

ACCIDENT COMMISSION (SFK)

at the

**Federal Ministry for the Environment,
Nature Conservation and Nuclear Safety**

SFK-GS-23

Guidelines

**issued by the SFK Management Systems Working Group
to explain the major-accident prevention policy
in accordance with Article 7 in conjunction with Annex III of the
“Seveso II” Directive**

Status: Oktober 1999

GUIDELINES

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to explain the major-accident prevention policy in accordance with
Article 7 in conjunction with Annex III of the Seveso II Directive**

adopted at the 31st session of the SFK, 12 October 1999

The Accident Commission (SFK – *Störfall-Kommission*) is a committee established by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety in accordance with Article 51a of the Federal Immission Control Act (*Bundes-Immissionsschutzgesetz*).

The commission has its office at the *Gesellschaft für Anlagen- und Reaktorsicherheit* (GRS) mbH.

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1 Introduction

1.1 The new Hazardous Incident Ordinance (*Störfall-Verordnung*)

On 14 January 1997, Council Directive 96/82/EC of 9 December 1996 on the control of major-accident hazards involving dangerous substances was published in the EU's Official Journal (OJ L 10 p.13ff). This new directive, known as the Seveso II Directive, replaces the first Seveso Directive. The new directive will be implemented via an amendment of the Federal Immission Control Act¹ (BImSchG) and an amendment of the Twelfth Ordinance on the Implementation of the Federal Immission Control Act (Hazardous Incident Ordinance)².

The new directive introduces not only new obligations for operators, but also new definitions. One significant new definition is that of an "establishment"³, which corresponds to the definition of "establishment"⁴ of Article 3 (5a) of the BImSchG:

"An establishment as used herein shall mean the whole area under the control of an operator where hazardous substances within the meaning of Article 3 No. 4 of Council Directive 96/82/EC of 9 December 1996 on the control of major-accident hazards involving dangerous substances (OJ EC 1997 No. L 10, p. 13) are present or planned to be present or will be present in one or more installations, including common or related infrastructures or activities including storage as defined in Article 3 No. 8 of the Directive in the quantities specified in Article 2 of the Directive, if there is reason to assume that the said hazardous substances will be generated when certain industrial chemical processes get out of control; the establishments, hazards and activities referred to in Article 4 of Directive 96/82/EC shall be exempted from this provision."

¹ Fifth amendment to the BImSchG, 19 October 1998. (Federal Law Gazette Part I, p. 3178ff of 26 October 1998).

² In progress.

³ Henceforth "establishment" will always mean establishment as defined by the directive as well as in Article 3 (5a) of the BImSchG.

⁴ The use of the term "establishment" in existing technical regulations (for example guidelines issued by professional associations) does not necessarily correspond to this definition.

Consequently, the obligations of the directive are not referred to single installations, but rather apply to establishments, which may include one or more installations, adjoining installations and infrastructural equipment, irrespective of licensing requirements by the Immission Control Act.

One significant new element introduced by the directive for operators of establishments which are only subject to the general obligations in the directive is the obligation to draw up and implement a major-accident prevention policy. These Guidelines deal with the question of how to present this document.

In addition to the above-mentioned obligations, operators are also required to comply with the following:

- In the event of the modification of an installation, a storage facility or any other part of the establishment, or a process, or the nature and quantity of dangerous substances which could have significant repercussions on major-accident hazards, the policy must be reviewed, and where necessary revised.
- If the competent authority identifies a risk of a “domino effect”, it must ensure that the operators affected modify their policies accordingly.
- When an establishment is inspected by the competent authority in accordance with Article 18 of the directive, the authority may review the policy and the accompanying documentation.

1.2 Subject of these guidelines

According to Article 7 of the Seveso II Directive (*Major-accident prevention policy*), the operator must:

(1) “ [...] draw up a document setting out his major-accident prevention policy and ensure that it is properly implemented. The major-accident prevention policy established by the operator shall be designed to guarantee a high level of protection for man and the environment by appropriate means, structures and management systems.

