

Evaluating the site safety report (SR)

Ike van der Putte



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Common Practices in SR

The overall approach followed should be properly described and explained

Preparation is the sole responsibility of the operator. The Competent Authority has no responsibility for content

- One of the main elements of the safety report is the definition of **reference accident scenarios**. These scenarios normally are the basis for demonstrating that the necessary measures are adequate. For this purpose, the scenario description should be structured and evidence provided to highlight the consistency between the scenario selected and the measures taken;
- The safety report should be of a **summarising** character, in which the information provided is limited to its relevance in regard to major-accident hazards, however the information should be sufficient to demonstrate that the requirements with regard to major accident hazards have been met and allow the competent authority to come to justified conclusions;



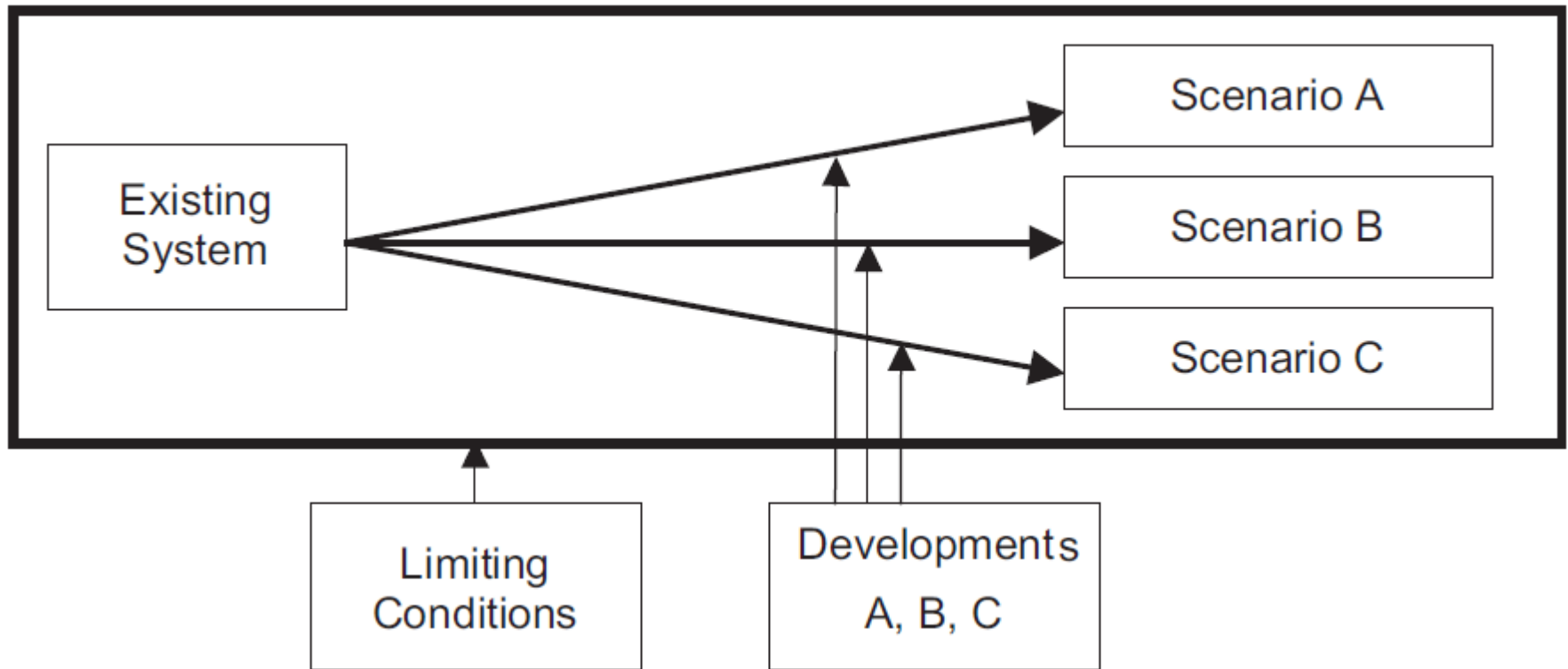
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Definition of “Accident Scenario”

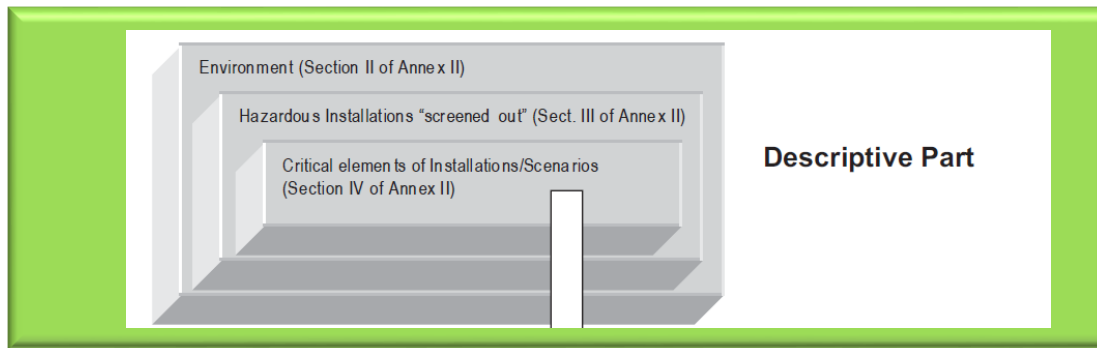
For the specific purposes of safety reports in the context of Seveso II requirements, a scenario is always an undesirable event or a sequence of such events characterised by the loss of containment (LOC) or the loss of physical integrity and the immediate or delayed consequences of this occurrence.



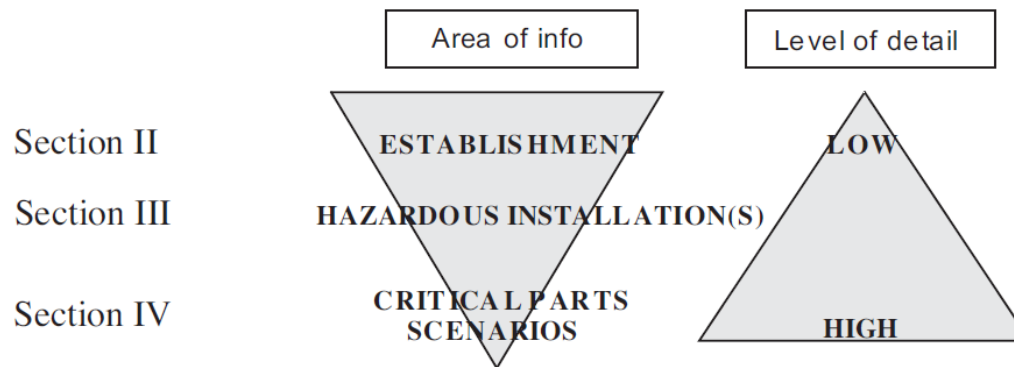
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An essential and extensive part of a safety reports is the central box, which refers to the description of the establishment, its surrounding, the hazardous installations and the critical scenarios which could lead to a major accident. In this case, the description of the different sections is expected to be characterised by a different level of detail depending on the relevance of the involved topic to the purpose of the safety report.



- ***Hazard identification*** includes consideration of all the things that can give rise to unwanted consequences.
- ***Risk assessment*** includes estimation of consequences and frequencies of unwanted incidents.
- ***Major accident scenarios*** are detailed descriptions of the events that could lead up to a major accident as well as modelling and/or description of consequences to people, environment, buildings and infrastructure.



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Reference scenario = Top event (loc) + dangerous phenomenon), i.e.
scenarios are defined as:
the conditions that might lead to a major accident and the potential consequences.

In more operational terms a major accident scenario describes usually the loss of containment (LOC) of a hazardous substance (or the change of state of a solid substance) and the conditions that lead to the realization of an undesirable consequence (fire, explosion, toxic cloud = the dangerous phenomenon)."



Example 1: Hazard identification should include

- Hazards from the chemicals' inherent properties (e.g. flammability, toxicity etc.)
- Hazards from tasks and processes
- Natural hazards (e.g. floods, lightning),
- Human factors
- Potential for undesirable reactions between substances
- Infrastructure hazards such as lack of electricity or cooling water
- Potential hazards arising in nearby installations (e.g. domino effects)



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Table 2: Accident Initiators Requiring Consideration in a Safety Report

Off-site Events	Operator Error	Abnormal Load	Arson or Sabotage	Inadequate Management	Loss of Service
Aircraft impact	system opened	impact by vehicle	fire	corrosion	Loss of electricity.
Seismic event	filled when not closed	impact by missile	explosion	erosion	loss of cooling water.
Subsidence	system overfilled	impact by dropped load	valve opened	vibration failure of process controls.	loss of nitrogen
Extreme environmental conditions abnormal rain fall abnormal snow fall very low temperature high temperature flooding gale force winds lightening strike	containment degraded.	internal temperature or pressure outside design limit.	safety system degraded.	cyclic load inadequate materials or specification.	loss of compressed air



CHECK - SR LPG/UK

Table 2: Accident Initiators Requiring Consideration in a Safety Report

Off-site Events	Operator Error	Abnormal Load	Arson or Sabotage	Inadequate Management	Loss of Service
Vehicle/train impact	excess load	external temp/pressure outside design limit.	contamination	inadequate materials or specification.	loss of steam
Land slip	failure to respond correctly to an alarm.	pressurisation.	control system degraded.	chemical attack	
Explosion	incorrect valve action.	under pressure	containment system degraded.	hidden defect in containment system.	
Fire				failure to detect dangerous situation.	
Missile				failure of process controls.	
Pipeline rupture					



Ways in which the safety *should* improve safety in practice

ref.The Role of Safety Reports in Preventing Accidents

JRC-IPSC 2012

☐ DISAGREE ☒ AGREE

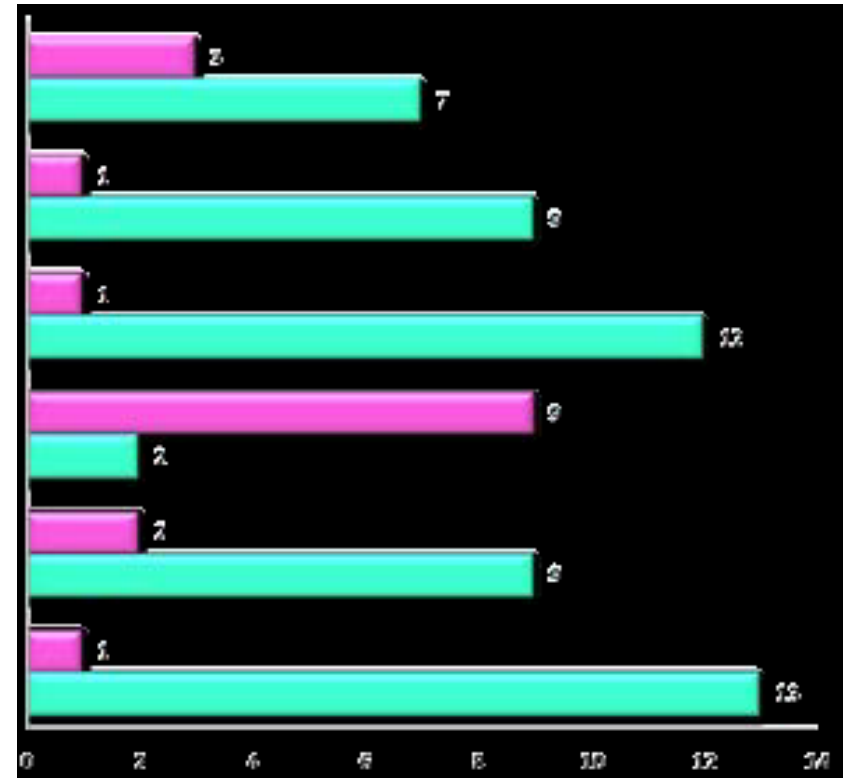
- 1) Having to prepare a SR helps the company to decide on investments into safety equipment
- 2) Having to prepare a SR increases safety
- 3) The SR helps the Company to identify risks
- 4) The SR is written for the authorities
- 5) The SR is used as training material for increasing overall awareness of risks in company
- 6) The SR is used to increase the management awareness of risks in the company



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Ways in which the safety *should* improve safety in practice ref. The Role of Safety Reports in Preventing Accidents JRC-IPSC 2012

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Ways in which the safety report improves safety *in practice*

Current situation ref. The Role of Safety Reports in Preventing Accidents JRC-IPSC 2012



- 1) Having to prepare a SR helps the company to decide on investments into safety equipment
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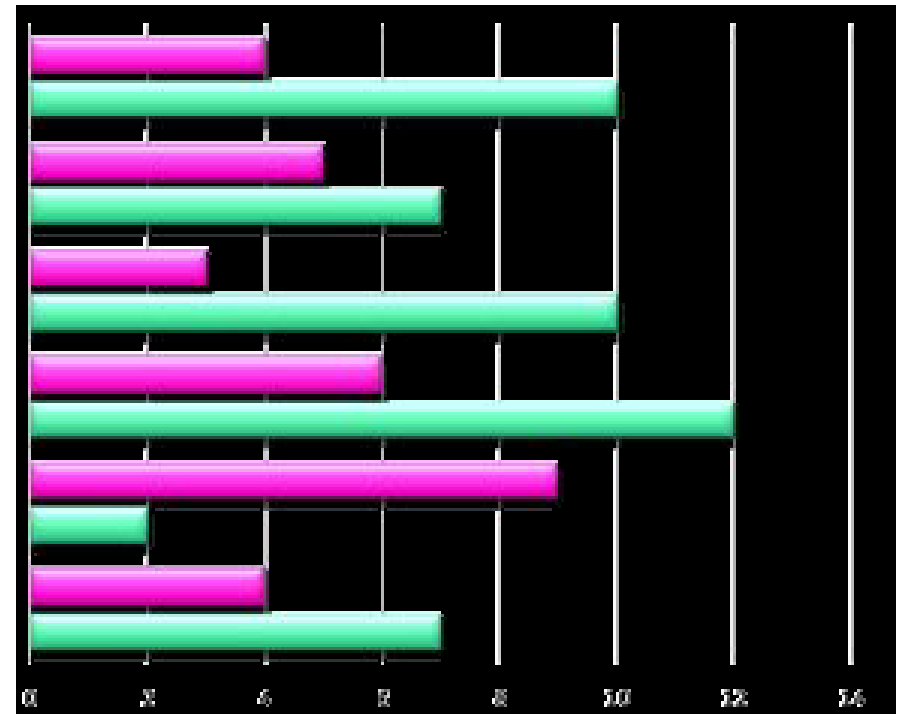


