



Process safety leadership in the chemicals industry

Achieving best practice in process safety leadership and management is a goal that I firmly believe is essential for the chemicals industry, and something I am determined to help CIA member companies attain. Our industry has a strong tradition of learning lessons from one another and health and safety is no exception. Over recent years, the industry's safety record has been a good one, in part due to the bond between management and workforces in recognising that high-hazard facilities such as chemical plants require constant, round-the-clock attention if licence to operate and public confidence are to be secured.

There is however no room for complacency with regard to health and safety, particularly as the chemicals industry wrestles with unstinting structural change, an ever more competitive business environment and an ageing workforce. It is against this background therefore

that I am very grateful to the CIA member companies who volunteered to participate in our interview programme, underpinning our focus on improving process safety leadership and management. Although we start from a promising base, the results of CIA's leadership visits to member companies described in this publication indicate there is a long way to go to achieve excellence across the width of the chemicals industry. I'm confident that we will get there, but it will need the same degree of commitment at board and senior management level in member companies that is traditionally given to financial performance or legal compliance.

As with other major hazard sectors, leadership from board level is fundamental to achieving best practice in robust protection measures for chemical businesses. Without the drive and support from the board to instil

effective process safety management at the top of the organisation's priorities, it is unlikely to happen – and while the legal minimum level of safety may still be achieved it will not reach the highest levels necessary for the protection of our people and hardware, the enhancement of our businesses and the sustainability of our industry.

This publication sets out briefly what CIA considers to be the chief characteristics of "best practice" process safety leadership and management. Each element will require commitment and may involve a lot of work. Some companies may already be at a high level in one or more areas but may need to address company systems, procedures and behaviours in others.

I'm challenging chemical companies to do a self-assessment to see how your organisation shapes up against these best practice indicators. Beyond that, I urge you to put plans and actions in place to improve your process safety understanding, commitment and, of course, performance.

Steve Elliott, Chief Executive, CIA

Process safety: the keystone of Responsible Care

The assessment and management of risks associated with chemical processes has been one of the guiding principles enshrined within the Responsible Care initiative for many years. CIA member companies, all of whom have signed up to the principles, need a full understanding of the hazards they deal with and the controls needed to prevent harm to employees and neighbours, as well as damage to the environment. Responsible Care can be used to bring a strong focus on safety management systems, particularly through planning, auditing and review alongside good performance reporting. This should assure our company boards that the right things are actually being done on the plant in the right way. Below board level, high quality training programmes and staff involvement in hazard studies and process risk assessments will raise awareness of and control over the major

hazards that employees are very close to every day of their working lives.

Process safety risks are real risks to any business and therefore good performance represents good value to a business. Business leaders and their boards contribute a wealth of knowledge and personal experience which is paramount in delivering commitment to process safety excellence throughout an organisation. But the Responsible Care programme also encourages engagement with other industry stakeholders, and in particular seeking opportunities for co-operation with the regulators – the principle of learning lessons from our own and others' incidents and near misses is at the heart of Responsible Care.

The current focus on process safety in the major hazards industries is only the start of the process. Responsible Care needs to continue to lead the way into the future, to promote the

role of leadership within chemical businesses and, in particular, the importance of a positive safety culture, shared knowledge, and learning from cross-sector experiences. In CIA we will facilitate this through events aimed at sharing best practice to fill the gaps found during our process safety work, and by establishing mechanisms for leaders to take part in appropriate networks to share relevant process safety information and to develop skills. We also plan a second phase of leadership site visits like those described in this publication, so that a wider section of membership can be included, yielding even more examples of best practice that companies can learn from. By promoting the Responsible Care objectives our intention remains to help all to improve and to strive to raise safety standards throughout the industry.



“Process safety cannot be managed or led from the comfort of the boardroom. Real leaders have to demonstrate their commitment by walking the talk which means going out and seeing for themselves. All too often senior managers and directors are far too detached from the reality of what is actually taking place on the ground. Every board also needs to consider what the real vulnerabilities of their process are and address them – and they also need to know that it is OK to seek help and advice from others – that’s also part of real, honest leadership.”

I commend the work of CIA in raising the profile of effective process safety leadership within the chemicals industry and for continuing to encourage the sharing of best practice between leaders of all major hazard industries.”

