Joint meeting of CCA responsible for SEVESO II Directive and the Committee for Action Programme in the field of Civil Protection

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Combating Interference by Unauthorised Persons
-German Approach-

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Overview

- New situation after September 11, 2001
- New Strategy for identifying and protecting security-relevant installations
- Hazard analysis
- Risk analysis
- Protecting security-relevant installations
- Related problems, further research developments

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New situation after September 11, 2001

- Terroristic activities are not unusual in history
- Viewpoint of process safety: Limiting consequences rather than prevention
- Prevention of terroristic activities is a matter of politics
- However reality shows that politics is not very successful. We have to taken into account the threat of terroristic activities and their consequences for Chemical Industry.

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Scope- What establishment may be concerned ?

- upper tier establishments due to European SEVESO II Directive (96/82/EC)
- lower tier establishments due to European SEVESO II Directive (96/82/EC) if vulnerable objects are in the vicinity

In those establishments a danger due to deliberate action can not excluded

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Definitions -1

- Facilities requiring special protection are establishments that are regularly intended for the presence of large numbers of people (schools, meeting places, hospitals, stations etc.). This group also includes densely populated residential areas and transport routes with high traffic densities.
- Security-relevant installations are installations in an establishment under SEVESO II Directive, which are, in the event of interference by unauthorised persons, capable of giving rise to a serious danger to facilities requiring special protection.
- An unauthorised person is any person who deliberately commits acts with the aim of directly or indirectly causing damage. For this purpose it is irrelevant whether the person is an employee of the operator, an agent of the operator, or a third party.

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Definitions -2

- Security means all activities designed to prevent dangers which may arise from interference by unauthorised persons and to achieve preventive containment of the consequences of any major accidents nevertheless caused by unauthorised persons.
- A security analysis is the identification and assessment, by systematic means, of potential interference by unauthorised persons and of the dangers that may result from such interference.

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Systematic identification weather a risk for deliberate acts with serious consequences is to be taken into account.

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Concerned establishments

General: Upper tier establishments

Case by case: Lower tier establishments if **Hazard Analysis** is positive.

Security Analysis

Hazard Analysis

- Description of major accidents despite precautions
- Identification of facilities requiring special protection
- Impacts of major accidents despite precautions cause serious danger to facilities needing special precautions

Risk Analysis

- Vulnerability
- Importance of availability
- Symbolic character

Feedback to authority responsible for public security

positive

Environmental Protection authorities

Audit of operator's measures

Operator's measures

- **Protection of site perimeter**
- **Protection of installatations**
- **Raising employee awareness**
- **Supplementing safety reports and/or documentation of measures**
- **Notifying information necessary for preparing the external alarm and emergency plans**

Emergency authorities

Immediate preparation of external alarm and emergency plans

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Hazard Analysis

- Accident scenarios triggered by deliberate acts, including possible domino effects.
- Identification of special vulnerable objects in the vicinity of establishments.
- Assessments of consequences in respect to the special vulnerable objects.

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Risk Analysis

- Assessment of the risk situation (general security situation, size and composition of work force, quality of security organisation, social position of members of company management, nature of sales connections and foreign activities, crime situation to date etc.)
- Local position of establishment and installations (vulnerability from outside and in-side, distance from factory fence, visibility from outside, roads on and off site, situation of industrial estate)
- The importance of availability of the installations for downstream production processes and services,
- The symbolic character of the company or the installation (ownership situation, type of production and storage of substances, product range, significance of the company from an economic strategy point of view etc.)

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Protecting security-relevant installations -1

- So identified security-relevant installations must take special measures to secure them against interference by unauthorised persons. To achieve such security objectives the following measures in particular may be considered:
- The perimeters of establishments – or if appropriate the common perimeter in the case of industrial estates – (site fence, gates etc.) must be secured by technical and organisational means to ensure that unauthorised persons cannot gain access with-out using force.
- Non-site personnel should be kept identifiable. Visitors and external companies must be monitored appropriately.

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Protecting security-relevant installations -2

- Installations are to be protected in such a way that unauthorised persons cannot cause a major accident without internal knowledge and/or technical aids.
- Employees must be made aware of the need to secure the establishment, and must be involved.
- Special situation to be considered for industry complexes.

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The selection of appropriate measures requires a systematic SECURITY Analysis.

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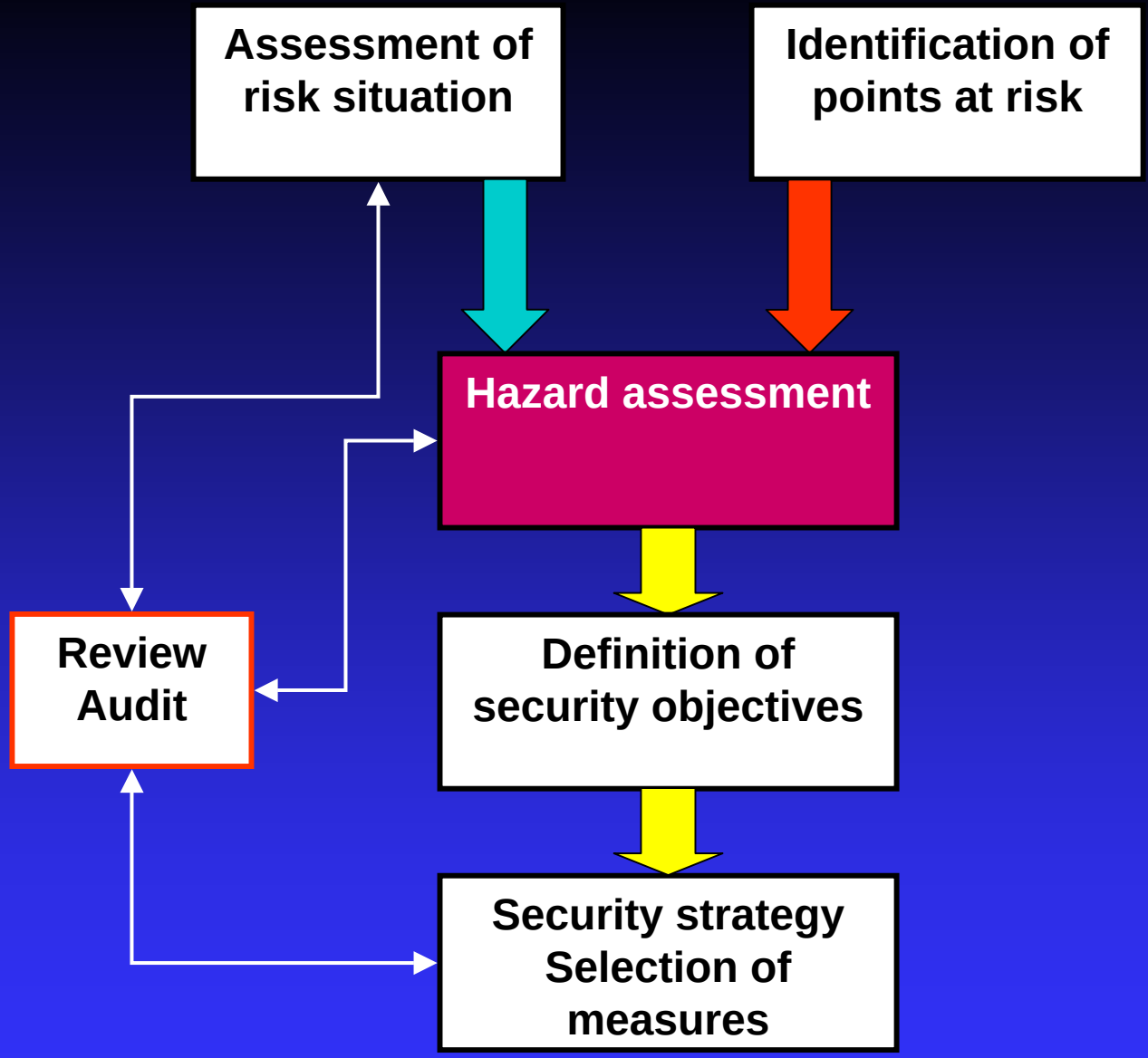

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Procedure for performing a security analysis

1. Determining and assessing the risk situation
2. Identifying the specific points at risk in the establishment
3. Assessment of hazards in relation to protection objectives
4. Selecting security measures, preparing the integrated security strategy.