(2) The document must take account of the principles contained in Annex III and be made available to the competent authorities for the purposes of, amongst other things, implementation of Articles 5 (2) (General obligations of the operator) and 18 (Inspections).

(3) This Article shall not apply to establishments referred to in Article 9 (Safety report).”

Annex III of the directive (*Principles referred to in Article 7 and information referred to in Article 9 on the management system and the organisation of the establishment with a view to the prevention of major accidents*) gives further explanations on this:

“For the purpose of implementing the operator’s major-accident prevention policy and safety management system account shall be taken of the following elements. The requirements laid down in the document referred to in Article 7 should be proportionate to the major-accident hazards presented by the establishment.

a) 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; [...]”

Additionally, Annex III (c) lists issues which need to be addressed by the safety management system. It is emphasised that operators as defined by Article 7, who are only subject to the general obligations of the directive, do not need to have a safety management system that meets all the criteria laid down in Annex III (c). This means

that Annex III (c) is primarily intended to provide guidance. This aspect is covered in greater detail in section 3.3 of these Guidelines.

A number of additional requirements arise from other articles, (e.g. Article 18, which deals with the inspection of establishments by the authorities) and from the overall content of the directive as well.

The main requirements which can be derived directly from the directive are as follows:

- The operator of an establishment must draw up a major-accident prevention policy.
- The major-accident prevention policy should be established in writing.
- The policy should include the operator's overall aims and principles of action with respect to the control of major-accident hazards (Annex III (a)).
- The regulations laid down in the document referred to in Article 7 should be proportionate to the major-accident hazards present in the establishment (Annex III, 2nd sentence).
- The major-accident prevention policy established by the operator should be designed to guarantee a high level of protection for man and the environment by appropriate means, structures and management systems (Article 7 (1), 2nd sentence).

The directive does not contain any specific requirements concerning:

- the scope and amount of detail of the written document or its structure and
- substantial technical and organisational measures within the policy itself. The directive is only specific about certain details of the management system (Annex III (c)).

The directive states that the operator must have an effective major-accident prevention policy. It does not explicitly state **how** the operator has to meet this requirement. However, the written document must give a plausible explanation how the aims of the policy are to be met to fulfil the general obligations of the operator as laid down in Article 5.

1.3 Aim of the Guidelines

These Guidelines are intended to give advice on, and make clear

- which aspects are important when drawing up and implementing the major-accident prevention policy;
- what is to be presented in the written document; and
- which aspects need to be taken into consideration in the presentation.

The Guidelines have been compiled by the Hazardous Incidents Committee's Working Group on Management Systems and been approved by the Committee at its meeting on 12 October 1999. They are applicable to establishments which are only subject to the general obligations of the directive. A separate set of guidelines, ref. SFK-GS-24, has been drawn up for establishments which have to fulfil the extended obligations.

As the Seveso II Directive has not yet been incorporated into German law, these Guidelines only refer to the Seveso II Directive. This booklet will be updated as appropriate after the directive enters into German law.

The Hazardous Incidents Committee is aware that the text of the directive offers different possibilities to interpret the scope and level of detail of the written document required in Article 7. The Committee has the opinion that in addition to details of the corporate policies, the operator should describe his procedures in relation to the present hazard potential to prevent hazardous incidents and limit their consequences. The level of detail to be provided is made clear in the following sections.

With that, a document should be produced in which the operator commits oneself within his organisation and towards the general public to the prevention of major accidents as an important company objective, and in which it is made clear how he meets his obligation to prevent major accidents and to limit their consequences. In addition to this, the document is of central importance for the operator's own monitoring activities, and for official and expert inspections in accordance with Article 18 of the directive. This document and other documents to which it refers must therefore be made available to the competent authorities in line with Article 7 (2).

