ARE WE DOING ENOUGH TO PREVENT MAJOR ACCIDENTS?

Following process safety accidents such as Deepwater Horizon and Buncefield, it's convenient to think that such equipment failures and errors by operating staff could not happen on our facilities. Concerned about such complacency, the HSE issued the following challenge to all those that work in the major hazards sector, from the boardroom downwards:

1. Do you know what can go wrong,
2. Do you know what the systems are to prevent this happening,
3. Do you have information to assure yourself that they are working effectively?

The offshore sector has been leading the way with the concept of barrier management, but a real challenge remains to identify those 'safety critical elements' that prevent and mitigate major accident hazards, devise suitable performance standards, and then implement effective monitoring of performance to ensure barriers are not impaired.

Improved barrier management arrangements are now set against a backdrop of rapidly falling oil prices. In such circumstances an obvious cost saving measure is to reduce discretionary spending by cancelling or postponing planned work. Writing in The Chemical Engineer (Issue 884, Feb 2015), HSE Chair Judith Hackitt gives a stark warning with, "I want all industries dealing with process safety to avoid writing tomorrow's headlines today", and "safety must not be compromised, even in hard times". Senior Managers need to be reminded of the massive cost implication of process safety accidents that can threaten the existence of the company, with many now referring to such events as 'billion pound incidents'. However, in these cost conscious times those with a responsibility for process safety should be questioning whether current methods are achieving efficient risk reduction for the money being spent.

Retrospective hazard reviews are an effective way of revalidating process safety risk assessments on existing facilities, achieving continuous improvement where performance can otherwise start to fall away. If done effectively, these reviews can identify impairments to barriers requiring urgent attention and provide information for subsequent barrier management improvements. It is essential to tap into the wealth of experience gained by operations and maintenance staff, building on the design basis knowledge of technical staff. Traditionally companies have used familiar HAZOP studies for such reviews, but these can become bogged down by the level of detail and hence time required, testing the ongoing availability of busy operations staff. An alternative approach uses a higher level HAZID or Process Hazard Review (PHR) technique, progressing system-by-system and looking for hazardous events associated with loss of containment or release of energy.

Whichever technique is used, the quality of the study and report needs to be given special attention. Such reviews should not be seen as a 'box ticking' exercise to get the job done as quickly as possible, but instead should be treated as a golden opportunity for identifying opportunities to reduce risks. Getting a highly experienced team with operational knowledge, led by a specialist and independent facilitator is crucial. Preparing a ‘Terms of Reference’ document to detail how the review will be conducted and recorded is seen as best practice, and this should be referred to by the review team and used to audit the quality of the records. Recommendations are the key output from the review, and there is a history of these not being implemented or the actions not addressing the original concerns. Writing clear and unambiguous recommendations using the ‘what-where-why’ format goes some way to addressing this problem, plus an effective action close-out process recognising the effort that is needed to turn recommendations into SMART actions.

So what is done once the review has been completed, certainly not wait for 5 years until the next revalidation is required. In addition to closing out recommendations effectively, a number of follow up studies may well be required, such as; LOPA, Pressure relief and SIS verification, alarm management, Bow Ties, etc. The records should be kept ‘evergreen’ as a living document on the facility, with updates based on implementing actions and as part of management of change. Deep dive audits provide a test of barrier robustness for selected Major Accident Hazards. These audits focus on safety critical barriers, and carry out in-depth checking of plant-process-people arrangements based on checking of records, discussions with key staff, and site based inspections.

So should we be looking to delay essential process safety studies until better times? My advice is to improve the efficiency of reviews to ensure improvements are genuinely risk based, and avoid being overtaken by far more serious events which may cause any further reviews to become unnecessary.

— G Ellis, ABB Consulting
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