Judith Hackitt

Chair, Health and Safety Executive



Identifying best practice – CIA process safety leadership initiative

The role of leadership

Effective process safety control involves a mixture of hardware and safety management systems to manage the major hazards. Ownership of each of these will rest with various functions within any company – engineering, operations, maintenance and safety/health/environment departments, to name but a few. So what part are leaders expected to play? Effectively, business leaders need to show commitment to all of these aspects and to give the management of major hazard risks in the company at least as much focus as they would, for example, to financial affairs of the company. The major hazard risks are often the biggest business risks to a chemical business. Business leaders need to show leadership of all the elements of process safety, by demonstrating they recognise its importance and by commitment of sufficient time, resource and monitoring to be fully confident they are being properly managed within the organisation.

CIA visits

During 2007 and 2008, CIA staff carried out a series of visits to member companies designed to establish what process safety management and leadership practices were in place in the sector and which ones appeared to be effective in giving good control of process safety hazards. The aim of the initiative was to capture “best practice” in process safety leadership from within our industry and then to share these lessons widely so that awareness of the issues could be raised on a broad front, and action stimulated to improve safety in the sector as a whole.

A total of 26 visits were completed, representing about 20% of CIA’s membership base to which the Control of Major Accident Hazards Regulations (COMAH) applies. In the vast majority of visits we interviewed at least one board member (and whenever possible, the CEO or MD) but when this was not possible, perhaps because of a foreign HQ and no UK visits planned by a board member in a suitable timescale, we took the opportunity to speak to the most senior manager available. The visits included detailed interviews with managers of safety, health and environment departments

and also *ad hoc* discussions with operational staff working in plant control rooms.

The aim of this approach was to put together a realistic picture of how each company was addressing the management of major hazard process risks and what practical leadership arrangements were in place. To achieve this we used a common question set (which managers did not see in advance of the visits) and collected the information from the responses. Among the questions we focused on were:

- The extent to which process safety was discussed as an agenda item at board meetings;
- How commitment to process safety was visibly demonstrated by the board;
- Communication of messages and cultures about the importance of process safety;
- Whether companies had process safety improvement plans;
- Whether process safety performance indicators were in use and the results seen by the board;
- The visibility of senior managers;
- Whether anyone on the board had read the Baker Report on the BP Texas City incident and the Buncefield Reports and whether any action had been taken on the recommendations.

In drafting the question set, and in discussion at meetings, we recognised the importance of existing guidance, including the Institute of Directors and the Health and Safety Commission Guidance “Leading health and safety at work”, published October 2007. CIA’s initiative, however, was targeted specifically at the chemicals sector and the aim was to capture best practice from within it.

Results

The results of this work were encouraging and showed a great deal of commitment and engagement at senior management level and highlighted some excellent practices that are clearly effective in helping to manage process safety risks. On the positive side, we found:

- There is no “one size fits all” and whatever the size, structure and HQ location of companies there were good examples of leadership practices;
- CEOs and directors do not necessarily need to have a technical knowledge and background in order to lead process safety – if they are receptive to advice on process safety from another board nominee or SHE manager and then move the company in that direction, this

model can work extremely effectively;

- We found an extremely high level of experience, commitment and competence at site manager and SHE manager level; operators too showed a high level of awareness of the extent and business risk of the major hazard potential that the processes represented and did not simply focus on personal risks;
- There were no examples from the visits of cash restraints on clearly identified process safety spending needs. Sometimes these needed business case justification and implementation scheduled through a pragmatic and timed action plan, but where the need was identified the commitment was generally evident.

Room for improvement

There is certainly no room for complacency. The visits showed that not all companies are operating at a high level and that there are many opportunities for sharing best practice in aspects of process safety leadership. We found that most companies showed good practice in some of the elements we identify below but not in all of them. Within individual companies, some good initiatives were in place at one site but had apparently not been developed at others. The need to raise performance was also demonstrated by the fact that some visits were to companies that had experienced damaging and costly process safety major incidents on UK sites within the last few years – an important reminder that the chemicals sector is just as prone to these as any other if best practice standards are not achieved and maintained.

Best practice

Based on the substantial number of visits and time spent with CIA member companies and their senior managers, and the wealth of information compiled during the visits, we have tried to set out the key elements of process safety leadership best practice that seem most effective in the companies we visited. The information is consistent with that from recent major hazard incident investigation report recommendations, guidance from the regulators and developments on cross-industry groups such as the Process Safety Leadership Group. However, it is written from a chemicals industry perspective. All the measures that follow are feasible and are already happening and effective to a greater or lesser extent in

some companies in the chemicals sector. All companies can learn something from this approach by ensuring they either adopt them all, or at least review the extent to which these aspects need to be refreshed or a new initiative taken.

