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GUIDELINES ON A MAJOR ACCIDENT PREVENTION POLICY AND SAFETY MANAGEMENT SYSTEM, AS REQUIRED BY COUNCIL DIRECTIVE 96/82/EC (SEVESO II)

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Table of Contents

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Preface

Council Directive 96/82/EC (SEVESO II) is aimed at the prevention of major accidents involving dangerous substances, and the limitation of their consequences. The provisions contained within the Directive were developed following a fundamental review of the implementation of Council Directive 82/501/EEC (SEVESO I).

In particular, certain areas were identified where new provisions seemed necessary on the basis of an analysis of major accidents which have been reported to the Commission since the implementation of SEVESO I. One such area is management policies and systems. Failures of the management system were shown to have contributed to the cause of over 85 per cent of the accidents reported.

Against this background, requirements for management policies and systems are contained in the SEVESO II Directive. The Directive sets out basic principles and requirements for policies and management systems, suitable for the prevention, control and mitigation of major accident hazards.

The Directive sets out two levels of requirements corresponding to 'lower tier' and 'upper tier' establishments. There is a requirement for lower tier establishments to draw up a Major Accident Prevention Policy (MAPP), designed to guarantee a high level of protection for man and the environment by appropriate means including appropriate management systems, taking account of the principles contained in Annex III of the Directive. The operator of an upper tier establishment (covered by Article 9 of the Directive and corresponding to a larger inventory of hazardous substances) is required to demonstrate in the 'safety report' that a MAPP and a Safety Management System (SMS) for implementing it have been put into effect in accordance with the information set out in Annex III of the Directive.

In effect, the requirements for policies and management systems which apply to a lower tier establishment are similar to those for an upper tier establishment except that:

- the Directive states that the requirements should be proportionate to the major-accident hazards presented by the establishment, which is considered to introduce more flexibility;
- it is not necessary to prepare a detailed report for demonstrating how the Safety Management System has been put into effect;
- the document setting out the MAPP must be 'made available' but need not necessarily be sent to the competent authorities.

The particular circumstances of a given establishment will mean that in many cases some of the measures proposed here will be required in more or less detail as appropriate. In the document which follows, the term "where appropriate" is used for the most significant of these cases, but should be understood to apply implicitly throughout. In certain cases, there may be aspects specific to the establishment which require the consideration of particular points not set out here.

This document has been produced to provide guidance and explanation on what is required on a 'Major Accident Prevention Policy' and 'Safety Management Systems' by the Directive. It should not be considered mandatory as such and does not preclude other reasonable interpretations of the requirements of the Directive. It should be emphasised that this 'guidance' is not legislation. However the document does give an authoritative interpretation of the meaning of the Directive, developed by the European Commission through dialogue with representatives from the Member States.

1 Introduction to Safety Management Systems

Relevant text from the Directive:

The safety management system should include the part of the general management system which includes the organizational structure, responsibilities, practices, procedures, processes and resources for determining and implementing the major accident prevention policy.

It is recognised that the safe functioning of an establishment depends on its overall management. Within this overall management system, the safe operation of an establishment requires the implementation of a system of structures, responsibilities, and procedures, with the appropriate resources and technological solutions available. This system is known as the Safety Management System (SMS).

Thus any Safety Management System is a constituent part of the overall management system of the establishment, which may in turn be dependent on a management system developed for a larger entity such as a company or group of companies. This is particularly important when it comes to detailed implementation of the guidelines set out here; the approach to implementation will and should differ from company to company, reflecting the overall management philosophy, system, and culture as appropriate for the workforce and the process technologies involved.

The Safety Management System may also involve integration with a management system which addresses other matters, such as the health of workers, the environment, quality, etc. It is possible to develop a Safety Management System by extending the scope of an existing management system, but it will be incumbent upon the operator to ensure, and demonstrate where necessary, that the management system has been fully developed to cover major-accident controls and meets the requirements of the Directive.

A further issue in the management system concerns the question "what is management?" While there are different terminologies and detailed definitions, it is accepted now that management of any sizeable activity is based on the idea of a "management loop", which involves agreeing an objective, defining a plan to achieve that objective, formulating the detailed work required to implement the plan, carrying out the work, checking the outcome against the plan, and planning and taking appropriate corrective action. Safety management is no exception to this general principle. This means that in addition to the goals of the Safety Management System, and the issues it addresses, the integrity of the management loop and the completeness and accurate functioning of the management system are essential.

