Health and Safety Executive

Competence Management Systems Inspection

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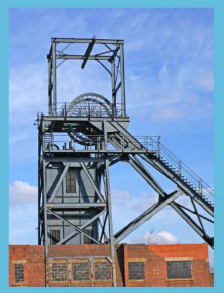
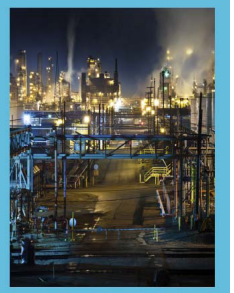
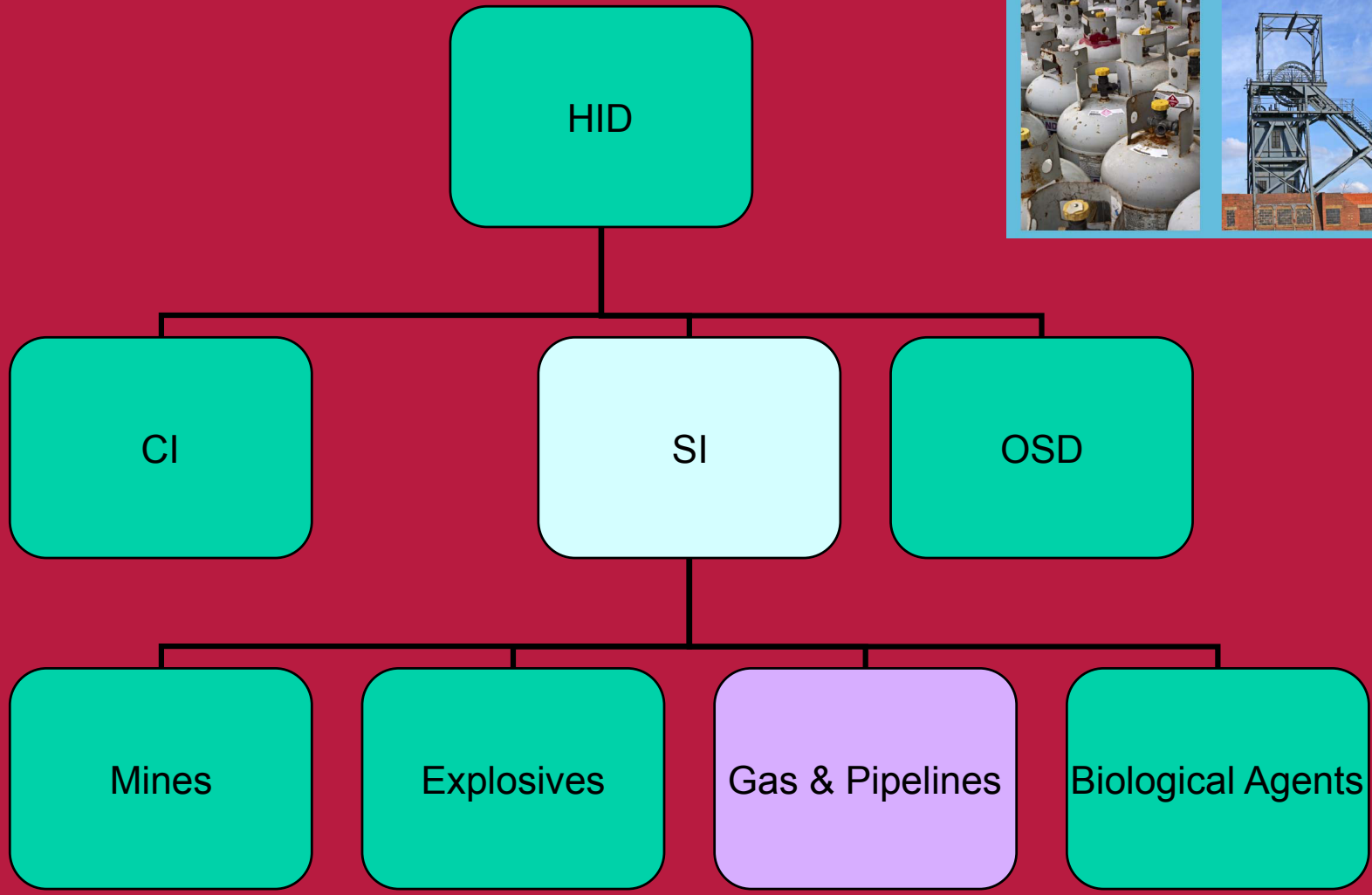
HID Specialised Industries Strategy

HID Specialised Industries





Underlying Causes of recent worldwide Major Accidents – from a HSE ND Research Report Nothing new but…..

