

THE IMPACT OF THE NEW SEVESO II (COMAH) REGULATIONS ON INDUSTRY

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The implementation of the new Seveso II Directive or the COMAH Regulations as it will be known in the UK will come into force in early 1999 and will have a major impact on industry. The COMAH (Control Of Major Accident Hazards) Regulations will replace the current CIMAH (Control of Industrial Accident Hazards) Regulations, and place greater emphasis on the demonstration of safe operation, particularly in terms of safety management. This paper will address the issues as to what is required of the operator of an establishment in order to comply with the forthcoming legislation without too much time, money and effort being put into new systems and provision of information beyond that which is required by the competent authority.

Keywords: COMAH, Seveso II, emergency planning, legislation

INTRODUCTION

On the face of it, the new COMAH regulations appear to be just building on the old ones, but there are significant changes that may be feared by some sections of industry, such as public disclosure, the greater requirements on lower tier sites and the testing requirements of emergency plans (see Table 1). However, as a package these regulations must be looked upon as very positive in intention, as it is a mechanism for building on the improvements that CIMAH made in the regulation of on-shore major hazards and is attempting to ensure that these improvements are applied evenly across the industries of Europe. This will lead to an overall improvement in safety to man and the environment, and hopefully a more cost effective approach to safety management systems.

WHO WILL BE SUBJECT TO THE REGULATIONS AND WHEN ?

The regulations will apply to an establishment where the quantity of dangerous substances held exceeds specified inventory thresholds. There is no longer any requirement for the site to be either a defined industrial activity or storage site, indeed this distinction has now been removed. The regulations therefore apply to all activities involving the presence of dangerous substances apart from specified exceptions including military sites, pipelines, temporary storage and waste landfill.

There will still exist named substances which will have a qualifying quantity. However the list will be much reduced as compared to the CIMAH Regulations. This is due to the use of generic categories such as Very Toxic, Toxic, Oxidising, Explosive, Flammable, Highly Flammable, Extremely Flammable, Dangerous for the Environment and Any Classification

which does not enter into the above categories but possesses risk phrases such as R14 and R29. As with CIMAH, there are lower and upper tier threshold quantities with different associated duties (these are summarised in Figure 1).

A note of importance is the aggregation rule which may lead to some establishments not subject to CIMAH being required to comply with COMAH. Inventories of individual substances in the same or related generic categories must be divided by their respective threshold quantity and the fractions then added together. If the sum is greater than or equal to one then the regulations apply. An important distinction between COMAH and CIMAH is the fact that under the new regulations, named substances not present in qualifying quantities must also be aggregated under the appropriate categories.

Introduction of the 2% rule means that dangerous substances at an establishment in quantities equal to or less than 2% of the relevant qualifying quantity can be ignored for purposes of calculating the total quantity present if their location within an establishment is such that it cannot act as an initiator elsewhere.

The above assessment will need to be carried out using anticipated inventories of raw materials, by products, intermediates and final products. However, dangerous substances may also be generated during the course of unplanned events. This was the case at Seveso where dioxin was generated when a reaction involving pesticides went out of control. Such establishments where quantities of dangerous substances may be generated during loss of control of a chemical process are also within the scope of the COMAH regulations.

Top-tier establishments which already submit a safety report to the competent authority (CA) under the existing regulations must take action to submit their next updated report under the new COMAH legislation when it would have been due had CIMAH still been in force, or by 3 February 2001 whichever is the earlier. A CIMAH update required between 3 February 1999 and 3 August 1999 can be submitted in the form of a COMAH safety report any time up until 3 August 1999. Other establishments which come under the COMAH regulations have until 3 February 2002 to submit their report.

DUTIES ON OPERATORS

All sites whether lower or top tier have a number of common duties. Notification of activities to the competent authorities and reporting of accidents are similar to the requirements under CIMAH. However, where COMAH differs from CIMAH is the increased emphasis on demonstrating as opposed to describing the adequacy of the physical and organisational safeguards in place to prevent, control and mitigate major accident hazards. This is reflected in the general requirement for a Major Accident Prevention Policy (MAPP).

Additional duties on top tier sites include preparation of safety reports and testing of emergency plans. The safety report is the means of formalising the demonstration that all necessary measures have been taken to prevent, control and mitigate major accident hazards, whilst the testing of emergency arrangements provides additional assurance that effective plans are in place should a major accident occur.

