GUIDELINES
for preparation and inspection of a safety report

UNECE convention on the transboundary effects of industrial accidents & the EU Directive 96/82/EC (SEVESO II) by a consistent Checklist system

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

Umwelt Bundes Amt
For our Environment

UNECE Convention on the Transboundary Effects of Industrial Accidents
Assistance Programme

Foreword

These instructions on preparing and inspection of a safety report provide a checklists system for safety reports. The document can be seen as containing three main parts:

First part, the introductory chapter, describes the purpose of safety reports and provides important definitions. This includes a useful definition of accident scenarios.

Second part, the guidelines chapter, provides background information on the content of the checklists (mostly questions in the complete category of the scoring system, although correct and credible could be found in the text), following the lists' numbering. The user can easily find detailed explanation of the chapters (1-6) in the checklist by referring to the corresponding numbers in the guidelines (for example, Q 1.1.1 Is the general description of the region provided?).

Third part, the literature, contains the list of useful references relevant for safety reports and inspections.

The document is designed as a supporting document to the SECTORAL CHECKLIST for preparation and inspection of a safety report in accordance with the UNECE Convention on the Transboundary Effects of Industrial Accidents and the EU Directive 96/82/EC (SEVESO II) by a consistent Checklist system presented in the separate document.

This checklist system has been prepared within a project on the evaluation of safety reports under the UNECE Convention on the Transboundary Effects of Industrial Accidents which was implemented with funds of the Advisory Assistance Programme for Environmental Protection in the Countries of Central and Eastern Europe, the Caucasus and Central Asia provided by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and managed by the Federal Environment Agency.

Any statements and opinions made are neither official statements nor opinions of the Ministry, nor can they be attributed to the managing agency. They solely reflect the opinion of the authors.

→ The present guidelines were prepared in cooperation with:

Mr. Gerd Schulze
R+D Sachverständige für Umweltschutz,
Germany

Mr. Jan Roed
Senior engineer, the Directorate for Civil Protection and Emergency Planning, Norway

Mr. Nikolay Savov
Head of unit "Hazardous chemicals",
Ministry of Environment and Water,
Bulgaria

→ Special thanks to:

Mr. Jochen Uth
from the Federal Environment Agency, Germany;

Mr. Milos Palecek
from the Occupational Safety Research Institute,
the Czech Republic;

Mr. Neil Manning
from the ICARO, Italy

Zoi Environment Network for supporting the project.

Table of contents

1. Introduction, general principles and definitions

Learning from major chemical accidents in the past, the international community took action to issue several regulations dealing with prevention of, preparedness for and response to major industrial accidents. In particular:

- UNECE Convention on the Transboundary Effects of Industrial Accidents[1]
- OECD Guiding Principles for Chemical Accident Prevention, Preparedness and Response[2]
- EU Directive 96/82/EC (SEVESO II)[3], amended by Directive 2003/105/EC[4].

Those regulations aim at the prevention of major accidents which involve certain dangerous substances, and the limitation of their consequences for man and the environment, with a view to ensure high levels of protection throughout the whole international community in a consistent and effective manner.

The responsible handling of bigger amounts of hazardous chemicals requires a systematic approach on safety and accident control. This is efficiently laid down in a Major Accident Prevention Policy (MAPP), which basic principles are made operational by the measures of the Safety Management System (SMS). The SMS is a part of the overall management system; the whole system represents the safety culture. The core instrument to demonstrate that all measures are taken in a consistent way is the Safety Report (SR). The preparation, auditing and inspection of SRs are strongly facilitated using a consistent system of checklists, which is described below.

The following document is mainly based on the European "Guidance on the Preparation of a Safety Report to meet the Requirements of Directive 96/82/EC as amended by Directive 2003/105/EC (Seveso II)"[5] and the German Guidance SFK-GS-24, "Outline of a major-accident prevention policy and a safety management system pursuant to Article 9 (1) a and Annex III of the "Seveso II" Directive".

1 http://www.unece.org/env/documents/2006/teia/Convention%20E.pdf
2 http://www.oecd.org/document/61/0,3746,en_2649_34369_2789821_1_1_1_1,00.html
3 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31996L0082:EN:NOT
4 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32003L0105:EN:NOT
5 http://mahb.jrc.it/fileadmin/MAHB/downloads/guidance/id-23/guidance-amended-by-2003-105-EC.pdf

1.1 Purpose of a safety report

→ WHY?

Safety reports are intended to demonstrate that:

- A major accident prevention policy (MAPP) and a safety management system (SMS) have been put into effect;
- All major-accident hazards are identified and necessary measures have been taken to prevent such accidents and to limit their consequences for man and the environment;
- Adequate safety & reliability have been incorporated into the design, construction, operation and maintenance of any installation;
- Internal emergency plans have been drawn up, supplying information to enable the external emergency plan to be drawn up; and
- Information for land-use planning decisions has been given.

→ HOW?

The safety report must include the following minimum data and information:

- Information on the MAPP and on the SMS;
- Presentation of the environment of the establishment;
- Description of the installation(s);
- Hazard identification, risk analysis and prevention methods; and
- Measures of protection and intervention to limit the consequences of an accident.