- Major accidents in the major hazard industry are rare, not least, because significant effort has been spent on designing and operating plant to minimise the risk of such events.
- Nonetheless, in the last decade there have been several incidents which provide further learning to continue the process of risk reduction.
- Some of this learning relates to technical and procedural issues.
- However, maintaining high levels of safety requires also the **understanding of causes involving more deep-seated and complex issues relating to organisational and cultural shortcomings**.

Port of Ramsgate walkway collapse
14 Sept 1994

A steel pin holding a passenger walkway came loose as hundreds of people were boarding the Prins Filip ferry from Ramsgate to Ostend.

As the walkway collapsed, more than a dozen people were sent plunging onto a steel platform 30ft below.

Six people died and seven were seriously injured.

Heathrow Express NATM tunnel collapse during construction (October 1994)

Tunnel Collapse, during London Underground extension project.
Cost of recovery £150 million
No loss of life.
6 months delay to project
Successful HSE prosecution
Fines totalling- £1.7million.

Longford gas plant explosion (Australia, September 1998)

The 1998 Esso Longford gas explosion was a catastrophic industrial accident which occurred at the Esso natural gas plant at Longford in the Australian state of Victoria's Gippsland region.
On 25 September 1998, an explosion took place at the plant, killing two workers and injuring eight. Gas supplies to the state of Victoria were severely affected for two weeks

Hatfield railway accident (October 2000)

A GNER InterCity 225 train bound for Leeds had left London King's Cross at 12:10, and was travelling at approximately 115 miles per hour (185 km/h) when it derailed south of Hatfield station at 12:23.

The primary cause of the accident was later determined to be the left hand rail fracturing as the train passed over it.

The accident killed 4 passengers and injured a further 70.

Loss of the Columbia Shuttle (USA, February 2003)

The Space Shuttle *Columbia* disaster occurred on February 1, 2003, when the Space Shuttle *Columbia* disintegrated over Texas stretching from Trophy Club to Tyler and into parts of Louisiana during re-entry into the Earth's atmosphere, resulting in the death of all seven crew members, shortly before it was scheduled to conclude its 28th mission.

Texas City oil refinery explosion (USA, March 2005)

On March 23, 2005, a fire and **explosion** occurred at BP's Texas City Refinery killing 15 workers and injuring more than 170 others.

BP was charged with criminal violations of federal environmental laws, and has been subject to lawsuits from the victim's families.

The Occupational Safety and Health Administration slapped BP with a then-record fine for hundreds of safety violations, and subsequently imposed an even larger fine after claiming that BP had failed to implement safety improvements following the disaster.

Underlying Causes of recent worldwide Major Accidents – from a HSE ND Research Report

- **ALL of the events studied have shortcomings in competence as an issue.**
- In some events, there was a gradual erosion of competence and a lack of **process-related knowledge**. This was not identified because of **a failure to review** competencies for process safety on a regular and systematic basis – particularly during or following major organisational change. This relates to positions at **all levels** in the organisation and often includes **contractors**.

Underlying Causes of recent worldwide Major Accidents – from a HSE ND Research Report

- **ALL of the events studied have shortcomings in competence as an issue.**
- There is a need to ensure that **senior managers and organisational leaders** have **sufficient understanding of the risks** which they are seeking to manage and to ensure that the consequences of failing to do so has been highlighted.
- *What is a safety critical role? Is it your MD/CEO?*

Underlying Causes of recent worldwide Major Accidents – from a HSE ND Research Report

- **ALL of the events studied have shortcomings in competence as an issue.**
- Some events studied highlighted the need for front line staff and their supervisors to have a **greater understanding of process safety risk** and an ability to **recognise when abnormal and potentially dangerous situations are developing**. In these situations they need to be able and willing to draw on competent specialist support.

Underlying Causes of recent worldwide Major Accidents – from a HSE ND Research Report

- **ALL of the events studied have shortcomings in competence as an issue.**
- In some events, training was **superficial** and based on a ‘tick box’ approach without adequate planning, assessment and direct personal support to ensure a **deeper understanding of principles and the underlying issues**.

Underlying Causes of recent worldwide Major Accidents – from a HSE ND Research Report

- **ALL of the events studied have shortcomings in competence as an issue.**
- Technical competence is vital but issues relating to **non-technical capabilities** such as communication, team working and issues relating to safety culture (such as the need for a questioning attitude and the importance of reporting and learning from events and precursors) in some cases did not receive the necessary attention.

