered. To sustain the rich level of biodiversity on the 8-square kilometre island, less than half the site has been industrialized, with the remaining areas maintained and monitored as natural habitats. Environmental monitoring is based on the findings of a long-term survey carried out by the Environmental Research and Wildlife Development Agency in 2002.

On a technical level, ADCO, an ADNOC subsidiary responsible for developing onshore oil and gas fields, has implemented the HSE Electronic Analysis Reporting & Tracking System (HEARTS). The system helps ADCO track, manage and report HSE events and data, which in turn supports its environmental target setting, performance and information analysis.

SAFETY TAKES CENTRE STAGE

The recent Innovation in Oil and Gas Safety event, held in Dubai last month and supported by Pipeline Magazine, addressed a number of health and safety issues core to the region's oil and gas industry.

In terms of regulations and standards, Carl Sall, head of industrial safety, Emirates Nuclear Energy Corporation, spoke about the Abu Dhabi Government's proposed Environmental Health and Safety Management System (EHSMS).

He says that while these are currently focusing on other industries in getting the HSEQ standards up and running, "oil and gas is very much lining up with it. What we're getting down to now is really in the reporting requirements."

"The standards are developed from looking at international best practice, at Australia, the US, the UK and also Singapore in trying to mesh that into something that can be refined and used here," says Sall.

When asked what he sees as the most



Carl Sall, head of industrial safety, ENEC

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Michael Stanhope, TenCate

significant challenge impacting the region's oil and gas industry, he highlights the increasingly multicultural diversity of the workforce. "That's the biggest challenge – you've got multiple languages, the safety culture is not there from a lot of these countries [where the workers originate], so how to develop that culture is one of the key issues," explains Sall.

"And doing that takes time. A realistic timeline is four to five years to set a cornerstone, and 10 to 15 years before you really see the full effect – it's a building process," he adds.

"It's hazard-based – initially we will identify the industries where all the 'hot hazards' lie and then eventually, the long term goal is to see it rolled out across all



Stan Jewell, Bulwark Protective Apparel

industries in Abu Dhabi," says Sall, without giving a specific timeframe, though Version 2 of the initial EHSMS framework is expected "in the very near future."

Protective clothing and footwear, other crucial elements of any oil and gas company's HSEQ programme, were also addressed during the event. Speakers including Stan Jewell and Diane Woods, senior executives from apparel specialist VF International's brands Bulwark and its newly acquired footwear brand Timberland respectively, explained the extensive design and testing involved in creating their products.

International product specialists Michael Stanhope and Travis Greer, from textile manufacturers TenCate and Milliken, also



Diane Woods, Timberland Pro

spoke on the intensive development processes behind their fire-resistant fabrics targeted at the sector.

Dr Pravinray D. Gandhi, director of corporate research, Underwriters Laboratories, also presented on the high fire risk posed by petroleum storage tanks. He referred to research that showed the industry's downstream refining sector was more prone to fire incidents than other sub-sectors. Out of 242 incidents, it found that 47.9 per cent of storage accidents occurred in refineries, followed by 26.5 per cent within storage and pumping stations, 12.8 per cent in petrochemical plants, 10.3 per cent in industrial facilities and just 2.3 per cent in oil fields.

