Ensuring that Multi National Company Process Safety Standards, Requirements and Recommended Practices are Complied with in All Parts of the Enterprise

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Most Chemical Companies create and maintain a set of Standards, Requirements and Recommended practices for Process and Occupational Safety. These augment the legal and industry consensus standards which exist. The process of creating, updating and maintaining these is a necessary commitment to Process Safety Management. The process of making sure that these are properly applied throughout the corporation is a very important task. Without this, all the other efforts fail. When accidents occur, it is occasionally found by the investigation that a requirement of the company has not been applied. In these cases, the root cause is found to be a failure in the implementation process. This part often turns out to be the most laborious of all. It is not enough to simply create a requirement or a recommendation and tell the organisation that it exists and they must apply it. When the topic has been researched within EPSC this has been cited as a problem. There have been particular challenges in the Mergers and Acquisitions field where an acquired facility has either continued to operate in ignorance or has not implemented necessary changes quickly enough. By breaking down the challenge into discrete steps with the issues elaborated for each, the EPSC study group has identified good practice and tools for creating, maintaining, implementing and compliance checking for each. This paper reviews these tools with a view to wider use and better performance.

1. Introduction

Most Chemical Companies create and maintain a set of Standards, Requirements and Recommended Practices for Process and Occupational Safety. These augment the legal and industry consensus standards which exist. The processes of creating, updating implementing these are necessary commitments to Process Safety Management. The process of making sure that these are properly applied throughout the corporation is a very important task. Without this, all the other efforts fail. When accidents occur, it is sometimes found by the investigation that a requirement of the company has not been properly applied. In these cases, the root cause is usually found to be a failure in the implementation process. This part often turns out to be the most laborious of all. It is not enough to simply create a requirement or a recommendation and tell the organisation that it exists and they must apply it. When the topic has been researched within EPSC this has been cited as a problem. Furthermore, Andrew Hopkins (ref1) has made it clear that there has sometimes been a drift from a strong rule based approach to a flawed application of risk assessment, leaving us vulnerable. The U. K. Health and Safety Executive has also implicitly stated that you cannot allow a risk assessment to avoid implementing acknowledged good practice.

There have been particular challenges in the Mergers and Acquisitions field where an acquired facility has either continued to operate in ignorance or has not implemented necessary changes quickly enough.

By breaking down the challenge into discrete steps with the issues elaborated for each, the EPSC study group has identified good practice and tools for creating, maintaining, implementing and compliance checking for each. This paper reviews these practices and tools with a view to wider use and better performance.

My experience may or may not be typical of our industry, but when it has been shared with other Process Safety professionals in different companies and countries, there seems to be a measure of consensus. Indeed, when the topic has been raised, some cite recent investigations which reveal that the system of Requirements, Standards and Recommended Practices within a company are not fully effective. Considering the amount of effort that goes into creating these, there is an evident challenge. So, how can examples give a pointer to the extent of the challenge?

As an example, in the mid 1970's a Chemical Company created a set of Requirements and Recommended Practices aimed at ensuring that these were implemented through the corporation. These parts of the 'Process Safety Management System' were drawn up by the (then) Safety and Loss Prevention function with advice from Technical resource departments and by reference to good industry practice. They were presented to the Vice President of Manufacturing for the company and endorsed for application. The Safety and Loss Prevention function then attempted with varying degrees of success to gain acceptance and conformity in the manufacturing divisions of the company. By the 1980s conformance with these was a generalised topic in audit. These audits probably did not go into sufficient depth to reveal shortcomings.

Was the system completely fit for purpose? In the late 1990s as a result of an incident where lack of understanding, acceptance and full implementation of technical requirements at a recent acquisition may have caused a severe incident, a full review and conformance programme was instituted.

When sharing experience among the EPSC group we found:

- In some cases the system of creation of Requirements and Recommended Practices had evolved in a haphazard way.
- Sometimes the operating facility staff did not know necessary detail of the Requirements and Recommended Practices. The range went from detailed knowledge to complete ignorance of even the existence of the system.
- Some facility staff believed that 'residual' locally created standards dating from the 1970s still applied. Although these had been drawn up in the enthusiasm of local EH&S people to show commitment to safety. These were 'localised' and seemed to have no real owner. They were often flawed and never benchmarked for applicability or suitability.
- People were confused about the nature of a Requirement and a Recommended Practice.
- Some felt it unnecessary to conform to a Requirement which seemed to have emanated from the desk of a 'safety department' with little understanding of the plant realities. 'Do I really have to do this?'
- Some 'end users' felt powerless to influence change and as a result selectively ignored requirements.
- Recommended Practices were seen to be an optional choice – a 'take it or leave it 'option. There were no mechanisms for explaining why a Recommended Practice was not followed or the justification of an alternative – and equivalent practice being followed
- Changes in technology were affecting the technical content of this part of the corporate management system but the custodians were very nervous about changing these foundations of Process Safety. So there was perpetual 'ratcheting up' of detail to be conformed with.
- When changes were made to the Requirements and Recommended Practices, justifying and communicating the changes was sporadic. No criteria were set to answer the question:
  - Is this requirement for existing facilities or for future projects? In other words, the 'retro-fit' question.
- Problems were occurring in newly acquired facilities where standards were lower and no programme had been established for improvement. In one case outside Europe, a company experienced a serious accident in a recently acquired company's flammable storage facility where a Recommended Practice had not been known by the operators.
- Joint ventures with other companies, sometimes with the minority asset owner operating to higher standards had proved a challenge but was usually properly handled and the higher standards adopted within a reasonable time frame.
- Most companies have a system of new project management which ensures that new facilities are in full compliance.

This seems to be a long list of deficiencies and challenges, but it is a combination of the inputs of many partners. Each is worth considering when we decide "What can we do about it?" This is how the EPSC group has addressed the challenges. The results of a survey of member experience is in an appendix which is in the oral presentation of this paper and available from Rgowland-epsc@icheme.org

2. What can we do about it?

CREATING THE REQUIREMENTS AND RECOMMENDED PRACTICES::

a) PROCESS SAFETY REQUIREMENTS:

- o The mandatory requirements for the technical and operational methods to manage Process Safety.
- o Application – company wide in all businesses.
- o Approved and resourced by company and business leaders
- o Describe what 'must be done' but leaves the detail on 'how' to the Recommended Practice or Guidance level.

Company Requirements and may exceed legal requirements in some countries. Over the last few years this has become a smaller issue as regulators learn and apply good practice from industry. An interesting question is now arising: If a country 'legal' requirement is different or apparently more 'stringent' than a company's norm:

What approach is needed?:
- Challenge the demand?
- Seek an alternative?

And,

If the country 'legal' requirement is applied in the country requiring it, should it affect the company's own requirement in other countries?
These are emerging questions and up to date, companies do not report any difficulties in this area. So far, company requirements mostly exceed those of the regulators.

b) RECOMMENDED PRACTICES:

he recommended methods by which the Requirements are implemented and managed. When implemented they ensure that <u>performance</u> is in line with requirements.

c) GUIDANCE and ACCEPTED/GOOD/BEST PRACTICE:

Guidance on methods by which the Requirements are implemented and managed. When implemented, they ensure that <u>performance</u> is in line with requirements. Examples (from literature, academia, benchmarking and consultation) of Accepted/Good/Best Practice are usually at this level.

How are each of these 3 level 'instruments' (a, b, c,) created?

- Cooperation between Process Safety Expertise, Process Design, Technology Expertise, EH&S Legal Compliance expertise, Operations Technical and Technology Leadership.
- Technical Leadership: by Process Safety Expertise. This process must include a practicability check (i.e. Is implementation practical? Are all affected facilities capable of implementation? What opportunities are there for feedback and adjustment?)
- Resources needed: International Standards, Legal Requirements, Technical Literature, Company Expertise and experience, Process Technology Benchmarking with similar industry. We should ask the question: Is an industry (or company) published practice the most efficient way to achieve our goals? Examples include IEC 61511, API 752.

3. How are the Requirements and Recommended Practices adopted and endorsed?

Process Safety Requirements endorsed, supported and resources by the company leadership.

What is the process for top level and business approval?

Standards are formally presented at a specific 'workshop' for the company leadership where:
- Technical and managerial issues
- justification,
- impact assessment
- Resource needs
- Decisions on Retrofit or not?

are fully understood and accepted. This proceeds to validation and mandating at company leadership level based on the results of the standards created.. This approval is made clear to each business unit of the company by their leadership.   This results in the businesses 'pulling' on the Process Safety Expertise function to help them implement something that has already been accepted by their business leadership. When this is done, the whole process of managing Requirements is transformed.

3.1 Communicating and Training

Probably, the most important part of this is to make sure that the engineers at facilities understand the system OF Requirements and Recommended Practices. Training requirements should be relatively routine since the Requirements and Recommended Practices should be clear enough to leave no space for misunderstanding. Most companies include such training for plant based operations engineers. A good self assessment tools should augment the knowledge of a user.