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Ways in which the safety report improves safety *in practice*

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Evaluation of the safety report and time required

The time taken to review the safety report varied widely between countries. There were also significant differences between the variance of time taken to review individual safety reports. The average time taken to complete the review was under 14 days. The time span from submitting the safety report to the company got the feedback was widely distributed (less than 6 months (50%) to more than 36 months)

In all countries the feedback to the operator is provided by the authority that manages the safety report review process. Usually this authority collects the remarks from possible other authorities and combines them to be sent to the operator.

For the evaluation, mostly in-house competence of the authority/authorities is used.

REF. The Role of Safety Reports in Preventing Accidents JRC-IPSC 2012



For General Evaluation Content SAFETY REPORT


See ANNEX II SEVESO III: Minimum data and information to be considered in the safety report referred to in Article 10

1. Information on MAPP and SMS with 7 elements, details ANNEX III
2. Presentation of the environment of the establishment (location, other activities with major accident-hazard, neighbouring establishments – domino effects)
3. Description of the installation (activities, processes, dangerous substances)
4. Identification and accidental risk analysis and prevention methods (possible major accident scenarios with assessment of consequences, review past accidents, safety equipment)
5. Measures of protection and intervention to limit the consequences of a major accident (equipment, emergency planning, mobilisable resources and other measures)




<http://www.hse.gov.uk/comah/sram/index.htm>

COMAH - Safety Report Assessment Manual (V2)

The New Safety Report Assessment Manual Main Changes 

SRAM Version 2 change sheet 

Section 1 - Statement from the Competent Authority 

The statement, signed by the senior managers representing each part of the CA, introduces the five key principles that will govern all future Safety Report assessment.

Sections 2 - 7 

This 121-page document provides an overview and describes roles and responsibilities and the procedures the CA will use to assess Safety Reports. Section 7 provides guidance on the way in which the assessment team will decide on proportionality and setting the target agenda for assessment.

Sections 8 - 15 

This 158 page document provides the criteria and supporting guidance to be used by the CA assessors to form judgements about the completeness of the Safety Report and a glossary of the terms used in the manual.



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<http://www.hse.gov.uk/comah/srag.htm>

COMAH - Safety Reports

Report assessment guides

Safety Report Assessment Guide : Chlorine

Safety Report Assessment Guide : Chemical Warehouses

Safety Report Assessment Guide : Explosives

Safety Report Assessment Guide : LPG

Safety Report Assessment Guide : HFL

Safety Report Assessment Guide : Methane Gas Bullets

Safety Report Assessment Guide : Methane Gas Holders

Safety Report Assessment Guide : Whisky Maturation Warehouse



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

Sectoral Checklists (SCL)

- SCL description of the environment and site
- SCL main activities and products for single installation
- SCL dangerous substances
- SCL identification of hazards, risk assessment and preventive measures
- SCL limitation of consequences and mitigation
- SCL Major Accident Prevention Policy (MAPP) and Safety Management System (SMS)



Detailed Checklists (DCL)¹

- DCL substances
- DCL internal Emergency Planning
- DCL interface internal & external Emergency Planning
- DCL checklists for refineries
- DCL reaction process design considerations
- DCL components

<http://www.uba.de/uba-info-medien-e/4510.html> .



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References

Seveso Inspection Series Volume 4

A joint publication of the European Commission's Joint Research Centre and the Finnish Safety and Chemicals Agency (TUKES)

THE ROLE OF SAFETY REPORTS IN PREVENTING ACCIDENTS

KEY POINTS AND CONCLUSIONS. 2012

<http://www.jrc.ec.europa.eu/>

**Guidelines on a Major Accident Prevention Policy
and Safety Management System, as required by Council Directive
96/82/EC (SEVESO II).** *Neil Mitchison & Sam Porter (Eds.)*

ISBN92-828-4664-4

**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).**

Luciano Fabbri, Michael Struckl and Maureen Wood (Eds.), 2005.

ISBN 92-79-01301-7



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