These guidelines describe seven fundamental elements that should be included in the Safety Management System, as specified in Annex III of the Directive. They do not describe a complete Safety Management System, since such a system will cover aspects of safety other than major accident hazards, and will have to reflect the culture and structure of a specific company. It is the responsibility of the operator to ensure that all seven elements are incorporated into the system, including monitoring, audit and review processes which are essential components of the system. The relevant sections of this document give advice on the need for sufficient independence from the operational unit for persons undertaking auditing and reviews. However it is still under the responsibility of the operator to ensure that independent audits and reviews are carried out.

Inspections carried out by, or on behalf of, the competent authorities in pursuance of Article 18 of the Directive do not replace the operator's own responsibilities to ensure that the necessary monitoring, auditing and review of the management system is carried out. However the results of operator audits and reviews may well be of interest to the inspection authorities.

2 Development of a Major Accident Prevention Policy (MAPP)

Relevant text from the Directive:

The major accident prevention policy should be established in writing and should include the operator's overall aims and principles of action with respect to the control of major accident hazards.

The operator must draw up a document setting out his Major-Accident Prevention Policy (MAPP). The document is intended to give an overview of how the operator ensures a high level of protection for man and the environment. The document should take account of the principles contained in Annex III of the SEVESO II Directive in the following seven areas:

- organization and personnel
- identification and evaluation of major hazards
- operational control
- management of change
- planning for emergencies
- monitoring performance
- audit and review

The text given in the subsequent sections of this guidance document is intended to describe the above elements within a Safety Management System but can also be used as a guide to the meaning of each of the elements within the MAPP.

The MAPP can be a much less detailed document than one which describes the Safety Management System but should clearly indicate the arrangements, structures and management systems required for each of the seven areas. A MAPP is not a mini safety report and should refer to other detailed documentation where necessary. Indeed there will normally be a hierarchy of documentation: at the top of this hierarchy the MAPP sets out the policy and

principles of major hazard prevention, and then each subsequent level explains in more detail the application of these principles, finishing with working documents and instructions.

The scope of application of the MAPP should be clearly stated and should be consistent with covering all sources of major-accident hazards.

Operators may already have a formal statement of safety policy in some form, possibly integrated with statements of policy covering health and environmental protection issues. In such cases, the operator may wish to review an existing policy document and revise it as necessary to include the requirements of a MAPP as specified by the Directive. It may also be appropriate in some cases to prepare the MAPP as an addendum to existing policy documents.

3 Elements of Safety Management Systems

Organisation and personnel

Relevant text from the Directive:

The following issues shall be addressed by the safety management system: Organisation and personnel - the roles and responsibilities of personnel involved in the management of major hazards at all levels in the organisation. The identification of training needs of such personnel and the provision of the training so identified. The involvement of employees and, where appropriate, sub-contractors.

The Safety Management System should reflect the top-down commitment and the safety culture of the operator's organisation, translated into the necessary resources and direct responsibilities of personnel involved in the management of major hazards at all levels in the organisation. The operator should identify the skills and abilities needed by such personnel, and ensure their provision.

The role, responsibility, accountability, authority and interrelation of all personnel who manage, perform or verify work affecting safety should be defined, particularly for staff responsible for:

- the provision of resources, including human resources, for SMS development and implementation;
- action to ensure staff awareness of hazards, and compliance with the operator's safety policy;
- identification, recording and follow-up of corrective or improvement actions;
- control of abnormal situations, including emergencies;
- identifying training needs, provision of training, and evaluation of its effectiveness;
- coordinating the implementation of the system and reporting to top management.

The operator should ensure the involvement of employees, and where appropriate of contractors or others present at the establishment, both in determining the safety policy and in its implementation. In particular the operator should ensure that contractors receive the necessary information and training to enable them to be aware of the hazards involved, and to satisfy the safety policy.