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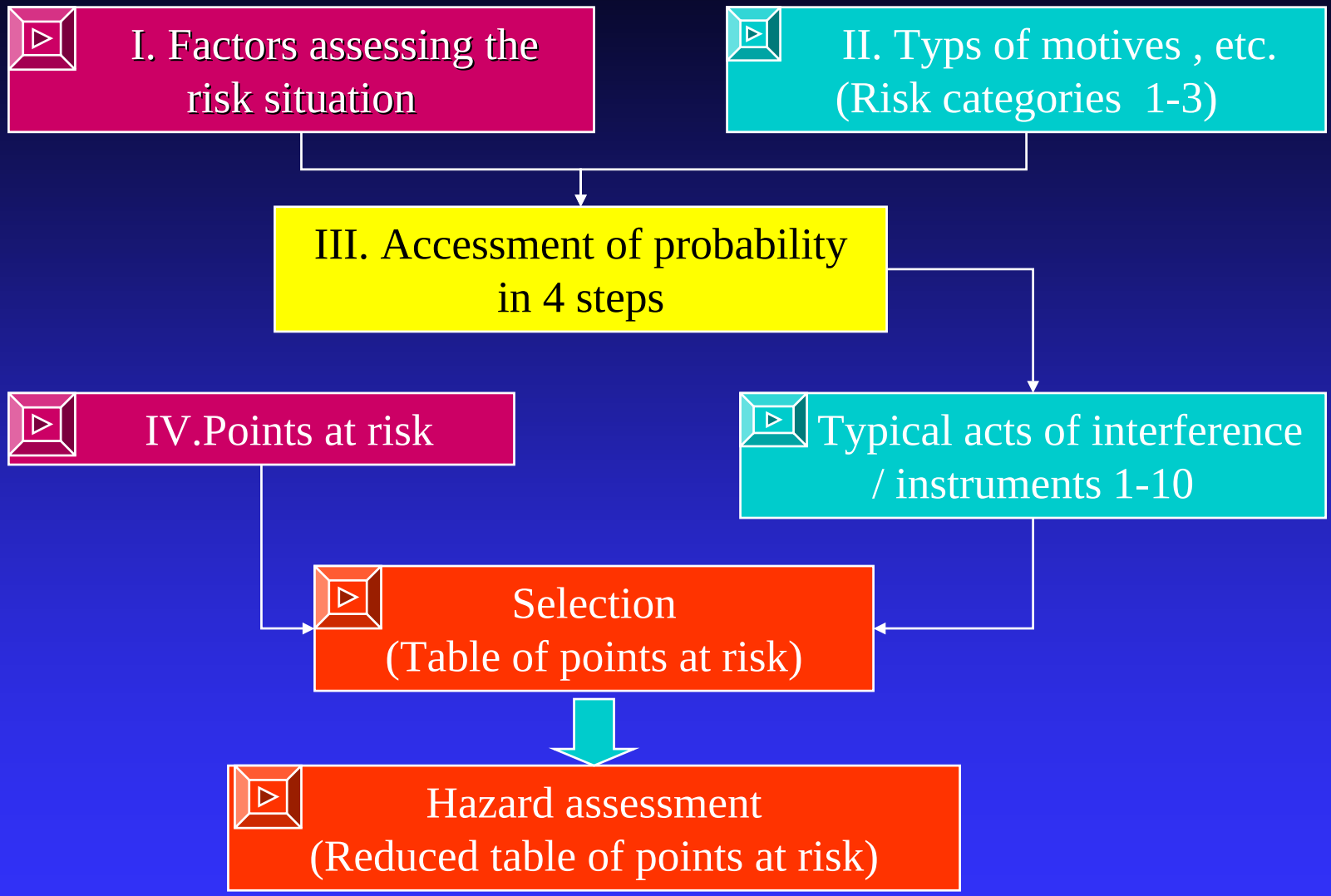
Hazard assessment



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Step I: Factors assessing the risk situation – General Information-

- General safety situation (police crime statistics, publications by insurance companies, information of public authorities on anti-subversion activities).
- Membership of other companies (establishment belongs to a large (global) company or group. This applies primarily to politically motivated crimes).
- Importance of establishment for downstream production and services (Installations with a key role for downstream production or services).
- Sales connections (business connections with politically unstable countries).
- Local situation of establishment (Neighbouring establishments, Access, domino effect).

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Step I: Factors assessing the risk situation – site specific information-

- Nature of production and storage.
- Amount and variation of employees (Internal and External personnel , Foreign employees, language barriers).
- Security management, policy of company (Quality of safety management system, company culture, commitment in security issues).
- Public involvement of Company management (position in political parties or associations).
- Crime to date (records of the last 5 years, organised crime, acts of sabotage, bomb threats, cases of arson.