There will be a whole raft of safety control measures and systems that will need to be in place at chemical manufacturing sites and it is beyond the scope of either CIA's visit initiative or this guide to cover them all. But in our view, and from the visits we carried out, the following represent the minimum necessary to be able to show board involvement in, and control over, the major hazard process safety risks that represent not only the highest potential for harm but also significant business risk.

1. Board "champion" for process safety

Many of the indicators outlined below will depend on having a natural focus for reviewing

1. Best practice example:

Setting a lead from the board

Following experience of a serious process safety incident at one of its sites, and also a high level presentation to the board by US safety experts close to the BP Texas City investigation, a multi-national company took a series of positive steps designed to raise the importance of process safety across their sites worldwide. A process safety director has been appointed with the role of creating a new corporate impetus to process safety through safety audits, use of process safety performance indicators, near miss reporting, competence assurance, etc. A process safety management system is in place, separate from "routine" health and safety issues, and uses a comprehensive computerised process information system that makes available plant procedures, process safety tools, technical publications and guidance for use in the preparation of basis of safety (BOS) documentation. Meetings of site directors have been arranged to update colleagues on the progress of individual process safety programmes and to share experiences. This direction and resource commitment by the board has led to a unified leadership approach for all the company sites and a clear focus on management of process safety risks.

process safety risks at board level. In some companies this may be a CEO taking a personal lead but other companies may choose to nominate another director. In smaller companies with a small board, the process safety lead may need to be combined with other functions. However this is done, the responsibility should not be subordinate to any other roles the individual has – the management of major hazard process safety risks in a business is fundamental to the safety of employees and public, and to the sustainability of the whole business. It deserves a suitably high priority.

The board lead on process safety should ensure that it is discussed at all board meetings in a structured way, that allows the board to review performance indicators, agree and set targets, review incidents and near misses, and decide and agree future priorities.

2. Process safety policy and expectations

There is a legal requirement under the Health and Safety at Work Act 1974 for employers to have a written safety policy and sites subject to the COMAH Regulations also a need to have a major accident prevention policy. However, beyond bare legal compliance to achieve "best practice", chemical companies that have major hazard process safety risks need to go further than this and not only set out the board policy and strategy for managing process safety hazards but also the importance to the business of this. A clear statement from the board, effectively communicated to all operational staff, about the importance the board places on this will help set a tone and culture within the organisation that empowers staff at all levels to play their part in delivering major hazard safety and ensuring appropriate focus on these risks – an important part of leadership of process safety. The process safety expectations, targets, review arrangements, etc, should all be included and consideration should be given also to how it will be communicated (for example, by written document, DVD presentation, personally addressing staff, etc).

Several companies CIA visited used a "basis of safety" approach as an excellent, practical approach to demonstrating commitment and delivering major hazard process safety management. This involved identifying the highest hazard inventories, plant and processes and applying the highest expectations of safety and management standards to these, in order

to focus attention on their criticality, both from safety and business perspectives. Being allocated basis of safety status meant that plant and equipment was subject to the highest level of scrutiny within the company, including the level of engineering and auditing attention.

2. Best practice example:

Setting clear expectations and standards for process safety major hazards

In a large UK-based company with multiple sites worldwide, there was a clear focus on whole process safety that was supported at board level and operated throughout the company. A consistent message about expected process safety standards was delivered by a BOS approach that clearly identified the relevant high hazard plant, equipment and processes. A global programme of minimum acceptable safety techniques (MAST) had been developed to set expectations for plant safety standards and underpinned the BOS approach. Audits against these MAST standards were carried out by the corporate safety function with an executive board member, and action taken (including, for example, training and refresher courses provided) where the audits showed any deficiency in either safety standards or appreciation by staff of the importance and operation of the BOS and MAST approaches. To complete the loop back to the executive board, basis of safety focus and plant audits was also one of the headings for quarterly reports by the site director at board meetings.