Hazard identification and evaluation

Relevant text from the Directive:

The following issues shall be addressed by the safety management system: Identification and evaluation of major hazards - adoption and implementation of procedures for systematically identifying major hazards arising from normal and abnormal operation and the assessment of their likelihood and severity.

The operator should develop and implement procedures to systematically identify and evaluate hazards arising from its activities, and from the substances and materials handled or produced in them. The procedures used for the identification and evaluation of hazards should be formal, systematic, and critical. There should also be systematic procedures for the definition of measures both for the prevention of incidents and for the mitigation of their consequences.

The detailed content of procedures for hazard identification and evaluation is beyond the scope of this particular guidance document. However the 'management system' should include an assessment of the skills and knowledge required, including where appropriate a team approach in order to find the necessary combination and range of theoretical and practical knowledge to develop and implement appropriate procedures.

Hazard identification and evaluation procedures should be applied to all relevant stages from project conception through to decommissioning, including:

- potential hazards arising from or identified in the course of planning, design, engineering, construction, commissioning, and development activities;
- the normal range of process operating conditions, hazards of routine operations and of non-routine situations, in particular start-up, maintenance, and shut-down;
- incidents and possible emergencies, including those arising from component or material failures, external events, and human factors, including failures in the SMS itself;
- hazards of decommissioning, abandonment, and disposal;
- potential hazards from former activities;
- external hazards including those arising from natural hazards (including abnormal temperatures, fire, flood, earthquake, strong winds, tidal waves), from transport operations including loading and unloading, from neighbouring activities, and from malevolent or unauthorised action.

Due consideration should be given to any lessons learnt from previous incidents and accidents (both within and outside the organisation concerned), from operating experience of the installation concerned or similar ones, and from previous safety inspections and audits.

Operational control

Relevant text from the Directive:

The following issues shall be addressed by the safety management system: Operational control - adoption and implementation of procedures and instructions for safe operation, including maintenance, of plant, processes, equipment and temporary stoppages.

The operator should prepare and keep up to date and readily available the information on process hazards and design and operational limits and controls coming from the hazard identification and risk evaluation procedures. Based on these, documented procedures should be prepared and implemented to ensure safe design and operation of plant, processes, equipment and storage facilities. In particular, these procedures should cover:

- commissioning
- start-up and normal periodic shutdown
- all phases of normal operations, including test, maintenance and inspection
- detection of and response to departures from normal operating conditions
- temporary or special operations
- operation under maintenance conditions
- emergency operations
- decommissioning.

Safe working practices should be defined for all activities relevant for operational safety.

Procedures, instructions and methods of work should be developed in co-operation with the people who are required to follow them, and should be expressed in a form understandable to them. The operator should ensure these procedures are implemented and provide the training necessary.

These written procedures should be made available to all staff responsible directly or indirectly for operation, and where appropriate to others involved such as maintenance staff. They should also be subject to periodic review both to ensure that they are current and accurate, and to ensure that they are actually followed.

Management of change

Relevant text from the Directive:

The following issues shall be addressed by the safety management system: Management of change - adoption and implementation of procedures for planning modifications to, or the design of new installations, processes or storage facilities.

The operator should adopt and implement management procedures for planning and controlling all changes in people, plant, processes and process variables, materials, equipment, procedures, software, design or external circumstances which are capable of affecting the control of major accident hazards. This approach should cover permanent, temporary and urgent operational changes, and should address:

- definition of what constitutes a change
- assignment of responsibilities and authorities for initiating change
- identification and documentation of the change proposed and of its implementation;
- identification and analysis where appropriate of any safety implications of the change proposed;
- definition, explanation where appropriate, documentation, and implementation of the safety measures deemed appropriate, including information and training requirements, as well as the necessary changes to operational procedures;
- definition and implementation of appropriate post-change review procedures and corrective mechanisms, and subsequent monitoring.

Management of change procedures must also be applied during the design and construction of new installations, processes, and storage facilities.

Planning for emergencies

Relevant text from the Directive:

The following issues shall be addressed by the safety management system: Planning for emergencies - adoption and implementation of procedures to identify foreseeable emergencies by systematic analysis and to prepare, test and review emergency plans to respond to such emergencies.

