

Thank you – Yes, I'm Kevin Allars, Head of HSE's Chemical Industries Division. I run a Division of 240 staff (150 of which directly regulate the 1100 onshore sites in the COMAH sector plus the 8000 or so onshore sites that are classified by HSE as sub-COMAH, many of which have inventories of similar products that could still have a significant incident.

HSE is very keen to not only learn itself from accidents across the major hazard sectors, and to promote increased sharing and learning, but also to encourage and stimulate the **industry** to share such knowledge and experience. So thank you for the invitation to keynote this very timely and well supported seminar on learning lessons from major accidents.

The central aim of HSE's Major Hazards Strategic Programme is for Great Britain to lead the world in the control of major hazard risks. Unfortunately we are not there yet, and we must all continue to strive for that goal.

Underpinning that central aim are three key objectives guiding the work of my own Chemical Industries Division:

- Firstly to reduce the probability of a major hazard accident through interventions under the COMAH Regulations
- Secondly to work with industry and other stakeholders to ensure that people leaving work at the end of the day do so in at least as good a state of health as when they started work that day
- and Thirdly to provide advice on Land Use Planning issues on the basis of risks to people offsite from on-site operations

My staff cannot achieve such aims alone, and the legal framework in this country makes it very clear that those who create risks and benefit from using the products created by those processes have the responsibility to demonstrate that risks are being effectively managed and properly controlled. My job is to ensure that you do it.

Turning to 'learning lessons', there is much already being done by HSE in partnership with industry and other stakeholders to improve future performance on the basis of applying the lessons from accidents.

- we have played a leading role in recent years in developing tools to assist industry in the task of ensuring risks are effectively controlled
- our work with stakeholders to promote board level leadership and director responsibility
- our research to better understand the importance of a positive safety culture as a key component in ensuring safety
- and the development of new guidance to assist industry in formulating leading performance indicators.

I'll return to these points later. However, a fundamental step to enable industry and regulators to become truly learning organisations is a change in culture. It requires an open, questioning mind, where established ways are challenged, and where major accidents are viewed as learning opportunities, rather than assuming events elsewhere are 'not relevant here' or 'could not happen here'.

There have unfortunately been too many serious accidents around the world in recent years, and several in highly regulated industries and involving companies or facilities that were considered to be high performers. Thankfully most of those in our major hazard onshore sector in this country have had little direct effect on human life, but I would challenge anyone

that said that in many cases we have not been lucky with 'when' and 'where' those incidents occurred.

Offshore, the recent sad events regarding the Bourbon Dolphin has brought home to those that didn't already know it the hazards of working many miles offshore in potentially very hazardous environmental conditions, let alone the hazardous operations undertaken offshore day on day, with nowhere to run to if things go wrong.

You've today a tremendous opportunity to listen, learn, interact, and then improve from experiences that others have had both onshore in chemical, oil and nuclear industries, and also from offshore accidents. Please don't waste that opportunity.

Turning to some of the recent onshore events, there are several common threads that sadly continue not to be learnt:

BP Grangemouth refinery (as it was) – major explosion in the cracker in 2001

- concentrating on H&S measures, not Process Safety measures
- lack of investment
- many issues repeated later at BP Texas City

ConocoPhillips refinery – leak of LPG from a fractured pipe (following undetected corrosion)

- poor management of change arrangements
- lack of understanding across the business of degradation versus operating procedures
- communications breakdown between operations, maintenance and inspection staff

British Nuclear Group THORP plant (at Sellafield) - leak of radioactive liquor inside a shielded facility

- design inconsistencies and poorly installed modifications
- cultural shortcomings – with the condoning of staff ignoring alarms, non-compliance with certain key operating instructions, and safety-related equipment not being kept in effective working order
- inadequate monitoring, audit and review arrangements, and a culture that failed to encourage staff to question and challenge

Terra Nitrogen Ammonia plant – hydrogen fire caused pipework failure (and large explosion)

- investigation ongoing, so cant say much more
- BUT questionable knowledge of safety critical plant needing particular maintenance attention

GlaxoSmithKline pharmaceuticals – reactor explosion following runaway reaction

- poor risk assessment or the particular process being undertaken
- failure to understand the process (with over-reliance on standard operating instructions)
- communications breakdown between operations and maintenance staff

Corus steelworks – furnace explosion in 2001 (3 fatalities and 12 seriously injured), following water ingress

- inadequate management of change arrangements
- poor monitoring and follow-up of actions from earlier inquiries
- poor risk assessment of breakdown history and maintenance findings
- communication breakdown between different process teams

- most seriously, warning signs not heeded by management (as the Judge said “an accident waiting to happen”)

Buncefield – major petrol leak led to fires and a vapour cloud explosion

- investigation ongoing, but several key learning points have already emerged about things like
  - o overfill protection and means of halting inflow (and hence ‘outflow’)
  - o overall policy for site containment of spills and leaks
  - o safety culture and leadership within the sector
  - o learning lessons from others
  - o shift handover and communications
- Clearly a talk all on its own (and you’ll hear more later)!

... and finally Texas City BP refinery in the USA (and again you’ll hear more later) – major explosion and fire following hydrocarbon overfill and release (15 fatalities and 170 injured)

- just about all of the above applies! But in particular
- a need to improve the focus on Process Safety, Safety Culture and Leadership
- with a key finding of the US Chemical Safety Board being that there were ‘organisational and safety deficiencies at all levels of the BP Corporation’.

With that last incident particularly in mind, a new acronym has crept into the language over the past decade – an HRO – High Reliability Organisation, and by this I mean an organisation that works to high levels of reliability and safety for long periods of time, despite operating in high risk environments.

I thought I’d take the next 10 minutes to share with you, in a keynote capacity, what I see as the key elements of what I consider an HRO to be, and I’ve 6 points.

Firstly (and top of my list)

Leadership from the top of the organisation, with clear accountabilities throughout the company AT ALL LEVELS, and with staff trained and competent to do the job they are required to do (and I’ll return to that last point later).

The prevailing culture in an organisation is heavily determined by the visible attitudes and behaviours of directors and senior managers. It is important they make a real effort to send out the right messages to those at the sharp end of the business, ensuring that those messages do not suggest, albeit unintentionally, that safety can be ignored, corners cut, and that profit is paramount.

Senior managers and the board of directors set the overall agenda and need to give a clear vision as to what is expected, preferably with objectives against which progress can be assessed. This top-level commitment must be demonstrated through their actions so that all managers and staff can see that health and safety is taken seriously.

Both the Health and Safety Commission and Executive have been very active in the promotion of directors responsibilities and board-level leadership over the past few years. We published guidance on director’s responsibilities for health and safety in 2001, and published a series of director leadership case studies on our website.

Very recently, the Commission has concluded that the case has not been made for changes to the law, but that existing guidance needs to be re-invigorated – the Commission is currently

working with the Institute of Directors and other stakeholders to this end, with a consultation process in train aimed at securing publication of the final product later this year.

HSE is also currently engaging with industry stakeholders with the aim of setting up a Major Hazards Group to promote leadership, taking on board the lessons from Buncefield, Texas City, THORP, and other incidents, and I'd encourage you all to participate in that work when it is signalled very soon. Part of the process will also be a senior-level conference and workshop in London next April.

Secondly

H&S being seen as PART OF Board business

- building on my first point, managing your business with H&S as part of the business process at all levels, including at the Board, and NOT as a bolt on extra
- Pose a question or two – What do you see as your key business risk? Do you know what it is? Is it the same as your Manager, Board member or Plant operator might recognise? I would suggest that one key business risk would be having a serious accident or incident, especially if it affects people off-site – ask those that have experienced such an event!
- walk the talk (being seen AND seeing and listening)
- encouraging a no-blame/open relationship with staff (a good safety culture would include phrases such as “this is the way we do things around here”)
- perceptions are important (not to be dismissed lightly)
- know and consult your operators (they will likely know the plant better than you)

Thirdly

Make Risk Assessment REAL

- ensuring that staff understand the links between hazards and risks AND the control measures that are in place to control them (the barriers to failure) – that way they won't be so tempted to over-ride, ignore or cancel things so quickly
- risk assessment is NOT for somebody else or for HSE, but for YOU and YOUR staff
- operators must understand the plant (not just operate it to procedures – relying on a tick box mentality) – too many examples of not thinking through the consequences of actions, especially in abnormal situations
- in major hazard terms, a key part of your risk assessment should include developing and concentrating on Key Process Safety Performance Indicators (HSG 254 – joint CIA/HSE publication – recommend it). Most serious incidents have clear precursors or early warning signs – you need to be watching for them
  - o learning from near misses (hopefully with lesser effects) and not incidents
  - o HSG 254 doesn't list prescriptive indicators - it provides the tool to assist you to determine :
    - What can go wrong?
    - Where those challenges will be most critical?
    - What systems are in place to manage those challenges?
    - What success looks like – measuring with lagging indicators.
    - What the critical activities are which must work right to deliver the intended outcome – measuring continued operation using leading indicators.
  - o in the longer term we expect all major hazard operators to have process safety indicators in place, and to monitor and review them as part of their safety management systems

#### Fourthly

A robust Management of Change procedure to capture real-time plant and operator issues and to ensure that today's plant is understood and fit to operate away from its design intent (maybe now 40 or more years ago)

- MoC should cover
  - o plant
  - o people
  - o procedures
- and make sure that those that need to know that a change has been made KNOW IT, and understand why such a change has been made
- I cant stress communications and consultation enough here – so many times we're told that changes were made by 'day staff' or 'the last shift' or 'somebody else', and are not owned (or even understood) by the present person or operator in the hot seat

#### Fifthly

Sustainability – focussing on long-term sustainability rather than short-term profit.

- payback periods are far too short in most circumstances (in some big companies it is only 3 years!), with a lack of investment for the future
- too much 'just in time' mentality, esp for maintenance activity (concentrating too much on breakdown maintenance rather than a thought through combined preventative and breakdown maintenance regime)
- outsourcing/downstaffing without adequate thought of the real effects on the business
- managing contractors as you manage your own staff (both in safety and competency terms)
- loss of intelligent customer capability inside the business (so over-reliance on others for safety critical functions and knowledge) – so a resulting lack of business-owned understanding.

Lastly – and no business can operate and develop without them ....

Well trained and competent people at all levels of the organisation – **not just front line staff...**

AND

... the infrastructure to ensure sustained competency through assessment and provision of training and the opportunity to continuously improve through wider experience.

Also an organisation with a keen eye on succession planning, and retention and transfer of knowledge to those that need it within the business.

So they are my 6 indicators for an HRO. In my view these are the aspects that you need to address if you are to become and remain, a High Reliability Organisation.

I'm not saying that an HRO is perfect – far from it. HROs **expect to fail at some point, BUT** the key point is that they work hard to avoid failure, whilst also preparing for the inevitable so that they can quickly and efficiently minimize the impact of failure should it happen.

So .... Can you answer positively to all of the indicators? If not then I strongly suggest that you give some thought to them within your organisation.

The HSE Agenda in our new Plan of Work is four fold:

- To improve H&S outcomes
- To deliver justice
- To provide support for Government, and
- To work in partnership

My presence here today fits well with 2 of those agenda aims in that I want to continue to work in partnership with you such that we can all learn from each others accidents and near misses, build your business with safety and sustainability in mind, and develop your organisations into High Reliability Organisations.

We must all learn from across the major hazard sector, and share experiences and knowledge in order to improve your H&S Outcomes, and to build a sustainable future for you, me, our children and grandchildren, and for the country as a whole.

Again, Thank you for the invitation and for the opportunity to put a few points across to you. I hope I've stimulated a few thoughts and I look forward to the rest of the seminar and to interacting with you over the rest of the day.

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