If a company already has regulations or management systems in place for related issues, such as environmental protection, occupational safety or quality control, or

wishes to install them, an integration of the major accident prevention policy required by Article 7 into the other relevant documentation is possible and even recommended. The directive does not require a separate written document.

In the light of the wide range of establishments covered by Article 7, the advice given in these guidelines can only provide explanatory guidance and is not intended to be the last word or a binding list of instructions for the operator. In particular, the annexes are not to be treated as checklists to be completely worked through. Rather they are to be seen as suggestions to what the operator may need to consider. By contrast, obligatory requirements in these Guidelines are rendered as quotes in italics.

However, the operator should recognize, that the explanations, advice and recommendations in these Guidelines are the results of intensive discussions between the experts who represent different social interest groups within the Hazardous Incidents Committee. An orientation towards these Guidelines will lead to a better acceptance of the documentation. It is also advisable to start a dialogue with the competent authorities either in advance or during the formulation of the document required by Article 7.

2 Structure of the written document

In many cases, a written document as required by Article 7 can refer to existing relevant documents, such as licensing documents in accordance with the Federal Immission Control Act, the construction law, or the Ordinance on Flammable Liquids (VbF); risk assessment documents in accordance with the Act on Safety and Health at Work (*Arbeitsschutzgesetz*), and safety examinations according to the Technical Regulation for Dangerous Substances 300 (TRGS 300). The latter merits special attention, as it could include a possible system of hazard analysis and the deriving of safety measures in the sense of these Guidelines.

When drawing up the written document, it is important to investigate the usability of the existing documents, and equally important to treat this as an opportunity to check, and if necessary update, the existing documentation.

The written document does not need to be as detailed and as easy to verify as a safety report in accordance with Article 9, but it must clearly describe, together with other

available documents, how the obligations are being met.⁵ The final document as required by Article 7 should present a coherent policy, despite all necessary cross-references.

Article 10 of the directive reads:

“In the event of a modification of an installation, establishment, storage facility or process or of the nature or quantity of dangerous substances which could have significant repercussions on major-accident hazards [...]”, the operator is to “[review] and where necessary [revise] the major-accident policy.”

Appropriate organisational arrangements must be made for this.

⁵ “Guidelines on a Major Accident Prevention Policy”, published by EU Technical Working Group 4, states that “a major-accident prevention policy (as defined in Article 7) is not a mini safety report and may often refer to other detailed documentation where necessary.”

3 Content of the policy and its presentation in the written document

3.1 Corporate policies and guidelines

The operator should commit in an appropriate manner⁶ that the prevention of hazardous incidents and the limitation of their consequences are part of the primary company objectives and have priority in the event of such an incident. The corporate policy is the basis for the measures outlined below. In larger companies, it may be appropriate to complement the corporate policy, which is usually formulated in rather general terms, with guidelines that show predominantly the company's strategy for achieving certain protection goals.

The corporate policy should not only make clear what the company is trying to achieve externally, but above all focus on this towards his own staff. Therefore it is recommended that staff, or staff representatives, are involved in the policy formulation process from the beginning, and that the policy's validity is confirmed by signatures of the company management.

3.2 Hazard potential in the establishment

The basis of all considerations is the identification of possible hazards. The Seveso II Directive emphasises on major accidents (hazardous incidents). Basic details for the identification and evaluation of hazards are supplied in the notification as per Article 6, which should be included as a copy. A reference on this document principally is possible as well.

In this section it should be clarified, which hazards can originate in the establishment. To do this, the possible hazards should be specified and evaluated with regard to their relevance to safety.

The following factors in particular should be taken into consideration:

⁶ Either by including details in the written document, by referring to the relevant documentation, or by including the documentation with the written document.

- **Geographical location**

Here, particular attention should be given to any neighbouring residential areas, areas of particular sensitivity or interest and to factors specific to the location (earthquakes, floods, etc).

- **Substances**

A complete list of the dangerous substances and/or the relevant categories as laid down in the directive, specifying the quantity and physical form of each substance, is part of the notification required by Article 6. In this notification, the operator should name and describe the substances and their properties which are particularly relevant for the aim of preventing major accidents. In addition to information on the quantity involved and the methods of handling, of particular importance are physical properties, technical data regarding safety, reaction properties, information on their effects, and possible threshold limit or assessment values. Annex 1 of this guideline exemplarily lists important data that can be of relevance in single cases and should then be described.

- **Type of process or activity**

The main activities in the establishment already form part of the notification defined in Article 6. In the document required under Article 7, the operator has to describe which installations or parts of installations and which activities are important under the point of view of major accidents. Annex 2 of these Guidelines lists examples of important factors which could be relevant in the individual case.

3.3 Technical and organisational measures to prevent or limit the consequences of major accidents

In this section, the operator should explain the basic measures proposed to reduce and control the hazard potential described in the previous section, and to limit the consequences of a hazardous incident. These measures can be of technical and/or organisational nature.

Reference should also be made, if applicable, to other relevant documents, such as licences according to the Federal Immission Control Act. It is, however, strongly

recommended that the operator makes clear in this section, which priorities are set in applying the safety policy⁷ to meet the general obligations of the directive, namely the prevention of hazardous incidents and the limitation of their consequences.

Annex 3 provides guidance which elements could be relevant when describing the technical safety-related measures. Annex 4 does the same for organisational measures. A certain amount of overlap can be accepted, just as the two kinds of safety measures complement each other in practice as well.

The structure of the organisational measures in Annex 4 is based on the principles for a Safety Management System (SMS) described in Annex III (c) of the Directive, as required for establishments which have to meet the extended obligations of the directive. Separate guidelines are published by the Hazardous Incidents Committee for such cases.

The structure follows some elements of other management systems, particularly : environmental management systems based on ISO 14000 ff or EMAS (eco-audit), quality management systems based on ISO 9000 ff; and relevant proposals from the State Ministries of Social Affairs in Bavaria (OHRIS) and Hesse (ASCA).

A company that has introduced such management systems can use them to meet the requirements of Article 7 and refer to them as such. Moreover, the integration of different management systems is both viable and makes sense. Article 7, however, does not demand a particular structure of organisational measures. So the operator is free to use any other organisational arrangement which he may already have introduced.

In general, the technical and organisational measures of the operator have to provide the premisses of meeting all legal requirements (laws, ordinances, accident prevention regulations, permits and legal conditions). This particularly includes measures which guarantee that the operator's documentation is in line with the current situation.

In contrast to the description as required in the safety report according to Article 9, Article 7 does not require the operator to provide a detailed description of a safety

⁷ For example: "single failure principle", physical distance between the hazardous area and protected

management system. However, he should clearly describe the fundamental elements of his safety organisation. This is resulting in significant differences between the requirements for larger and smaller companies. The simpler an establishment's organisational structure, the less information needs to be included in the document.

Annex 1: Key data of substances and reactions

Physical substance properties, such as:

- boiling point
- melting point
- vapour pressure and density
- particle size
- evaporation enthalpy

Safety-related and reaction properties, such as:

- explosion limits
- flash point
- ignition temperature
- minimum ignition energy
- temperature of spontaneous ignition
- decomposition temperature and enthalpy
- reaction enthalpy

Effects data, such as

- toxicity
- irritant effects
- long-term effects
- carcinogenicity
- synergism
- odour threshold
- sensitisation

Classification and labelling, eg:

- dangerous substances law
- transport law

Threshold limit and hazardous incident assessment values, such as:

- Threshold limit values such as MAK, TRK
- Hazardous Incident Assessment Values; IDLH; ERPG; AEGL

Annex 2: Informations on assessing hazard potentials

The following points are important when assessing the hazard potential:

- The technical purpose of the establishments/installations including basic operations (physical or chemical transformations, interim storage of educts and products, handling of waste materials and waste gases).
- Characteristic process parameters of establishments/installations (pressure, temperature, physical conditions, reaction or kinetic parameters such as data on exothermic reaction enthalpies, autocatalysis, decomposition reactions, etc.) and their assignment to significant substance hold ups and massflows. The Operators attention is drawn to the guidelines entitled "Recognising and controlling exothermic reactions" (ref. TAA-GS-05), produced by the Technical Committee for Plant Safety (*Technischer Ausschuss für Anlagensicherheit*) for evaluating the safety-related aspects of exothermic reactions.
- The size, layout, type, construction and design of the establishment, for example storage facilities or processing plants, which can be operated continuously or as batch processes. Another important aspect is whether the individual facilities are located in buildings, surrounded by enclosures or are open-air plants.
- Hazardous substances and their maximum quantities in each of the establishments/installations.
- Identification of the establishments/installations which are significant to safety, such as distillation columns, stirred reactors, furnaces, storage tanks, driers, pumps and pipes.

Annex 3: Informations on technical safety-related measures

The following factors may be important when determining and presenting technical safety-related measures:

- Safety-related construction and design characteristics of installation components, such as the material used (e.g. steel, glass or graphite), as well as location and overall design of these components.
- Safety-related maintenance at the establishment/installation
- State-of-the-art of safety technology, regulations, standards, guidelines, etc. which must be observed.

Measures to prevent, and limit the effects of events which could cause major accidents as defined in the Seveso II Directive, may include:

- process control systems to prevent excessive pressure or temperatures
- safe containment of hazardous substances
- safety valves
- measures to avoid explosive atmospheres (e.g. inertisation)
- measures to avoid sources of ignition (for example, using electrical installations according to qualified, i.e. standardised, categories of explosion protection, grounding)
- fire prevention measures
- defensive and constructional fire protection measures
- equipment of constructional explosion protection, such as rupture disks, explosion flaps and explosion suppression systems
- rapid closure devices
- spillage-collection facilities
- sprinkler systems
- gas detectors
- water/steam curtains

Annex 4: Informations on organisational safety measures

The following points may be significant when establishing and presenting organisational safety measures:

I. Organisation and personnel

Establishing tasks and areas of responsibility of those members of staff in charge of handling the risk of major accidents, for example through organisational charts.

Regulations on the legally required functions of safety officers, and regulations to ensure cooperation between the various officers and the line organisation.

Establishing a procedure for identifying and providing the required qualifications of personnel and for carrying out training and further training measures.

II. Identifying and evaluating the hazards of major accidents

Establishing a procedure to systematically identify hazards within the establishment, and to select and implement the derived measures.

In particular, regulations are needed for:

- the type of safety-related investigation methods (eg HAZOP)
- the responsibility for the identification and assessment of the hazard potential
- inclusion of relevant knowledge and experience, of the operating staff
- guaranteeing the compliance, implementation and performance monitoring of the organisational measures

III. Operational control

Measures to ensure that operations comply with the relevant regulations, such as monitoring (continuous or discontinuous), including maintenance and fixed stoppage periods.

Involving the subcontractors and other external staff into this monitoring process.

Establishing operation procedures, in particular for the following areas:

- clear, appropriate and viable operating instructions in a clear and logical way⁸
- comprehensibility of operating instructions
- staff training transparency and documentation of any safety-related actions carried out, ensuring that they are adequately understood in retrospect
- maintenance

IV. Management of change

The following points need to be addressed when modifying or planning new installations, processes or storage areas ::

- determining responsibilities, competences and details of processes
- identifying the hazard potential and the measures required to carry out the modifications safely
- consideration of the effects on all systems
- keeping the staff informed

⁸ When establishing the required procedures, it is important to note the fact that working and operating instructions and appropriate training measures are required by various other German laws, notably the Act on Safety and Health at Work and its ordinances, the Ordinance on Dangerous Substances, the Safety of Equipment Act and various accident prevention regulations.