The detailed content of the emergency plan is not within the scope of this particular guidance document. (Details of data and information to be included in an Emergency Plan are specified in Annex IV of the Directive.) However the Safety Management System does include the procedures necessary to ensure that an adequate emergency plan is developed, adopted, implemented, reviewed, tested, and where necessary revised and updated. These procedures will define the skills and abilities required, including where appropriate a team approach in order to find the necessary combination of theoretical and practical knowledge.The operator should develop and maintain procedures to identify, by systematic analysis starting from the hazard identification process, foreseeable emergencies arising from or in connection with its activities, and to record and keep up to date the results of this analysis. Plans to respond to such potential emergencies should be prepared, and arrangements for testing and review on a regular basis should be included within the Safety Management System. The procedures should also cover the necessary arrangements for communication of the plans to all those likely to be affected by an emergency.

Monitoring performance

Relevant text from the Directive:

The following issues shall be addressed by the safety management system: Monitoring performance - adoption and implementation of procedures for the ongoing assessment of compliance with the objectives set by the operator's major accident prevention policy and safety management system, and the mechanisms for investigation and taking corrective action in case of non-compliance. The procedures should cover the operator's system for reporting major accidents or near misses, particularly those involving failure of protective measures, and their investigation and follow-up on the basis of lessons learnt.

The operator should maintain procedures to ensure that safety performance can be monitored and compared with the safety objectives defined. This should include determining whether plans and objectives are being achieved, and whether arrangements to control risks are being implemented before an incident or accident occurs (active monitoring), as well as the reporting and investigation of failures which have resulted in incidents or accidents (reactive monitoring).

Active monitoring should include inspections of safety critical plant, equipment and instrumentation as well as assessment of compliance with training, instructions and safe working practices.

Reactive monitoring requires an effective system for reporting incidents and accidents and an investigation system which identifies not only the immediate causes but also any underlying failures which led to the event. It should pay particular attention to cases of failure of protective measures (including operational and management failures), and should include investigation, analysis, and follow-up (including transfer of information to personnel involved) to ensure that the lessons learnt are applied to future operation.

The operator should define the responsibility for initiating investigation and corrective action in the event of non-compliance with any part of the SMS. This should include in particular revision where necessary of procedures or

systems to prevent recurrence. The information from performance monitoring should also be a significant input to the processes of audit and review (see below).

Audit and review

Relevant text from the Directive:

The following issues shall be addressed by the safety management system: Audit and review - adoption and implementation of procedures for periodic systematic assessment of the major accident prevention policy and the effectiveness and suitability of the safety management system; the documented review of performance of the policy and safety management system and its up-dating by senior management.

The terms "audit" and "review" are used here for two different activities. An audit is intended to ensure that the organisation, processes, and procedures as defined and as actually carried out are consistent with the Safety Management System; it should be carried out by people who are sufficiently independent from the operational management of the unit being audited to ensure that their assessment is objective. A review is a more fundamental study of whether the Safety Management System is appropriate to fulfil the operator's policy and objectives, and may extend to considering whether the policy and objectives should themselves be modified.

Audit

In addition to the routine monitoring of performance, the operator should carry out periodic audits of its SMS as a normal part of its business activities. An audit should determine whether the overall performance of the Safety Management System conforms to requirements, both external and those of the operator. The results of these audits should be used to decide what

improvements should be made to the elements of the SMS and their implementation.

For this purpose the operator should adopt and implement an audit plan covering items 1-6. This plan, which should be reviewed at appropriate intervals, should define:

- the areas and activities to be audited;
- the frequency of audits for each area concerned;
- the responsibility for each audit;
- the resources and personnel required for each audit, bearing in mind the need for expertise, operational independence, and technical support;
- the audit protocols to be used (which can include questionnaires, checklists, interviews both open and structured, measurements and observations);
- the procedures for reporting audit findings;
- the follow-up procedures.

Review

Senior management should, at appropriate intervals, review the operator's overall safety policy and strategy for the control of major-accident hazards, and all aspects of the SMS to ensure its consistency with these. This review should also address the allocation of resources for SMS implementation, and should consider changes in the organisation as well as those in technology, standards, and legislation.

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The document explains and exemplifies the list of topics required by the Directive to be covered by a safety Management System, and is accompanied by an extensive bibliography on Safety Management Systems.

15

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