The safety report may be combined with other reports produced in response to other legislation to form a single safety report in order to avoid unnecessary duplication or repetition of work.

WHO is to prepare a safety report? The operator is the one to submit the safety report to the competent authority and he has the responsibility to decide on the competence of the people and organisations involved in the preparation of the safety report.

Relevant organisations entrusted with such tasks must be named in the safety report.

→ WHEN?

The safety report must be submitted:

- In case of existing establishment, a defined period of time from the date the relevant legislation enters into force;
- In case of an establishment, which subsequently falls within the scope of this Directive, within one year after the date on which this Directive applies to the establishment concerned;
- In case of a new establishment a reasonable period of time prior to the start of construction or operation; and
- Without delay after a periodic or necessary review.

The safety report must be reviewed and, if necessary, updated:

- In a regular period, which is laid down in the respective regulations; or
- At the initiative of the Operator or at the request of the Competent Authority, where justified by new facts, new technical knowledge about safety or about hazard assessment; or

- In case of a modification of a site, this means modification of the establishment, the installation, the storage facility, the (chemical) process, the nature of dangerous substance(s) or the quantity of dangerous substance(s). The decision whether these modifications would have an impact on safety and, therefore, would require a review of the safety report should be taken by using a systematic analysis such as for instance a screening method or a rapid ranking tool.

1.2 Definitions

The safety report should demonstrate that necessary measures to prevent, control and limit the consequences of a possible major-accident have been put in place and are fit for the purpose.

1.2.1 Demonstrate

For this specific purpose, "demonstrate" is intended in its meaning of: "justify" or "argue the case" but not "provide an absolute proof". In reality, the hazard identification, its associated risk analysis and the subsequent decisions in regard to control measures are processes that are always characterised by a certain degree of uncertainty. As such, it is normally not possible to prove absolutely in the safety report that "all necessary measures" have been taken.

In addition, it should always be assumed that the Competent Authorities will take the information and conclusions in the report largely as presented, using professional judgement more generally to assess the credibility and logic of the conclusions reached in the report. An extensive in depth scrutiny or exhaustive examination is not envisaged in most cases.

Finally, the effective implementation of this principle is strictly dependent on the correct identification of all potential major accident hazards and proper selection and application of the necessary control measures for each of them.

From these considerations the following guidance may be derived:

- The operator shall expect professional judgment from the assessor of a safety report and should base its demonstration on this assumption;
- The demonstration must be "convincing". This means that the rationale for deciding the completeness of hazard identification and the adequacy of the measures employed should be supported and accompanied by all assumptions made and conclusions drawn;
- The demonstration should provide evidence that the process was systematic which means that it followed a fixed and pre-established scope;
- The extent to which the demonstration is performed should be proportional to the associated risk.

1.2.2 All necessary measures

"Necessary measures" shall be taken in order to prevent, control and limit the consequences of a possible major-accident. In the context of the assessment of a safety report it means that, in applying the identified measures, all risks of concern have been properly reduced according to current national practices.

A point to note is that, although the "necessary measures" are properly taken, some 'residual risk' will always be present.

The decision as to whether the residual risk is acceptable depends very much on national approaches and practices.

Nevertheless there are some widely accepted supporting principles for this decision:

- The efficiency and effectiveness of the measures should be proportionate to the risk reduction target (i.e. higher risks require higher risk reduction and, in turn, more stringent measures);
- The current requirements of technical knowledge should be followed. Validated innovative technology might also be used. Relevant national safety requirements must be respected;
- There should be a clear link between the adopted measures and the accident scenarios for which they are designed;
- Inherent safety[6] should be considered first, when feasible (i.e. hazards should always be removed or reduced at source).

1.2.3 Prevent, Control and Limit

Prevent, control and limit can be defined as:

Prevent: to reduce the likelihood of occurrence of the reference scenario (example: automated system to prevent overfilling);

Control: to reduce the extent of the dangerous phenomenon (example: gas detection that reduces intervention time and may prevent major release);

Limit: to reduce the extent of the consequences of a major accident (e.g. through emergency

1.2.4 Major Accidents

The regulations aim at the prevention of major accidents, which involve dangerous substances, and the limitation of their consequences to the man and the environment. As defined in Article 3 of the SEVESO II Directive, major accident means an

> "adverse occurrence such as a major emission, fire, or explosion resulting from uncontrolled developments in the course of the operation of any establishment covered by this Directive, and leading to serious danger to human health and/or the environment, immediate or delayed, inside or outside the establishment, and involving one or more dangerous substances."

To qualify an accident as "major accident", three criteria must be fulfilled:

- The accident must be initiated by an uncontrolled development;
- One or more dangerous substances must be involved; and
- The accident must lead to serious danger to human health, the environment, or the property.

Whereas the criteria "uncontrolled development" and "dangerous substance" are viewed as relatively unambiguous, the interpretation of "serious danger" is more controversial and reflects often national policies. However a "serious danger" might be connected with: