

Health and Safety Executive Senior Management Team Paper SMT/08/35			
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HEALTH AND SAFETY EXECUTIVE
The Senior Management Team
Remodelling COMAH
A Paper by Ian Travers
Cleared by Kevin Myers on 25 June 2008

Issue

1. To inform the HSE Board of the Remodelling COMAH Programme and report on progress to date.

Timing

2. Routine, the paper is primarily for information only - although as the Programme is at an early stage any strategic steer or thoughts from the Board can be fed into the Programme. The issues raised may also be relevant background in the context of developing the new HSE Strategy.

Recommendation

3. That the Board: notes the objectives of the Programme; understands the approach the CA is taking to learn the lessons from recent major incidents; including the fire and explosion at Buncefield; and the arrangements for managing the Programme.

Background

4. The background to the Programme was set out in HSE Board paper 2008/04. The programme represents an opportunity for the COMAH Competent Authority (CA) to review and, where necessary, recast the regulatory regime informed by experience since the Regulations were first introduced. The programme commenced in April 2008 and brigades together other associated workstreams addressing the response to related recommendations of the Buncefield Major Incident Investigation Board (MIIB).

Presentation

5. See paragraphs 13-14 of the attached paper.

Costs and Benefits

6. Initial resources estimates were given in HSE/08/04. Originally, it was intended to include HSE's response to the Land Use Planning (LUP) and Explosion Mechanism issues emerging from the MIIB. However EA/SEPA have questioned this approach. Coincidentally as the MIIB's intentions for LUP have recently become clearer it does now seem more appropriate to manage HSE's input within the framework of a more broadly-based Government wide response. Equally, work to conclude the explosion mechanism is likely to run over a much longer timescale compared to the other work to remodel COMAH. It is thus now proposed to separate these two areas from the Remodelling Programme.

7. Overall, over a 3 year period the programme will now involve an estimated 28 staff years effort from HSE.

8. The benefits of this programme include:

- i. a greater degree of assurance that the COMAH regime is delivering better control and management of risks in this sector - with a lower chance that the full socio-economic costs of another Buncefield will occur again;
- ii. a credible demonstration of a proportionate (cross Government) response to the MIIB recommendations;
- iii. a demonstration that the CA is a learning organisation that builds on experience of its regulatory activities and implements appropriate improvements; and
- iv. the maintenance of CA's reputation with government and the general public as an effective and modern regulator.

Financial/Resource Implications for HSE

9. Much of the cost of the programme will be recovered from industry and has been factored into the new COMAH charge out rate.

10. The aim of the programme is to re-engineer COMAH to improve its capacity to deliver desired regulatory outcomes. Delivery of the new model itself may require additional resources or a different mix of resources to achieve the desired outcomes. If it is accepted that more resources are required for the current or a re-modelled COMAH regime there will be extra costs for the industry. These costs will be factored into the COMAH charging regime within the proposed revised charging arrangements.

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Remodelling COMAH Programme			

Purpose of the paper

1. The COMAH (Control of Major Accident Hazards Regulations 1999) Competent Authority (CA) has initiated work to re-configure the way the COMAH regulatory regime is operated and agreed that this should be taken forward within an integrated programme entitled 'Remodelling COMAH'. This paper is to inform the Board of the programme, of the progress so far, and provide an opportunity at this early stage for any strategic steer or thoughts on carrying the work forward.

Background

2. Regulation of COMAH is the responsibility of a Competent Authority comprising HSE and the Environment Agency (EA) in England and Wales, and HSE and Scottish Environment Protection Agency (SEPA) in Scotland.

3. COMAH is within HSE's suite of 'Permissioning' regimes. Implicit in these is a balance between the competence and performance expectations of the regulators and regulated. However there has been evidence in recent years of growing shortcomings in the management and control of risks on onshore major hazard sites. Although the relevant PSA targets have been met there have been 65 major or significant incidents in the onshore chemical sector since COMAH came fully into force in 2002. Annex 1 lists some recent major incidents.

Argument

4. There is an expectation that a robust major hazard regime should be more effective in detecting and remedying weaknesses in an operator's process safety management system before such incidents occur. There is recognition that achievement of 'no major accidents' is unrealistic. However, the underlying issues identified through HSE's investigations of these incidents do not reflect well on a regime which places obligations on site operators "to guarantee a high level of protection for persons and the environment by appropriate means, structures and management systems". Therefore the aim is for the CA to focus on the regulatory activities that have greatest impact and, in particular, to be better able to detect and diagnose failings in the management of risk and ensure improvements are implemented.

5. The evidence of shortcomings within the COMAH regime has been reinforced by the Buncefield incident in December 2005. This was unprecedented in terms of credible and foreseeable events at fuel storage sites; particularly the force and scale of the explosion. Although the primary responsibility for managing the site rests with the operators, the incident has challenged the existing approach to regulating this sector. The CA would wish, and wish to be seen, to learn from any such incidents.

This is an integral element of our existing policies for responding to major incidents.

6. In the light of this experience (and a scoping study carried out last year) the SMT (Board as was) has agreed to carry out a review of the COMAH regime. The issue was also discussed with partners in the COMAH CA and there was broad agreement that the regulatory regime should be reviewed and, where necessary, re-engineered.

7. The review is to be carried out as a Programme – with the primary aim of reducing the likelihood of on-shore major accidents and limiting the socio-economic impact and consequences of major accidents should they occur. The objective is to improve the implementation of COMAH to ensure that:

- i. operators of COMAH establishments provide and maintain the necessary risk control and mitigation measures;
- ii. emergency planners and services prepare for, and respond to, major accidents on the basis of the most credible worst events, and
- iii. HSE, as part of the COMAH Competent Authority, CA, conducts its regulatory functions in the most effective and efficient way in order to provide assurance that objectives i-ii above are achieved.

8. The Programme has been entitled 'Remodelling COMAH'. Annex 2 illustrates the nature and extent of the work involved and shows progress to date. The focus is on reconfiguring the way that the Regulations are implemented to optimise regulatory processes and outcomes. In other words how we utilise safety report assessment, inspection, advice and incident investigation and the balance between these activities. It is not a design intention to alter or amend the COMAH Regulations to change the existing duties under the Regulations unless compelling reasons to do so become apparent during the review. Although relevant outcomes will feed into UK's contribution to the review of the Seveso II Directive being undertaken within the EU.

Partnership Working

9. The programme is being delivered in partnership with the EA and SEPA. This has already led to a significant strengthening of relationships with these Agencies. CA Governance has been revitalised by a newly formed Strategic Management Group, SMG. Within HSE there is a close partnership between HID, Policy Group and the Chief Scientist's office to deliver policy and operational objectives based on a sound scientific basis.

Programme Management

10. To provide appropriate oversight a Programme Board with the Director HID as Senior Responsible Officer has been established. Board membership covers relevant interests at SCS level in HSE and equivalents in both Environment Agencies. A senior manager from the Ministry of Social Affairs and Employment, Netherlands has been co-opted to provide an alternative Regulatory oversight (Regulators from other countries will be inputting to specific workstreams). The

Programme Board also includes an external independent with widespread experience in this field (previously a member of HSC's Advisory Committee on Dangerous Substances – ACDS).

11. The SRO will report to the SMT and there is close liaison with the CA Senior Management Group. The Programme Board met for the first time in April this year and is due to meet again in the autumn. A detailed Programme Initiation Document has been drafted to assist in the delivery of the programme. To provide assurance on these arrangements the programme will be subject to external scrutiny via an Office of Government Commerce gateway review.

Presentation

12. Fundamental re-engineering of the COMAH model has implications for many stakeholders who are either responsible for, or are affected by, the COMAH Regulations. A formal communications plan has been developed to manage this. Key industry and TUC representatives will be contributing to the developmental phase of the project and before any changes are finally implemented there will be full consultation with stakeholders. The programme is not expected to impose any new regulatory responsibilities upon duty holders and so there should be no overall increased regulatory burden beyond the original intent of COMAH. However, improved compliance, where standards are not currently considered adequate, could entail additional costs for the industry. For example, compliance with the revised CA Containment Policy relating to primary, secondary and tertiary containment for bulk tank storage facilities is expected to cost between £200m - £300m over the next 20 years.