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Step II: Risk Category Typ -1

Attendant circumstances	Contingent intent
Motives	Revenge, frustration
Preparatory activities	Spying out the situation, obtaining tools and other instruments
Instruments	Simple or major tools, possibly simple incendiary equipment
Criminal energy	**average**
Group of persons	Criminals from inside or outside company
Remarks / Examples	Putting safety equipment out of action, Interference with production flows, Non-notification of critical plant status, Arson, vandalism after unsuccessful break-in, Arson for other motives.

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Step II: Risk Category Typ -2

Attendant circumstances	Direct intent
Motives	Political radicalism, revenge, gaining financial/competitive advantages
Preparatory activities	Reconnoitre safety relevant installation parts and weaknesses. Exploiting surveillance loop holes. Obtaining complicated instruments if necessary. Putting safety equipment out of action.
Instruments	Simple and specialised tools, incendiary equipment, simple explosives (home-made)
Criminal energy	**Above average**
Group of persons	Individuals, groups, including as part of “organised crime”, radical political groups
Remarks / Examples	Arson/bomb attack, Destruction of important operating facilities, Interference with control systems, Deliberate incorrect programming of control processors.

Step II: Risk Category Typ -3

Attendant circumstances	Massive terrorist attacks
Motives	“Lighting a beacon”, anarchy, using violence to bring about social change, “punishing” companies, religious motives.
Preparatory activities	Logistical preparations, reconnaissance, putting security equipment out of action.
Instruments	Simple and heavy tools, weapons, incendiary devices, explosives.
Criminal energy	**Extremely**
Group of persons	Extremist and terrorist individuals and groups.
Remarks / Examples	Armed ambush, Blowing up tanks/containers, Firing on facilities, Setting fire to major installations, Attacks on security personnel,Targeted bomb attacks on specially sensitive areas.

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Step IV: Typical Points at risk

- Tanks, containers, storage facilities, Filling stations
- Control centres, switch panels, computer systems
- Pipe channels, Cable routes, Pump buildings, Valve batteries
- Production buildings, sections
- Cooling units, Emergency systems of all kinds
- High-voltage lines and in-feed points, Electrical supply facilities
- Energy supply systems of all kinds etc.

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Step V: 10 Typical acts of interference / instruments

No	Description
01	Deliberate male operation
02	Manipulation
03	Vehicle traffic
04	Interference using simple tools
05	Interference using heavy tools
06	Arson using simple means
07	Arson using incendiary devices
08	Use of explosives
09	Shooting
10	Incidents out-side the plant itself

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Example of a table of points at risk

No	Possible interference	Point at risk 1 "Tank storage"	Point at risk 2 "Process building"	Point at risk 3 "Pipeline bridge" ....
01	**Deliberate male operation**	**Yes**	**Yes (During Process)**	**No**
02	**Manipulation**	**No**	**Nein**	**No**
03	**Vehicle traffic**	**Yes**	**No**	**No**
04	**Interference using simple tools**	**No**	**Yes**	**No**

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Hazard assessment (Reduced table of points at risk)

No	Possible interference	Point at risk 1 "Tank Storage"	Point at risk 2 "Process building"	Point at risk 4 "Control center"
01	Deliberate male operation	**Yes**	**Yes**	_____
02	Manipulation	_____	_____	**Yes**
04	Interference using simple tools	**Yes**	_____	_____
10	Incidents outside the plant itself	**Yes (Fire in building "X")**	_____	_____

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Deliberate male operation(01)

- Switching equipment on/off,
- Opening/closing pipeline valves,
- Turning hand wheels, actuating levers in the course of the process etc.

Criminal Profile: Such deliberate male operation might be caused by employees or external individuals.

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Manipulation (02)

- Deliberate incorrect programming of control systems,
- Deliberate incorrect adjustment of measuring equipment,
- Suppression of process, fault or alarm reports,
- Preparatory prevention of starting of emergency units,
- Switching off protective systems etc.

Criminal Profile: “insiders” with a detailed knowledge of the installation

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Vehicle accident (03)

- Leakage from drum due to accident with fork lift truck.
- Derailment of tank cars,
- Destruction of installations due to truck impact etc.

Criminal Profile: employees and external individuals.

Interference using simple aids (04)

- Cutting wires,
- Breaking glass parts of installation (e.g. level gauges),
- Jamming moving parts of an installation,
- Admixture of non-permitted substances to a process etc.

Criminal Profile: most likely offenders are employees

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Interference using major aids (04)

- Breaking open doors and subsequently destroying equipment,
- Demolishing instrumentation and control equipment,
- Breaking open tanks and pipelines, resulting in major leakages etc.

Criminal Profile: All , no preference

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Arson using simple means (06)

- Igniting flammable liquids from the process sequence,
- Setting fire to storage facilities, resulting in release of hazardous substances,
- Setting fire to peripheral rooms or equipment having an impact on important parts of installations.

Criminal Profile: All , no preference

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Arson using incendiary devices (07)

- Pouring out and lighting flammable liquids (e.g. petrol),
- Throwing “Molotov cocktails” (e.g. through windows),
- Attaching professional incendiary devices with timed or remote controlled ignition.

Criminal Profile: Such attacks presuppose a high level of criminal energy.

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Use of explosives (08)

- Placing a home-made “fire extinguisher bomb” inside sensitive installation parts or, more probably, at the edge of buildings,
- Blowing up tanks and pipelines,
- Blowing up load-bearing structures, resulting in the collapse of tanks,
- Destroying parts of installations etc.

Criminal Profile: As a rule this kind of attack involves external interference with a radical political background.

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Shooting (09)

- Causing leakages in free-standing tanks or pipelines,
- Eliminating instrumentation or control equipment from a distance,
- Causing failure of supply systems at a distance.

Criminal Profile: external actor.

Incidents outside the plant itself (10)

- Spreading of fire from neighbouring facilities,
- Flying debris following an explosion in neighbouring facilities,
- Failure of supply systems as a result of disasters outside the installation etc.

Security objectives

- Meaningful planning of security measures is only possible if clearly defined objectives exist as to what they are intended to achieve.
- Examples
  - The control equipment including the software must only be accessed by specially authorised personnel.
  - Security-relevant switching systems must be monitored by the hazard warning sys-tem. In the event of incorrect operation an alarm sounds in the control room.
  - The danger area is to be separated from the rest of the building by constructional/ mechanical means.
  - Ingress into the storage building after working hours is to be impeded by mechanical barriers and reported by electronic surveillance measures etc.

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Description of security measures / security strategy

- Location and position
- External enclosure
- Site access controls (pedestrians and vehicles)
- Protecting areas at risk
- Organisational measures
- Security organisation
- Alarm, surveillance and communication systems

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Documentation

The analysis and the measures based on it should be documented. This documentation, however, is especially confidential and should only be accessible to a limited group of employees within the company. It should however be clear from documents available to all employees and the public that the operator has taken the necessary measures to protect the establishment and installations from interference by unauthorised persons.

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Recent Research Results (2004)

- A-1 Securing industrial facilities against deliberate acts causing chemical releases
- A-2 Evaluation of approaches to prevent deliberate acts by ‚internal offenders'
- B Classification of information for reasons of public safety

Full report UFOPLAN-202 48 376 (in German):
www.umweltbundesamt.de/anlagen

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A-1 Securing industrial facilities against deliberate acts causing chemical releases

- This part evaluates the possibility of security screening on trustworthiness of employees as a prevention measure against deliberate acts of politically or ideologically motivated internal offenders.
- A procedure to identify the staff requiring security screening at hazardous facilities is proposed.

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A-2 Evaluation of approaches to prevent deliberate acts by ‚internal offenders‘

- This part deals with intended harmful behavior of employees for reasons of dissatisfaction, anger or due to working conditions.
- Known motives and root causes for the development of motives were analysed.
- Several strategies to prevent the development of motives were analysed and evaluated to be a part of an overall prevention concept.
- A manual for good practice in the prevention of intended harmful behavior of employees in organizations is developed.

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B Classification of information for reasons of public safety

- This part evaluates the conditions to be fulfilled to allow restrictions of the free access to documents including information on hazardous installations (e.g. the safety report) for reasons of public safety according to German relevant legislation (Federal Impact Protection Law and Environmental Information Law)
- Development of decision criterias for the restriction of the rights on free access to information.

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Information sources on SVA (Selection)

- German Recommendation: www.umweltbundesamt.de/anlagen
- US overview: http://yosemite.epa.gov/oswer/ceppoweb.nsf/content/links.htm?openDocument#security
- Guideline of CCPS: http://www.aiche.org/industry/ccps/sva/index.htm
- US Ministry of justice: http://www.ncjrs.org/pdffiles1/nij/195171.pdf
- Responsible care program: http://www.responsiblecaretoolkit.com/security_guidance_siteSec.asp
- SOCMA: Chemical Site SVA Model & Manual: http://www.socma.com/products/VulnerabilityAnalysis.htm

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