V. Emergency planning

The obligation to establish internal emergency plans in accordance with Article 11 and Annex IV of the directive only applies to operators who have to meet the extended obligations of the directive. However, limiting major accidents and their consequences for man and the environment is one of the general obligations of the operator as defined in Article 5 (1). The emergency plans should at least include the following elements:

- establishing control measures for operational hazards
- drawing up plans with escape routes and emergency exits
- classifying and differentiating incidents
- keeping internal and external emergency contact numbers ready
- establishing communication chains for incidents
- keeping a coordination point for incidents occupied
- emergency drills (unannounced)

VI. Monitoring Performance

The operator needs to establish a procedure for the regular assessment of its measures to prevent major accidents and limit their consequences, considering the question of whether the policy's objectives are being met and whether the measures are being implemented properly. Particular attention should be given to the following points:

- reviewing organisational measures to see whether they are suitable and viable, also involving the external staff and contractors;
- recording details of hazardous situations and "near misses" by working closely with all employees (e.g. improvement suggestion schemes).

VII. Audit and Review

Establishing a procedure to assess how the aims laid down in the major accident prevention policy are proving to be effective.

Establishing the responsibility within the management of the establishment to draw consequences from the results, as well as for the documentation and the implementation of adopted measures.

Appendix

List of members:

The following members belong to the SFK Management Systems Working Group
(Status: August 1999):

Dipl.-Chemiker Bahr (from 18 June 1998)	Industriegewerkschaft Bergbau, Chemie, Energie
Dr. Ehret	BASF AG
RD Friedrich	Ministerium für Umwelt, Raumordnung und Landwirtschaft NRW
Dipl.-Ing. Guterl (from 19 November 1998)	Berufsgenossenschaft der chemischen Industrie
Dr. Heuter (until 26 February 1998)	Deutscher Gewerkschaftsbund
Horster	Bund für Umwelt und Naturschutz Deutschland e. V.
Prof. Dr. Jochum (chairman)	Gerling Consulting Gruppe GmbH
Konstanty (from 18 June 1998)	Deutscher Gewerkschaftsbund
Dr. Kutscher (until 19 November 1998)	Berufsgenossenschaft der chemischen Industrie
Dr. Nitsche (from 19 November 1998)	Umweltbundesamt

Dipl.-Ing. Paul
(from 19 November 1998)

RWTÜV Anlagentechnik GmbH

Dr. Poppendick

Bundesanstalt für Arbeitsschutz und
Arbeitsmedizin

Prof. Dr.-Ing. Schulz-Forberg

Bundesanstalt für Materialforschung
und -prüfung

Dr. Sundermann-Rosenow
(until 19 November 1998)

Umweltbundesamt

Dr. Wiesner
(until 19 November 1998)

Secretariat of the Accident Commission:

Dipl.-Ing. Freund

Gesellschaft für Anlagen- und
Reaktorsicherheit (GRS) mbH

Dates of meetings:

The following meetings of the SFK Management Systems Working Group have taken place:

1st Meeting on 21 April 1997 in Ludwigshafen

2nd Meeting on 19 June 1997 in Köln

3rd Meeting on 2 September 1997 in Dresden

4th Meeting on 18 November 1997 in Ludwigshafen

5th Meeting on 12 March 1998 in Köln

6th Meeting on 13 July 1998 in Köln

7th Meeting on 9 October 1998 in Köln

8th Meeting on 27 January 1999 in Köln

1st Meeting of the ad-hoc-Group "Guidelines" on 8 March 1999 in Frankfurt/M

2nd Meeting of the ad-hoc-Group "Guidelines" on 20 April 1999 in Berlin

9th Meeting on 22 June 1999 in Köln

**Gesellschaft für Anlagen-
und Reaktorsicherheit
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