

## **Some examples of PSPIs & insight into HSE's approach to inspection of same**

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### **Background**

- Unacceptable level of process safety related Dangerous Occurrences especially in relation to loss of containment incidents
- Major Hazard Industry measured safety by using Lost Time Injury Rates
- BP Grangemouth Report highlighted weakness in adopting right measures.

## PSPIs



- **Leading indicators:**
  - Active monitoring of a few critical RCSs
  - Require a routine systematic check that key actions are undertaken as intended
- **Lagging indicators:**
  - Reactive monitoring of specific incidents/events
  - Show when a desired safety outcome has failed or has not been achieved

## Recap of PSPI process



1. Identify main process safety risks from the MH scenarios assoc with the site
2. Identify main risk control systems for each of the above scenarios
3. Then consider the following:-
  - a. Why is that RCS in place?
  - b. What does it deliver in terms of safety?
  - c. What would be the consequence if you didn't have the RCS in place?



## Recap of PSPI process cont<sup>d</sup>

4. Describe an outcome for each control system
5. Identify the key elements of each RCS that are necessary to deliver the outcome
6. Choose indicators to monitor the effectiveness of these elements
7. Set a tolerance for each indicator



## Examples of PSPIs

### **Activity:**

- Bulk tank overfilling

### **Lagging indicator:**

- Number of times the tank is filled above the safe operating limits

### **Leading indicator:**

- Number of times ullage checks not done correctly before product transfer begins
- Number of times inspection and maintenance of tank gauging system not carried out to required frequency

## PSPI examples cont<sup>d</sup>



### Activity:

- Leaks from pumps

### Lagging indicator:

- Number of detectable leaks from pumps due to seal failure

### Leading indicator:

- Number of product pump vibration checks undertaken to schedule
- Number of remedial actions that are raised following vibration monitoring which are not completed on time

## PSPI examples cont<sup>d</sup>



### Activity:

- Competence

### Lagging indicator:

- No safety incidents as a result of human error

### Leading indicator:

- Number of times when a checked action/performance deviates from the intended action

## PSPI examples cont<sup>d</sup>



### Activity:

- Permit to work

### Lagging indicator:

- Number of accidents/incidents that can be attributed to/occurs during non-routine work

### Leading indicator:

- Number of times when work under a permit is checked to establish that it is being carried out in accordance with the permit
- Number of times when the PTW form is not correctly handed back within the designated time period

## PSPI examples cont<sup>d</sup>



### Activity:

- PTW

### Lagging indicator:

- Number of adverse incidents/deviation from PTW/attribution to PTW

### Leading indicator:

- Number of times job request does not adequately describe scope
- Number of times the isolations are not done correctly
- Number of times the de-isolations are not done at the right time, in the right sequence, or done completely

## PSPI examples cont<sup>d</sup>



### Activity:

- Road tanker drive away

### Lagging indicator:

- % of times/yr a road tanker leaves the fill point without the fill hose & sample hose disconnected

### Leading indicator:

- % of the tanker lifting arm mechanisms inspected and tested on schedule

## PSPI examples cont<sup>d</sup>



### Activity:

- Contractor activities on site

### Lagging indicator:

- Number of times contractors act unsafely or their acts impact adversely on operations

### Leading indicator:

- % of contractors who undergo spot-check who understand the site rules & the hazards/risks relating to the work they are carrying out on site and who have also read, understood & signed the method statement relating to their task

## PSPI examples cont<sup>d</sup>



### Activity:

- Loss of containment from lines, valves, pumps

### Lagging indicator:

- Number of leaks of flammable liquid from lines, valves, pumps or filters

### Leading indicator:

- Number of times leaks not isolated 'immediately' once it has been reported

## PSPI examples cont<sup>d</sup>



### Activity:

- Management of change

### Lagging indicator:

- Number of times following a plant change there is a challenge to the integrity of the plant, eg increase in pressures, human errors, etc resulting from the change

### Leading indicator:

- Number of changes (to plant, process, operational practices, competence) undertaken which do not go through formal change procedure
- Number of changes which are undertaken where risk assessment not fully completed



## What is HSE looking for?

- How do you know your key risk control systems are working?
- Does your system give:-
  - direct information on the outcomes of the process management system?
  - Detect deteriorations?
  - Identify areas for improvement?



## What is HSE looking for cont<sup>d</sup>?

- That the site is developing & implementing PSPIs
- That senior managers are routinely receiving information on process safety performance
- Discerning if PSPIs are set at:
  - Installation
  - Site
  - Organisational level or
  - A combination

## What is HSE looking for cont<sup>d</sup>?



- How was the scope of the measures set, is it based upon:-
  - Process safety and major hazard risk profile?
  - Where greater business assurance required?
  - Improvement programmes?
- Are both leading and lagging indicators set?

## What is HSE looking for?



### Commitment & leadership cont<sup>d</sup>:

- Management that:
  - Participate in developing indicators & setting tolerances
  - See & act upon the information provided

## What is HSE looking for cont<sup>d</sup>?



### **Commitment & leadership:**

- Directors & managers who are actively involved in risk management
- Senior managers that understand performance management & its benefits
- The use of performance indicators to show the status of process safety management
- Evidence of clear actions being taken to make improvements based on the information received

## What is HSE looking for cont<sup>d</sup>?



- During the course of their normal interventions with sites during 2009, local HSE inspectors will be talking with operators about their progress with developing an initial suite of PSPIs
- Work to develop the initial, trial, suite can take up to six months.
- 'Awareness Raising' and 'Advice' modes by HSE at this stage in the roll out of PSPIs.

## Syndicate work



- CIA/HSE workbook
- MAH identified for your site
- HSG254
- Working lunch
- 🕒 14:30hrs