13. This work is being carried out in collaboration with our partners in the CA. The need for change and a radical review of the regime is common ground following meetings at a senior level. The scope, shape and programme arrangements have been agreed at senior management level within the CA. The new model for COMAH will have to be cleared by each respective management Board.

Financial/Resource Implications for HSE

14. Prior to constructing the programme it was estimated that current and projected resources deployed simply to respond to the MIIB recommendations would involve some 21 staff years of effort from across HSE - spread over the next 3 years. It is also likely to involve significant research and scientific funding costs.

15. The scoping study confirmed a serious business risk if this work is not effectively prioritised or co-ordinated and that there was a need for clear corporate oversight to ensure the efficiency and effectiveness of this work. Overall, over a 3 year period the programme will involve an estimated 28 staff years effort.

16. Much of the cost of the programme will be recovered from industry and has been factored into the new COMAH charge out rate.

17. The aim of the programme is to re-engineer COMAH to improve its capacity to deliver intended regulatory outcomes. Delivery of the new model itself may require

additional resources or a different mix of resources within HID to achieve the desired outcomes. If it is agreed that more resources are required for the current or a re-modelled COMAH regime there will be extra costs for the industry. These costs will be factored into the COMAH charging regime.

Paper clearance

18. This paper was produced by Ian Travers and was cleared by the Senior Management Team on 2 July 2008.

Annex 1: Examples of recent COMAH incidents

Operator Date of incident	Location	Material Loss	Cause/ Comment
ConocoPhillips Humber refinery 16 April 2001	Humberside	180 tonnes of flammable liquids & ½ tonne toxic gas released.	Fire & explosion following the failure of an overhead gas pipe. No serious injuries caused but major damage to the plant and nearby property. Caused by internal corrosion of pipework due to excessive water washing. Poor management of change and pipework inspection where the underlying causes.
Petroplus August 2005	Milford Haven S Wales	653 te of kerosene	Internal corrosion in the base of a large storage tank – chronic leakage over a period of months. Kerosene soaked into the sub soil from the cliff top site and eventually leached out on the foreshore and in a neighbouring stream and gardens of residential properties. Poor control on design of internal tank drains caused excessive corrosion in the base of the tank. Tank situated on permeable ground and bund floor not designed to hold chronic leaks.
HOSL 11 December 2005 6.00am Sunday	Buncefield Fuel Depot,	Initially 340 te of petrol. Final full inventory loss	Explosion followed by multiple tank fires cause by overfilling of a petrol bulk tank.
Invista Textiles UK Ltd 19 February 2006 05.55 Sunday	Wilton, Middlesbrough	15 tonnes of cyclohexane	Expelled hot process vapour (including cyclohexane) at elevated temperature (150C) and pressure (8 bar), forming a vapour cloud on site. The Ketone Acetate plant oxidises cyclohexane using a similar process to that carried out at Flixborough. No ignition & no injuries. Investigation still on going. Gas detectors alerted operators, flame proof equipment and emergency shutdown of the plant prevented a major escalation.
Terra Nitrogen 1 June 2006	Billingham, Teesside	1.2 Tonnes of hydrogen/	10" pipe failed releasing flammable gas at 220 bar and 120°C 1.2 principally Hydrogen (but with nitrogen and ammonia mixed in).Release ignited causing a large fire. Caused by the incorrect fitting of the sealing gasket.
Chevron UK October 2006	Poole Harbour	30 te of diesel oil	Corrosion of storage tank floor leading to a large spill in an environmentally sensitive area. Emergency measures managed to contain the spill without it causing major damage to the marine environment.
ConocoPhillips 27 July 2007	Mayflower depot Plymouth	40 tonnes petroleum	Internal weld failure in sump floor plate. Chronic loss over a period of weeks not detected by the operators. Tank mounted on permeable base and product seeped into the underlying rock strata. Most of the lost product recovered via bore holes.
Petroplus Refinery 31 October 2007	Stanford-le-Hope Coryton, Essex		Fire in distillation column.

Annex 2: Remodelling Programme component workstreams

- **Re-configuration of Regulatory Process:** To review and re-configure the implementation of the COMAH regime to learn the lessons from recent incidents and to address the issues raised by the MIIB policy and procedures review of HSE and EA in order to ensure the CA's regulatory processes deliver the outcomes intended by the Seveso II directive.
Progress: The development phase has started, utilising a creative thinking workshop to ensure that the CA is radical and ambitious in modernising its approach to major hazard regulation. Options for change have been determined with a major focus in this work on control of risk outcomes with flexible approaches capable of meeting the variety of sectors covered by COMAH e.g. from refineries to simple warehouse to enclaves where COMAH activities are all but a minor part of the enterprise. The development phase is due to complete in October 2008.
- **Review Permissioning Options:** Examination of the strengths and weaknesses of permissioning and potential alternatives as tools to achieve the CA's desired regulatory outcomes under COMAH. Outcomes will feed into the "Re-configuration of Regulatory Process" workstream.
Progress: The work to review permissioning options has started with a clarification of the purpose and regulatory benefits of permissioning. This will be followed by an exploration of the various options which could be accommodated within the Seveso Directive. This work is due for completion by August 2008.
- **Operational Intelligence:** To provide accurate, full and timely intelligence to support operational decision-making and action-taking in order to facilitate the regulation of onshore major hazards becoming more outcome focused and consistent and ensuring similar actions are adopted for broadly similar risks.
Progress: An outline methodology for the acquisition and analysis of regulatory intelligence has been developed. The next phase is to test the practicality of the model and determine how this will feed into operational strategy.
- **Emergency Arrangements:** To ensure that the CA addresses, as appropriate, the recommendations of the MIIB on 'emergency preparedness for, response to and recovery from incidents'. This will be through co-ordination and prioritisation in the design and delivery of a robust and fit-for-purpose emergency response across government facilitating improved integration between site operators and emergency responders.
Progress: Three key workstreams have started dealing with the on-site arrangements that COMAH operators should implement to accommodate a Buncefield like incident, the off-site planning and response and finally exploration of mutual aid arrangements for the provision and sharing of equipment and facilities, particularly in relation to sharing of foam stocks and specialised response vehicles. The first two workstreams will be completed by September 2008 with the latter completed in 2009.
- **Design & Operation (Process Safety Leadership & Operational Control):** To oversee improvement in process safety leadership, to secure appropriate improvements in the design and operation of Fuel Storage sites, taking account of the lessons from the Buncefield, BP Texas City and other relevant incidents.
Progress: The work to develop and implement improved standards for COMAH operators started by the Buncefield Standards Task Group has continued within

the Process Safety Leadership Group. Work to address the technical recommendations of the MIIB will be completed in 2009 whereas the forum to strengthen process safety leadership will continue beyond this date.

- **Containment Policy:** To complete regulatory impact assessment, assess comments on CD and revise policy as appropriate, develop proposals for policy implementation, complete research and scoping exercise on other relevant substances, identify improvements in primary, secondary and tertiary containment necessary to meet the CA containment policy, draft associated technical guidance in association with the PSLG, and develop operational guidance for CI on implementation of the policy.
Progress: The new Policy was issued in January 2008 with the first phase of requirements applying to large scale petroleum storage sites commencing immediately. A second phase of the policy covering bulk storage of other liquids at COMAH sites will be ready for consultation this autumn.
- **MIIB Final Report:** To address any further recommendations from the MIIB and to put in place suitable arrangements for monitoring progress against the MIIB's recommendations.
Progress: Awaiting the publication of the report.
- **Prosecution Follow up:** To, assess, disseminate and act upon information on lessons that may yet to be disclosed during legal proceedings arising from the Buncefield investigation where such information relates to broader lessons or key messages for site operators or for CA regulators.
- **Buncefield Re-start:** To ensure appropriate regulatory oversight of the Buncefield terminal complex sites.
Progress: BP are planning to export fuel to Heathrow after completing testing of overfill protection systems and are planning to commence 'ground fuel' storage, including petrol, in August subject to completion of a list of 'Safety Works'. The Total Fina pipeline is in operation supplying Heathrow.