3. Visibility

Visibility of board-level management can be a means of showing interest in and commitment to a high level of control of major accident risks that many chemical businesses potentially represent. CIA's visits found that visibility can take many forms however, and there are practical considerations in some company structures that mean boards need to show some imagination in deciding how their visibility will achieve the most benefit in terms of process safety leadership. In smaller companies, with one or two major hazard sites, it should be possible for the most senior manager to be seen on site and visiting control rooms reasonably

often; in large multinational companies however, where the board is not resident in the country where the assets are, this will be less practical and its real value can be questioned. The fundamental starting point is that visible commitment of the most senior manager (irrespective of whether he/she has a technical background) is an important part of the process of setting the right tone within the rest of the company for effective process safety control of major hazard risks. However, there are many different approaches to how this can best be achieved or indeed is feasible. The range will include personal site visits and meetings with operators, through to structured presentations on major hazard risks at which the most senior manager participates to give the board message personally, and face-to-face or teleconference meetings with staff at which major hazard safety is covered. In some companies a mix of all of these will be productive and leaders should be imaginative about how best to show visibility. The important thing is for boards to consider their own company circumstances, make policy and positive decisions on how visibility can best be achieved and then deliver it.

3. Best practice example:

Demonstrating visibility and visible commitment of senior management

In a very large company, members of the board participated personally in presentations to groups of staff, during a programme that spanned two months in order to cover all operational personnel. Each session featured the CEO, site director and site manager during structured presentations on the theme of process safety. Part of each session used real-life, high-profile major accidents that had happened worldwide and highlighted the main system of work failures that had caused them; these were then linked with near-misses that had happened at the company site caused by the same system of work failures. This powerful way of illustrating the causes of major accidents, and in particular the personal and visible commitment by the board in delivering the messages, made a big impact with staff and gave a very clear message about the high priority of following process safety control systems.

4. Process safety performance indicators

One of the most prominent recommendations for effective process safety leadership and management that has come out of recent major accidents in process industries is the need for process safety performance indicators (PSPIs) that measure the effectiveness of preventive and control measures (leading indicators) as well as incidents or failures that have happened (lagging indicators). There is substantial current detailed guidance on this, including the HSE/CIA guidance HSG254 "Developing process safety indicators", published in 2006, and "Process safety leading and lagging metrics", published in 2007 by the American Center for Chemical Process Safety (CCPS). In many cases, however, CIA's visits showed that while companies were aware of the issue and guidance it had not yet been widely adopted and there had been little movement towards developing leading indicators. Lagging indicators of incidents, loss of containment,

4. Best practice example:

PSPI system continually reviewed and used at both corporate and site levels

One foreign-headquartered company has had a system of PSPIs in place for several years but continually reviews and modifies these on an annual basis to ensure they remain appropriate for the business needs. Some metrics are set at the corporate level for global use, to ensure the board has the overview it needs; other specific indicators are established by and for individual sites. Results of the indicators are collected by site "PSPI owners" and used to populate an electronic site "scorecard", the results of which are presented monthly. This scorecard is reviewed and modified annually following a process of challenge, to make certain it remains relevant and is picking up the critical/relevant information. This approach has led to dramatically improved performance: one of the leading indicators, for example, represents management of change procedures – failure to complete this key process safety management system control measure was reduced in 2007 from a level of around 120 to zero by the end of the year.

exceeding permit conditions and personal injury accident frequency rates were extensively used but not indicators designed to give a measure of the protection against process safety major accidents. Furthermore, there was even less use made of PSPIs at board level. Boards should be monitoring a manageable number of indicators that are designed to give a measure of the overall health of the process safety control measure for the business.

One way to achieve this is to use a hierarchical system – whereby the board sees a small number of key overall leading indicators, operations manager or equivalent sees several more, plant or unit managers see more detailed ones, etc – with the SHE department monitoring the overall system.

What is clear is that if the board is not seeing some leading indicators of the state of major hazard controls it cannot get a fully informed picture of the performance of this crucial aspect of a major hazard chemical business.

5. Process safety improvement plan

Companies should have a formalised process safety improvement plan that identifies its

5. Best practice example:

Process safety improvement plan integrated into whole process safety management system

In one international company with a single UK site, a structured process safety improvement plan is maintained from a variety of inputs including operational integrity reviews, audits, HSEQ department, regulator requirements, etc. The annual process safety target objectives are produced from this and are allocated a priority on a 1-3 scale. The actions necessary to achieve the targets are identified and assigned by agreement to appropriate individuals and recorded in a structured performance development review system as part of the overall job performance expectations – reviews by line manager are carried out on a mid-year and annual basis to ensure that progress and achievement of targets in the improvement plan are monitored. This structured system sends a very clear message about the importance company management attaches to continuous improvement and achievement of process safety improvement targets.

priorities for ensuring systems and hardware for safeguarding major hazard processes and inventories retain their integrity and are subject to review and continuous improvement. It is crucial for process safety hazards to be given this focus and an annual plan, that sets out the objectives and which site and board management can review progress with, helps ensure this is achieved. The inputs to the improvement plan will need to be varied – including periodic reviews of safety management systems, advice from engineering/maintenance/inspection functions about existing or the need for new equipment, HAZOP reviews, risk assessments, regulator advice and requirements, and changes in safety and environmental engineering control standards. The development and management of the improvement plan may often be coordinated by a SHE department or engineering function but, as with all aspects of process safety, it is important that the board sees and endorses it.

6. Review incidents from other sectors

Recommendations in reports on incidents at Buncefield and BP Texas City refer specifically to their application across all major hazard sectors, and hence to the chemical industry. The current trend in development of major hazard process safety controls is cross-industry, for example through the work of the Process Safety Leadership Group, where the onshore major hazards industries, the regulators, and trade unions come together to formulate and agree standards and share commitment to future improvement programmes. Companies will need to consider how they address this new direction within the context of their own business. Without this read-across to other industries where there is relevant experience in major hazard and preventative programmes, boards are depriving themselves of a valuable intelligence base that will assist in creating robust forward-looking programmes for protection of the business risks represented by major accident potential, and in dealing with the regulator to demonstrate leadership.

There is a variety of ways companies might approach this – it could be by personal involvement of the most senior manager or a board champion, or for example by delegation to a SHE specialist to make recommendations to the board for endorsement. The key points are to ensure this broad perspective approach to industry-wide lessons is adopted and that there is board involvement in it.

6. Best practice example:

Reviewing incidents and recommendations from other sectors

In one international company with a single UK COMAH site, the SHE department maintained a detailed matrix of outstanding process safety actions. The data not only included corporate audit actions but specifically a review of the recommendations from the Buncefield Major Incident Investigation Board, the Baker Report on BP Texas City incident and USA Chemical Safety Board. Each recommendation had been reviewed for potential impact and relevance at this site and a priority had been allocated to each. Actions included development of process safety performance indicators, leadership, and integrity of primary and secondary containment. The actions were scheduled and monitored by the operations management team and the director received reports on progress and future cost/resource implications so that appropriate arrangements could be put in place.

The challenge for the chemicals industry is to measure itself against these six elements. Companies need to see how well they are placed now and, where there is room for improvement, to have informed discussion at board level and then to put in place action plans to raise standards. In this way the whole chemicals sector will gain in terms of its ability to avoid major accidents, to show it can satisfy the expectations of the regulators, and to demonstrate to the public that chemical businesses responsibly manage major hazard risks.



Beyond the chemical sector

"In some cases, although we have not studied the wider chemical industry, we consider that relevant lessons for fire and explosion risks can be applied beyond fuel distribution and storage. More generally, we encourage the chemical industry, working with the competent authority, to consider the broader relevance of our findings so far."

"We have noted with interest the recent report of the BP US Refineries Independent Safety Review Panel by James Baker's panel in the United States. Some of the recommendations and findings in that report align with our thinking arising from the Buncefield investigation. In particular, the Baker report's recommendations relating to process safety leadership, process safety culture, performance indicators, independent monitoring and industry leadership are relevant. The Baker panel's findings regarding the implementation of good engineering practices, safety knowledge and competence also align with our views."

Fifth report of the Buncefield Major Incident Investigation Board, 29 March 2007

Linking the elements of effective process safety management

It has long been recognised that the essential foundation of effective process safety management (PSM) is a combination of robust technical risk control systems and an overall management system.

The essential elements of technical risk control systems have been specified in corporate manuals such as the ICI "White Book" and in the regulatory programme of OSHA CFR 1910. These included management of change, process hazard analysis, mechanical integrity, pre-startup safety review, and others. Developing, implementing and maintaining these risk control systems has required technical expertise supported by clear technical standards and guidance documents. Consultants from ABB Engineering Services have assisted clients with the preparation of technical documents, on-site auditing and practical advice on implementation, and are currently supporting steelmaker Corus to develop and implement a suite of process safety standards.

In addition to the technical risk control systems, there is a requirement for a management process that sets a policy, organises resources, plans and implements actions and then provides feedback through measurement, audit and review. This is the "POP MAR" management process described

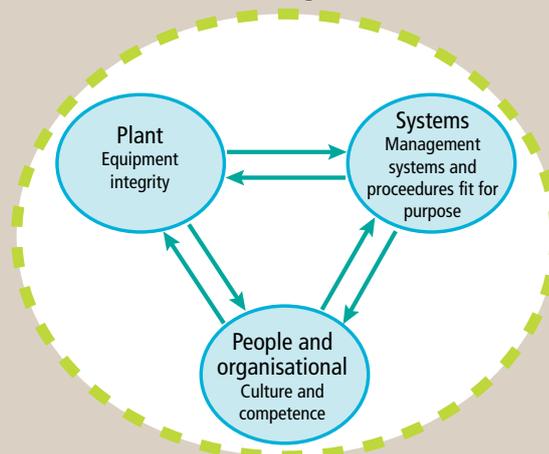
in the HSE publication "Successful health and safety management". This management process provides the framework for the ongoing effectiveness of the technical risk control systems. ABB uses this framework in safety reports to the competent authority to describe the safety management systems on upper tier COMAH sites.

More recently we have seen in the Baker Report and the HSE's "leading from the top" programme an increased emphasis on people behaviours and the organisational culture aspects of PSM. This completes the triumvirate of equipment, systems, and people elements of effective PSM. We recognise that the very nature of process safety, with low likelihood but high consequence events, creates a different set of behavioural and leadership challenges. Even on sites that are not operated and maintained to the highest standards, significant process safety incidents will be rare and may not be within the personal experience and hence appreciation of operators, technicians and managers. This can lead to a disproportionate focus by senior managers on personal injuries and neglect of the potential major process accidents.

Through our i-2-i process and using formal training courses, seminars, and participative workshops, ABB can assist companies to develop, embed and sustain an organisation-wide transformation in PSM practices and performance, linking all three elements of effective process safety management.

Mike Beanland, Team Leader, Process Safety Management 01642 372000

Risk management



The holistic approach for effective safety management



Process safety management – it's more than just a set of key performance indicators

Investigations into recent incidents, such as the one that occurred at the BP refinery in Texas City in 2005, have raised fresh concern over falling standards in process safety management (PSM). Those involved in the management of major accident hazards will no doubt recognise the mistakes made, with many now placing new emphasis on PSM at the corporate level – so what's new about PSM and what does this mean in practice?

"PSM is all about focusing on the critical safety elements and ensuring that these elements are designed and operated against the design intent at all times – it's realising the intent throughout the lifecycle. It's about making these critical elements special, and ensuring that anyone operating or maintaining them recognises that they are special and that the job must be done properly at all times."

*Dr Andrew Fowler,
Principal Consultant, HFL Risk Services Ltd*

Great strides have been made over the last 30 years in the management of occupational health and safety risks and most will agree that industry at large has benefited greatly from a reduction in accidents and their associated costs. This has transpired as a result of a deliberate and sustained focus on management of the causes of accidents: understanding the causes; putting measures in place to reduce the likelihood and consequences; and introducing robust systems to manage the integrity and monitor the efficacy of those measures. The driver for this has been an acceptance that injuries are socially and economically unacceptable and therefore bad for business.

Who would argue then that the drivers for reducing major accidents are any different? PSM is just another focus – a focus on catastrophic events – or, more simply put, a focus on preventing loss of containment of substances capable of major accidents. Good PSM places greater emphasis on the integrity of management systems, the systems (i.e. the

key risk control systems) that are necessary for effective maintenance and safe operation of critical plant and equipment. The aim of PSM is to ensure consistently high levels of performance across a number of areas, including:

- Defining acceptable operating envelopes for all critical components of the process;
- Maintaining the process conditions within these envelopes;
- Understanding the impact of excursions;
- Maintaining and testing equipment and preventative and protective devices;
- Rigorous compliance with procedures;
- Professional management of change processes.

In short, PSM is nothing new to those responsible organisations that are already experienced in the management of major accident hazards. It is concerned with management of critical activities taking place throughout the process or plant lifecycle; from initial concept through to realisation of the commercial operation.

So how can process safety performance indicators (PSPIs) help? If implemented correctly, PSPIs – based on lagging and leading indicators – can provide senior management with a useful means to monitor the performance of key risk control systems, providing a means to detect early signs of system degradation before they become a problem. They can be used to alert those responsible to potential areas of exposure from human failure, poor procedures and inadequate controls – this is an essential part of corporate governance.