**SAFETY MANAGEMENT SYSTEMS AND MAPP
(MAJOR ACCIDENT PREVENTION POLICY)**

The increase in emphasis on safety management systems even in lower tier sites (Major Accident Prevention Plan) is indicative of the way things are going in this type of legislation. The fact that Seveso II lays out the requirements of the major accident prevention plan (MAPP) will provide companies that are new to the Seveso legislation with a framework upon which to base their systems or to rearrange existing systems. This will also give a strong lead to companies that are already subject to COMAH on how they should use their safety management system and what the regulators will be looking for. It is essential that the MAPP specifically addresses major accident hazards and relates to protection of both man and the environment.

The MAPP requires the safety management system to have mechanisms built into it to that will allow its effectiveness to be easily monitored. This means going beyond the reactive measurements of injuries, downtime, incidents etc. that are the staples of many systems at present. It means that positive proactive measurements will have to be used as well e.g. monitoring and review.

This at first seems to be just more demands on safety, health and environment budgets. However, in the major hazard industries it is cost effective to develop proactive safety systems. In large plants like refineries saving one day of downtime will probably pay for most of the improvements to the system. Although these arguments have been put before, COMAH provides a different opportunity because these new measures will be driven by legislative requirements. This will give management the incentive to achieve a better safety profile by investing in new systems that will be good business and provide compliance with legislative requirements (therefore less negative interaction with the regulatory authorities).

The Crux of this new approach is that safety management systems have to be demonstrably effective - measuring injuries only indicates the relative inadequacy of a safety management system.

To further develop the above theme it is possible to use the example of emergency planning. Sometimes emergency planning is looked upon as something that is 'bolted on' the end of a safety management system. It is looked upon as coming into practice only when somebody or something fails, or when a piece of bad luck occurs. Therefore it is almost natural to think of it as a negative aspect and separate it from the rest of the operational management system which is designed to ensure that everything goes as smoothly and positively as possible. The emphasis on safety management and the new requirements in emergency planning in COMAH may encourage managers to see emergency planning as an integrated part of their overall safety management system. For example adequate training is seen by everyone as a key component of a successful safety management system. Reflecting this, there has been a recent trend in the use of competence based assessments as part of operational training (in the UK the most popular are the National Vocational Qualifications - NVQs). This form of training ensures that the operator proves that he/she is adequately trained on a particular aspect of the job by demonstrating his/her competence. It is a 'quality system' based approach to training. However there is little evidence across industry of this

approach being used in the training of managers specifically for emergencies or upset conditions. Emergency exercises often only demonstrate whether management representatives can follow a set of given procedures, they do not assess individual manager's competence to make correct decisions in 'upset' conditions in any depth. Yet it is under these extra-ordinary conditions that managers really need to perform well.

An important part of emergency planning is to try to ensure that correct decisions are made as an unplanned event develops, decisions that either prevent an emergency situation developing or, if this is unavoidable, ensure that all necessary actions have taken place in a timely manner so that the emergency plan has the best chance of success. Success in this aspect of emergency planning has direct and large economic benefits. Some forward-thinking companies have developed 'Situational Analysis' type training that assesses their individual managers abilities in mock stressful situations. This is an approach that has been used by airline companies for some time now. For companies that can afford them, the use of simulators can aid this training immensely, however the careful use of table top exercises can be just as effective. If actions can be taken that prevent an upset condition developing into a shutdown let alone a major accident situation then any money spent developing and testing improved safety management systems will be well spent.

COMAH with its requirements for testing of emergency plans will help emergency planning to be treated as part of the 'whole' of safety management, not just something that is an unfortunately needed add-on. It should also encourage a more auditable approach to the assessment of individual managers' ability to deal with formative and full blown emergency situations.

It will be part of the new COMAH Regulations that any establishment qualifying as lower-tier should have to a document in place displaying their MAPP and demonstrating that a safety management system exists. Top-tier establishments will be able to include their MAPP in their safety report which is submitted to the CA, whereas for lower tier establishments it will be more likely that it will exist as a stand alone document. It is necessary that the length and content of the MAPP is proportionate to the scale of hazards at the establishment. It is not necessary to submit the MAPP to the CA, but it must be available for examination by Inspectors, who may use it to structure and plan their inspections.

It may be necessary in some areas of the MAPP to refer to other supporting documentation e.g. plant operating procedures, training records, job descriptions etc. which may be too lengthy or tortuous to include in the MAPP itself. Hence it does not need to be a lengthy document, only setting out what needs to be achieved and an indication of how it is to be done.

The essential contents of a MAPP are briefly described below;

- roles and responsibilities of personnel involved in management of major hazards at all levels within the organisation including selection criteria for competent personnel and training requirement;
- methods in place for the identification of major hazards and assessment of their likelihood and severity;
- methods in place for ensuring safe operation including maintenance;
- methods in place for controlling plant modifications;

- methods in place for identification of foreseeable emergencies including the preparation, testing and review of emergency plans;
- methods for reporting major accidents and near misses, the means of investigation and follow up action;
- methods in place for the monitoring, audit and review of the MAPP.

The Health and Safety Executive's (HSE) publication HS(G) 65 'Successful health and safety management' may help in the preparation of a MAPP as it is the foundation for addressing key aspects of effective management of health and safety such as policy, organising, planning, measuring performance, auditing and reviewing performance.

SAFETY REPORT STRUCTURE

The essential requirements of a safety report are the identification, prevention, control and mitigation of major accident hazards. Operators have to demonstrate that they appreciate the nature and scale of potential major accident hazards and that they have taken all reasonable steps to ensure safe operation of their establishment. From initial interpretation of the legislation, this does not appear to be different to the CIMAH regulations. However, it is stated in the new COMAH regulations that all operators (both lower and top tier) shall take all *measures necessary to prevent major accidents and limit their consequences to man and the environment*. This requires a greater depth of substantiation of the systems in place to prevent or mitigate a major accident hazard and places a greater duty on operators to demonstrate this in their safety reports. The duty is also extended to the environmental aspect whereby standards should be proportionate to hazard and risk and in line with the Health and Safety Commission's (HSC), the Environment Agency's (EA) and Scottish Environmental Protection Agency's (SEPA) policy. It is difficult to guarantee prevention. Therefore the principles of inherent safety should be the first port of call e.g. reduction in inventory, use of similar substances which create less of a hazard etc. Another important aspect of this process will be compliance with appropriate codes of practice, standards, HSE guidance etc. The guiding principle in determining the level of justification required in the report is that it should be *proportional to the level of hazard and risk involved*.

The emphasis within COMAH on demonstration of the adequacy of the prevention, control and mitigation measures also has implications for the assessment of hazards itself. In particular, COMAH will require a more structured approach to the identification of hazards and the associated initiating events and conditions. Systematic techniques such as Hazard and Operability studies will be suitable for this purpose.

The remaining sections of a safety report should provide a full description of the establishment highlighting all the installations, processes, storage facilities, pipework etc relevant to major hazards. This will include temperature and pressures, material standards, engineering diagrams, site layout diagrams, quantities of dangerous substances etc. The safety report will also need to provide a description of the land use and sensitive environmental features in the vicinity of the site.

EMERGENCY PLANS

As with CIMAHA, there is a requirement on operators of top tier sites to prepare on-site emergency plans. Similarly, local authorities are required to prepare off-site emergency plans.

The essential contents of the on-site emergency plan include:

- details of persons authorised to set emergency procedures in motion and the command arrangements;
- means of issuing warnings and required actions of non emergency personnel;
- description of specific arrangements for dealing with identified accidents;
- staff training;
- procedures for setting in motion the off-site emergency plan.

Many of the above elements of the on-site plan are applicable to the off-site plan:

- details of persons authorised to set emergency procedures in motion and the command arrangements;
- arrangements for receiving warnings and mobilising resources;
- arrangements for providing the public with information on the accident and the actions to take.

Emergency plans have traditionally concentrated on the immediate response to the accident. However these plans now need to also address the longer term clean up and restoration of the environment. This aspect is likely to be new to many companies and may require the use of specialised external expertise.

TESTING OF ON-SITE AND OFF-SITE EMERGENCY PLANS

A new feature of COMAHA is the requirement to demonstrate that the emergency plans have been reviewed and tested at suitable intervals not less than once every three years. As a full test of emergency plans can prove to be quite costly, an establishment has the option of the exercise taking the form of a live interactive plan or a table top exercise with the support of some live components. In whichever form the testing arrangements take place, it must fully satisfy the objectives as laid out in the plan itself.

The differences between a live and table top exercise are discussed in more detail below;

- a live exercise incorporates a simulation of an accident and the utilisation of all the appropriate resources. The disadvantage with this type of exercise is that it requires careful planning and organisation and can be quite costly e.g. the use of a fire brigade.
- table top exercises involve all the appropriate resource in one place who work through their roles in an emergency situation. The event has to be carefully selected and it is difficult to ascertain in this type of situation whether the event would run smoothly in a ground simulation exercise of an emergency situation.

For multi - installation sites and where shift teams are present, testing emergency plans may seem a daunting task. However it needs to be borne in mind that what is being tested is the plan itself. Therefore emergency plan testing on different installations need only concentrate on any installation specific arrangements that exist. Similarly there is no specific need to test the plan using each shift. Training can ensure that each shift understands the required actions.

For off-site emergency plans, full scale exercise testing need not take place, but include site visits by all off-site agencies for familiarisation purposes, communication exercises to test the communications procedures during an emergency, and table-top exercises as before. Communication exercises enable the necessary personnel to work through their responses in an emergency situation.

PUBLIC DISCLOSURE

An important new feature of the COMAH regulations is the provision for public access to the contents of safety reports. Under CIMAH, operators had the confidence to disclose information on the basis that confidentiality would be protected. However operators are now understandably concerned about the protection of sensitive information. The COMAH regulations do include the option to withhold information on the basis of commercial secrecy national security etc. Such exemptions will need to be agreed with the competent authorities. Means of satisfying the needs of the competent authorities and ensuring protection of sensitive information from public disclosure include producing two safety reports or including sensitive information in separate documents or removable appendices.

LAND USE PLANNING

Land use planning for major hazard installations has been in existence in the UK for many years. Therefore the inclusion of land use planning in the COMAH regulations will not cause any major changes to existing arrangements. There are however certain implications in relation to hazardous substances consent and substances harmful to the environment. In the first case, hazardous substances consent will be extended to include all lower and upper tier COMAH sites. These additional controls in terms of what substances can be held on site and their location could have significant implications for sites where inventories and locations are subject to change such as warehouses and contract bulk storage sites. The way to overcome such problems include anticipation of future storage needs and notification of worst case substances to cover generic groupings. The inclusion of a specific environmental harm category within COMAH also raises for the first time the need to consider environmental hazards in the context of land use planning. The EA and its Scottish counterpart will therefore need to assess the potential for major accidents to the environment and in certain limited circumstances even set a Consultation Distance.

CONCLUSIONS

The COMAH regulations are very positive in intention and compliance will lead to an overall improvement in safety to man and the environment and hopefully a more cost effective approach to safety management systems. COMAH with its increased emphasis on safety management will promote the incorporation of major hazard controls and accident response in

to a company's overall safety management system. There is a wide body of evidence to support the concept that the costs associated with prevention, control and mitigation are far less than the potential financial implications of a major accident being realised. In deciding the level of resources to be applied to COMAH compliance, the guiding principle should be that it is proportionate to the scale of hazard and associated risk.

Table 1 - Main differences between CIMAH and COMAH Regulations

	Seveso I	Seveso II
Scope	<ul style="list-style-type: none"> • Applies to installations • Distinction between process and storage activities • Application determined by a list of named substances • Explosives and nuclear facilities exempt 	<ul style="list-style-type: none"> • Applies to establishments • No distinction between process and storage activities • Application determined primarily by reference to generic categories of substances • Explosives and chemicals at nuclear sites included.
Lower tier duties	<ul style="list-style-type: none"> • No specific duties beyond demonstration of safe operation and accident reporting • No clear definition of scope 	<ul style="list-style-type: none"> • New duties include to notify competent authority (CA) and prepare a Major Accident Prevention Policy (MAPP) • Scope of application clearly defined by reference to thresholds of dangerous substances
Top tier duties	<ul style="list-style-type: none"> • Safety report • Emergency plans 	<ul style="list-style-type: none"> • Safety report requires an expanded content • Greater emphasis required on safety management systems • Greater public access to report • Requirement for CAs to communicate conclusions of the reports to operators prior to construction or operation of new sites and within a reasonable period for existing sites • Requirement for an expanded statement of purpose and content of plans and a requirement to test them

Table 1 (continued)

	Seveso I	Seveso II
		<ul style="list-style-type: none"> • Requirement for plan to include clean up and restoration of the environment
Inspection systems	<ul style="list-style-type: none"> • Not dealt with 	<ul style="list-style-type: none"> • Member states to have in place adequate inspection systems to ensure operators implement the directive
Powers of competent authorities	<ul style="list-style-type: none"> • Primarily normal HSWA duties 	<ul style="list-style-type: none"> • Duty on CAs to prohibit activities if the measures taken by the operator for the prevention, control and mitigation of major accidents are seriously deficient
Land Use Planning	<ul style="list-style-type: none"> • Not dealt with 	<ul style="list-style-type: none"> • Requirement for land use planning policies taking into account major hazards
Domino effects	<ul style="list-style-type: none"> • Not dealt with 	<ul style="list-style-type: none"> • CA to identify groups of establishments where there could be a knock on effect and these establishments to share information, particularly on emergency planning