GHISLENGHIEN – July 30th 2004

The scene of one of Belgium's worst ever industrial disasters

Around 8:30am workers constructing a new factory reported a strong smell of gas.

Escape from a high-pressure underground pipeline, buried 6m underground carrying natural gas at 60 bar from Zeebrugge to France, operated by gas transportation company Fluxys.

Killed 24 people and injured 132

Competence?

Buncefield Oil Storage Depot, Hemel Hempstead, 11th December 2005

Buncefield Oil Storage Depot, Hemel Hempstead, 11th December 2005

In the early hours of Sunday 11th December 2005, a number of explosions occurred at Buncefield Oil Storage Depot.

At least one of the initial explosions was of massive proportions and there was a large fire, which engulfed a high proportion of the site.

Over 40 people were injured; fortunately there were no fatalities. Significant damage occurred to both commercial and residential properties in the vicinity and a large area around the site was evacuated on emergency service advice. The fire burned for several days, destroying most of the site and emitting large clouds of black smoke into the atmosphere

COMAH Control of Major Accident Hazards

Buncefield: Why did it happen?

The underlying causes of the explosion and fire at the Buncefield oil storage depot, Hemel Hempstead, Hertfordshire on 11 December 2005

Report published 15th Feb 2011

At the core of managing a major hazard business should be clear and positive process safety leadership with board-level involvement and **competence** to ensure that major hazard risks are being properly managed.

Buncefield – Why did it happen?

Safety management systems at the HOSL site were embedded in the safety report that is required to be produced for a top-tier COMAH site.

The safety report was therefore a vehicle in which HOSL could, and indeed did, set out their principles for managing the major hazard aspects of their operations.

However, what was set out in the document and the safety management systems did not reflect what actually went on at the site.

Buncefield – Why did it happen?

Further, the safety management system **focused too closely on personal safety** and lacked any real depth about the **control of major hazards**, particularly in relation to primary containment.

The Buncefield explosion was therefore further evidence that the major hazard industries had still not taken on board vital lessons.

This document aims to reinforce previous findings and **serves as a further stimulus to improvements in process safety leadership**; health, safety and environmental management; and control of major accident hazards.

What is competence?

- HSE definition
  - "the ability to undertake responsibilities and to perform activities to a recognised standard on a regular basis".

- It comprises a combination of **practical and thinking skills**, **experience** and **knowledge** and can also include a **willingness** to undertake work activities in accordance with standards, rules and procedures.

HSE HID SI Competence Management Systems Focus

- Currently in “Pilot Phase” –
  - Top 10 UK mines
  - COMAH TT Explosive sites
  - COMAH TT Gas Terminals / Stirage Sites
  - CL4 Laboratories
- Human Factors Input from,
  - HSE HF Specialists, (Nick Dickety, John Wilkinson)
  - AB Risk Ltd,
  - Human Reliability Associates (HRA)
- Will be adopted by HID CI in April 2012 (COMAH)