4. Ongoing Management of Requirements and Recommended Practices

Generally updating the instruments will be carried out by a team similar to that which created them. A key aspect of this will be to take opportunities for feedback from users and clear statements about retro fit. policy.

4.1 Variance Process

A 'variance' process is used by some companies. This allows a user to propose a waiver of application of a particular requirement at a facility or within a business section. Alternative and technically equivalent methods may also be approved. In all cases, companies report that they require proper technical and senior management approval and periodic renewal of authorisation for such matters.

4.2 Application to newly acquired facilities

This remains a challenge and needs to be formalised. Ideally Process Safety expertise needs to be involved at the Due Diligence which precedes an acquisition. At that stage a preliminary gap assessment can be made. This is seen as an essential step since the cost of closing the gaps will affect the economics for the enterprise. This would seem a simple and obvious step, however, since most acquisitions are made for commercial reasons resistance sometimes is encountered because of (probably spurious) confidentiality issues and a belief that Process Safety expertise will kill the economic case by demanding a 'gold plating' upgrade.   The period allowed for compliance to be complete should be set. Companies quote periods of (typically) 3 years for those requirements not requiring significant capital expenditure. For those requirements needing significant investment, the project process would be started within the 3 year period.
In many cases, the two way transfer of technical and other staff assists the transformation process.

4.3 Joint Ventures

These can in principle be treated similarly to acquired facilities. EPSC members report that Joint Ventures do not normally present problems. Those companies who were in joint ventures where they were in the position of minority owner report that they had few difficulties in enforcing the right standards.
We cannot assume that acquired facilities always have inferior systems. In one merger event, it became clear that the 'junior' partner in some areas needed to upgrade their Process Safety, but in other important areas their systems were superior. This motivated changes for both divisions of the merged company.

4.4 Checking Degree of Compliance

This is a crucial area for attention. If a proper management process is in place, this should be straightforward, although it seems to fail more than it should. Self Assessments should be guided by simple tools such as those illustrated in the appendix which is in the oral presentation of this paper and available from Rgowland-epsc@icheme.org

One company reported a dramatic change in the understanding of Requirements and Recommended Practices by users immediately they were presented with self assessment tools. These described the Requirement and Practice which should be in place and required an entry.

For each technical description.

    e.g.
- Ball and Plug valves in flammable service are 'FIRE SAFE' to a specific national standard:
- There is an up to date (reviewed in the past 3 years) plot plan indicating the hazardous areas in the facility (ref ATEX).

The answers provided by the engineers at the facilities:
- Fully complied with? yes/ no
- Current Variance/waiver in place? yes/no
- Description of approved alternative method
- Not applicable in this technology? n.a.

Using a simple Excel spreadsheet to track:

- Progress of review of all practices
- Degree of compliance
- Status of 'variance' or waivers

Is easily accomplished. An example is which is in the oral presentation of this paper and available from Rgowland-epsc@icheme.org

5. Audit

The audit will normally assess the 'health' of the Process Safety Management System and its key requirements. If there is no self assessment process, this places a heavy burden on the auditors. They will need to check compliance down to the detail level. In the case where there is a current formal self assessment, they will be able to check the statistics and results from it. They will then need to 'deep drill' specific topics which can be selected based on:

- The self assessments sent to the auditors as preparation material
- Previous audit results
- Process Safety Incident record for the audited facility
- Impressions gained from the physical examination of the facility
- Aspects of the facility or technology demanding extra attention – selected by Technology Expertise for the manufacturing unit
- Incidents which have occurred in similar technology inside or outside the corporation.

6. Summary and Conclusions

From discussions within EPSC it is clear that there is no instant solution to a recognised problem like this. However, diligent application of the principles described will improve performance. It is agreed that involving plant based engineers and the shift operators in the process of checking, for example in self assessment, brings remarkable benefits in understanding and compliance.

For a large company, all this might seem straightforward. For Small and Medium Enterprises this remains a problem. They rarely develop their own system and they appear to be 'reactive' in the sense that when a

problem occurred, they would ask other companies how they managed a specific issue, engage consultants or carry out literature research. The results do not look like a coherent part of a Safety Management System. EPSC still sees this as an area where help is needed.

There exist a number of resources on the web which allow SMEs to access and adapt well established Process Safety Management Systems and the details which support the. Examples include www.promis.eu/uk/ and , S2S. www.safety-s2s.eu/   There is scope for creating more technical content in these low cost or free resources. Their managers are committed to this task.

Reference

Risk-management and rule-compliance: Decision-making in hazardous industries: Andrew Hopkins (ELSEVIER Safety Science 49 (2011) 110–120)