Process Safety Performance Indicators (PSPI) Health check

The accidents at Texas City and Buncefield have highlighted the importance of monitoring process safety performance using both lagging and leading indicators. The HSE had an intervention programme to ensure that all COMAH top tier sites were using PSPIs effectively by April 2011. This deadline has now passed and many companies still have the following concerns regarding their current PSPIs:

- Difficulty selecting effective indicators
- Not targeted towards process safety risks
- Cannot be collected and monitored efficiently
- Not effective in terms of changing behaviours
- Too many indicators causing a lack of focus
- Current system has failed an HSE assessment
- Difficulty complying with corporate requirements

The process safety pyramid (figure 1) shows how effectively monitoring failures in risk control and Process Safety Management (PSM) systems can reduce demands on safety critical equipment and ultimately reduce the potential for loss of containment leading to accidents causing serious harm to people or the environment. This is similar to the proven approach for occupational safety where serious injuries can be prevented by monitoring near misses. The challenge with PSPIs is to select a manageable set of PSM system indicators that measure areas of current weakness and drive short-term improvement in process safety performance.

Why ABB?
ABB offers a structured PSPI health check service to develop a set of key leading and lagging PSPIs for companies operating major accident facilities, as outlined on the flow diagram (figure 2).

The methodology meets HSE guidance as outlined in HSG254 and other published guidance from CCPS and API.

The ABB approach uses an experienced site based team led by an independent and competent ABB specialist. Having understood the nature of hazardous substances on site, a checklist is used to identify the key major accident hazards and their associated risk control systems. The site history of process safety incidents are then discussed to assess the root causes and identify weaknesses in risk control systems.

Develop a set of SMART leading and lagging performance indicators targeted at improving process safety performance on your site.
A list of potential leading indicators are narrowed down to a selection of key indicators for short-term focus, by applying a test of SMARTness (figure 3). ABB provides assistance with the selection of appropriate indicators to meet corporate reporting requirements. These are generally based on lagging indicators associated with events involving loss of containment of hazardous substances or demands on safety critical systems. Threshold quantities for losses will be based on industry guidance and advice given on the selection of safety critical systems for inclusion in the monitoring process.

Following the selection of leading and lagging PSPIs, ABB can provide further support as required to set up the monitoring systems, provide training, analyse results, periodically review and refresh the indicators, and set up a PSM system to manage the overall PSPI process on your site.

Benefits
- Reduced risk of incidents
- Meeting HSE requirements through the demonstration of structured approach
- Set of SMART leading PSPIs that can be efficiently collected and reviewed
- Selection of lagging indicators based on published guidance meeting corporate reporting requirements
- Management procedure to periodically review and refresh PSPIs

Why ABB?
ABB are highly experienced in assessing process safety risks on existing facilities by tapping into the knowledge of experienced operating staff. Having worked in all sectors of the process industry, ABB is well positioned to offer advice in selecting PSPIs and efficiently managing the system based on published guidance and relevant good practice.

We are leading process safety experts, having developed and run a variety of process safety training courses.

Because of our involvement with industry bodies, we have a deep knowledge of global safety standards and legislation.

We can also support customers in implementing recommendations by calling upon our broad range of inhouse expertise.

Above: Figure 3 - SMART.