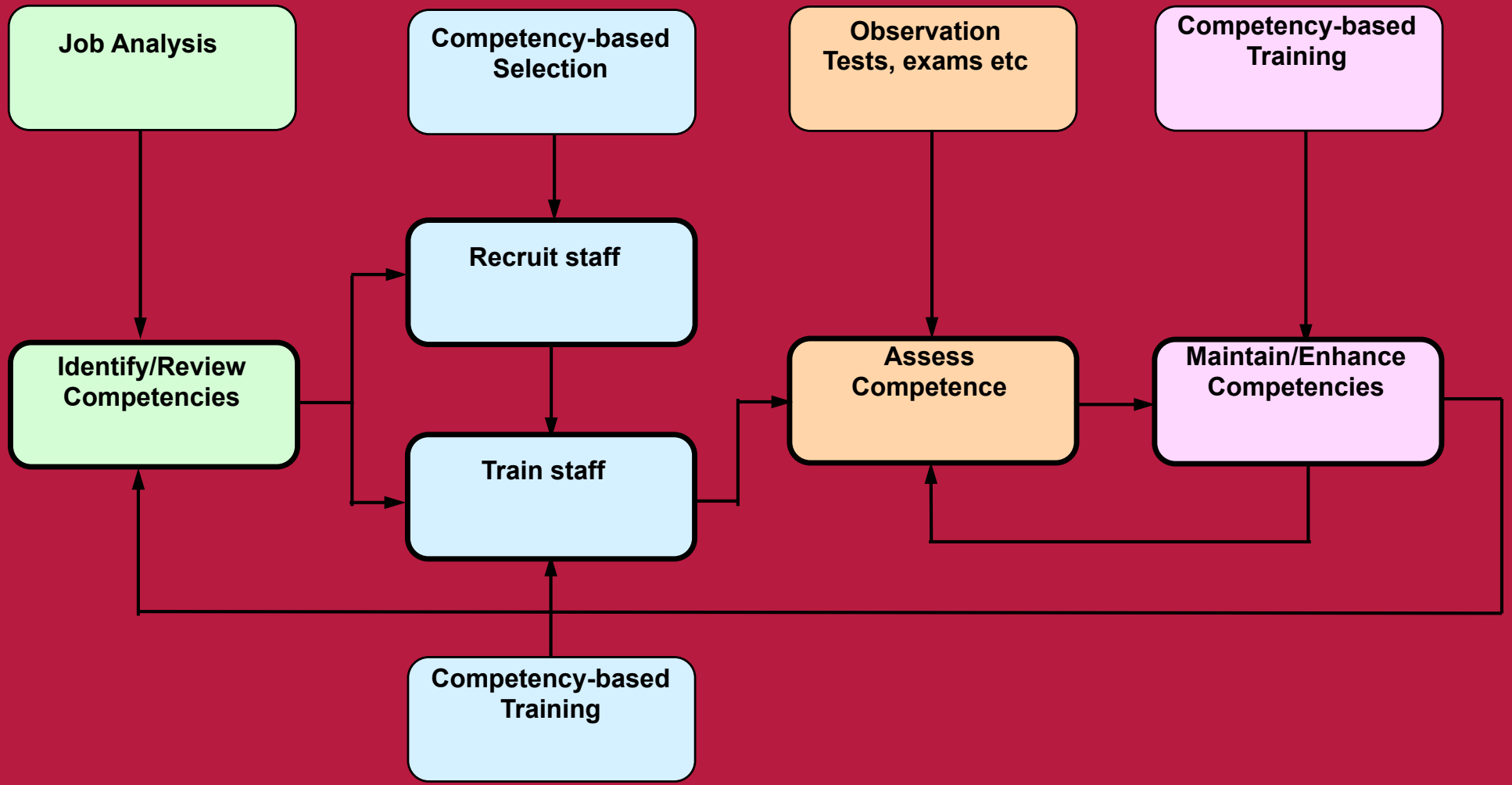
HSE HID SI Competence Management Systems Focus

- Delivery Guide

- To be published (internally & externally) in April 2011
  - Inspector Toolkit
  - Question set / Aide Memoire
  - Based on 4 fundamental elements of a Competence Management System

- Will be adopted by HID CI in April 2012 (COMAH)

4 Elements of a Competence Management System



4 Elements of a Competence Management System

Competency based **Job Analysis**

Competency based **Selection**

Competency based **Assessment**

Competency based **Training**

Job Analysis

- Competency criteria (framework or matrix) for safety critical posts, through job analysis
  - task analysis,
  - job sampling,
  - verbal protocol analysis etc
- Firm link to MAH potential – generic job descriptions not sufficient.
- Reference to MAPD / Risk Assessment is crucial
- Identification of safety critical tasks
- Competence matrix MUST be relevant to “local context”

Selection – Recruit & Train

- Is accurate competency criteria used as a basis for selecting and recruiting staff into these safety critical roles
- Systematic approach to matching – physical and mental attributes
- Training Needs Analysis - MAH potential essential part
- Relevance of past experience
- Sitting by Nellie / off job training
- Success measure?
- Individual / team training
- Training of instructors

Assessment

- Measuring operator performance
  - simple written or verbal tests of knowledge,
  - observing people using a skill whilst working,
  - collecting evidence of work for examination (written or physical items), or
  - setting up an assessment exercise to test how they act and respond to a situation
- Who can assess competence?
- How often should assessment be undertaken?