In most companies much of the data necessary to select indicators will already be available in some form to support a measurement system. Problems can arise, however, if insufficient thought is given to understanding the key risk control systems at the detailed level. For example, simply recording that thickness testing of a piece of plant has been carried out by a given date (one of the most common PSPIs) does not assure integrity or performance unless the correct methods have been employed at the critical locations, by a competent person. In such cases, incorrect implementation of PSPIs can have the opposite effect by hiding problems. This in turn leads to misplaced confidence in deficient management systems and it may only be a matter of time before the worst happens. Good PSM then is about making sure you know just what needs

to be done, getting it right, and reviewing to ensure it is right, now and into the future. So beware, simply measuring what you are doing – if what you are doing is flawed – may have very little to offer by way of increased integrity assurance!

"The use of performance indicators based on reactive and active monitoring systems to provide a means to check key risk control systems shouldn't just be limited to management of health, safety and environmental risks – they have much to offer the business as a whole. They promote systematic learning from mistakes and provide early warning as key systems start to degrade – but if, and only if, they are implemented correctly!"

Dr Julian Hought, Managing Director, HFL Risk Services Ltd

The HFL Risk Services approach to PSM

HFL Risk Services has developed a PSM masterclass, designed to help managers and technical staff to strengthen this crucial element within their loss prevention strategies.

The approach can be tailored to suit the needs of any organisation, whatever the size or complexity. It ensures that the resources deployed are appropriate, proportionate and specific to your business needs. Participants will learn how to set up cross-functional teams and identify plant, operations and activities that are not just critical to health, safety and the environment – but to the business too. They will also learn how to identify key risk control systems and map out activities to help minimise non-value added steps, to develop more robust and meaningful procedures. The setting of leading and lagging indicators and the development and implementation of effective data capture and performance measurement systems are also covered.

By working specifically on your processes and business in this way, not only will you gain greater knowledge and understanding of PSM, you will also become more confident in application of the techniques. Your company will benefit from a solution too – the implementation of a targeted and effective management tool.

*Dr Andrew Fowler, Principal Consultant
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A process safety leadership checklist:

In this publication we have explained the need for continuous improvement towards best practice standards in management of process safety hazards. The role of process safety within Responsible Care has been set out, there have been contributions by leading consultants in this field and CIA's own recent work to identify process safety leadership practices in the chemicals industry has been explained. Based on our visits and the information gathered, we have highlighted those indicators of best practice in process safety leadership and management that we consider all companies should be aiming to achieve. These are not unrealistic ambitions attainable only in exceptional circumstances; they are examples of the sorts of arrangements already in existence and necessary for effective management of process safety hazards. From our experience, most companies will be reasonably advanced in one or more of these areas; if you can honestly say your company is achieving a high level in all of them – congratulations, you are one of a select few. But as we have said, the challenge now is for industry to measure itself against this best practice and, if there is a gap, for boards to put in place action plans to raise their company performance and that of the sector as a whole.

So how does your company measure up against these principles...?

Board "champion" for process safety

- A board member has specific responsibility for process safety;
- Process safety is discussed at board meetings;
- The board reviews process safety indicators and performance and decides future priorities and actions.

Policy and expectations

- A clear statement of the board expectations for process safety has been made;
- There is a policy for how and when this message will be delivered;
- A structured approach to managing the highest process safety risks is set out.

Visibility

- The importance of personal involvement of the board and most senior manager as a means of setting the right process safety culture and tone is recognised;
- Consideration is given to how this visibility can be shown in practice in the company;
- The policy on how visibility is to be achieved is delivered.

Process safety performance indicators

- Leading indicators of process safety performance within the company have been set;
- PSPIs are reviewed to ensure their continued relevance;
- The board sees and reviews an appropriate number of leading performance indicators.

Process safety improvement plan

- A process safety improvement plan that covers the main process and storage hazards is prepared on an annual basis;
- The inputs to the improvement plan are widely drawn to include safety management systems, plant and equipment hardware, and human factors behavioural elements;
- The board endorses the plan, reviews its progress, and ensures appropriate resource is committed to its delivery.

Review incidents from other companies and other sectors

- Company and its board are outward looking in terms of lessons from major accidents;
- A cross-industry approach is taken to learning the lessons from incidents;
- Programmes to implement lessons from major incidents are put in place and progress monitored by the board.

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