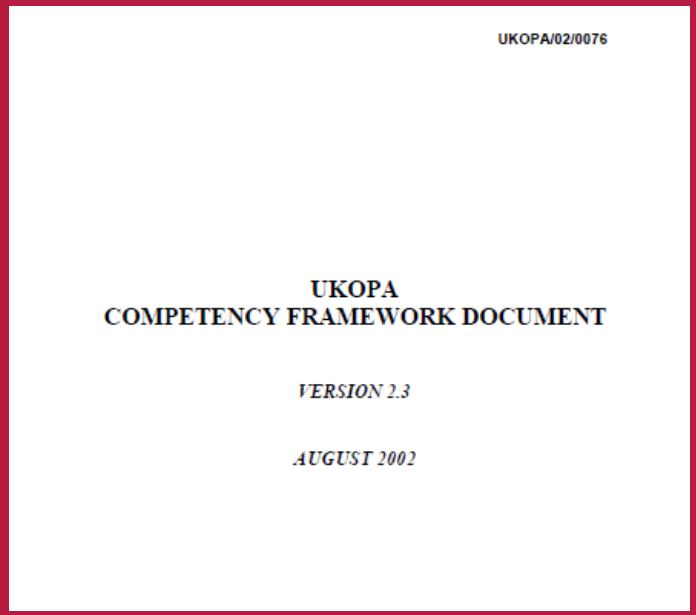
Training

- Maintaining and Enhancing competencies
- Refresher training for infrequent or rarely performed safety critical tasks.
- Update training
- Record Keeping
- CPD

Competency Management System

- Who should be involved in managing the CMS?
- Audit & Review of CMS

UKOPA Competency Framework Doc - UKOPA/A02/0076 – August 2002


UKOPA/02/0076

UKOPA
COMPETENCY FRAMEWORK DOCUMENT

VERSION 2.3

AUGUST 2002

No conflict between this and the HIDSI DG

- Different focus
  - focus on what a Competent Person looks like, as opposed to what a Competent Management System looks like
- Essential framework document for members to use in considering specific competency matrices for their safety critical tasks / roles
- Potentially more focus on “softer” competencies as opposed “hard engineering technical competencies”.

Competency Management System – rating duty holders performance

Performance Assessment

Each risk control topic should be assessed against the following performance criteria, a score of 20 or 10 must satisfy all specified criteria.

60	50	40	30	20	10
Unacceptable	**Very Poor**	**Poor**	**Broadly Compliant**	**Fully Compliant**	**Exemplary**
Unacceptably far below relevant minimum legal requirements. Most success criteria are not met. Degree of non-compliance extreme and widespread. Failure to recognise issues, their significance, and to demonstrate adequate commitment to take remedial action.	Substantially below the relevant minimum legal requirements. Many success criteria are not fully met. Degree of non-compliance substantial. Failures not recognised, with limited commitment to take remedial action.	Significantly below the relevant minimum legal requirements. Several success criteria are not fully met. Degree of non-compliance significant. Limited recognition of the essential relevant components of effective health and safety management, but demonstrate commitment to take remedial action	Meets most of the relevant minimum legal requirements. Most success criteria are fully met. Degree of non-compliance minor and easily remedied. Management recognise essential relevant components of effective health and safety management, and commitment to improve standards.	Meets the relevant minimum legal requirements. All success criteria are fully met. Management competent and able to demonstrate adequate identification of the principal risks, implementation of the necessary control measures, confirmation that these are used effectively; and subject to review.	Exceeds the relevant minimal legal requirements. All success criteria are fully met. Management competent, enthusiastic, and proactive in devising and implementing effective safety management system to 'good practice' or above standard. Actively seek to further improve standards.
EMM Risk Gap					
EXTREME	**SUBSTANTIAL**	**MODERATE**	**NOMINAL**	**Not applicable**	**Not applicable**
Initial Enforcement Expectation					
Formal enforcement Notice and / or Prosecution.	Formal enforcement Notice / Letter.	Letter / IN.	Verbal instruction / letter.	Verbal instruction may be appropriate.	No further action is necessary

Initial Enforcement Expectation is dependent upon the authority of the relevant standards applicable to the areas of non-compliance.
Actual enforcement conclusion is dependent upon Duty holder and Strategic factors as per HSE's Enforcement Management Model.

Main Messages

- Ineffective competence management continues to be prevelant in MAH industries
- Need for DHs to ensure sufficient focus
- HSE will commence CMS inspections in April 2011
- Potential enforcement
  - MHSWR99 Reg 5 – appropriate arrangements
  - HSWA74 Sec 2&3 – ensure SFAIRP
  - COMAH99 Reg 4 – all necessary measures

Main Messages

- DHs should focus on whole CMS not restrict to individuals' competencies
- Competencies **MUST** link to MAH potentials (process safety focus)
- Consideration of "Softer" competencies
- How are you maintaining and enhancing competencies?
- Is there an "observation" element of competency assessment? – safety critical, and infrequent tasks.

Challenges

- Consider senior managers / those who set strategic direction as safety critical roles.
- Monitor / assess peoples “willingness” to do the job.
- Audit and review of the competence management system

Questions,

comments,

observations