

Romania - Ministry of Environment, Water and
Forests
National Environmental Guard
Cluj County Commissariat

Seveso directives, elements of
enforcing using specific environmental
inspection

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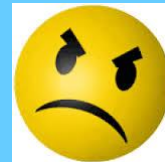
Content

- Bowtie risk evaluation and its use in Seveso installation inspection
- Seveso inspection report pattern
- Reporting a Seveso accident pattern
- Recommendations&Conclusions

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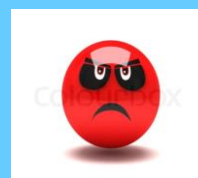
“The big accidents are just waiting for the little ones to get out of the way.” Carolyn Merritt



“Safety doesn’t happen by accident.” Anonymous (safety slogan)

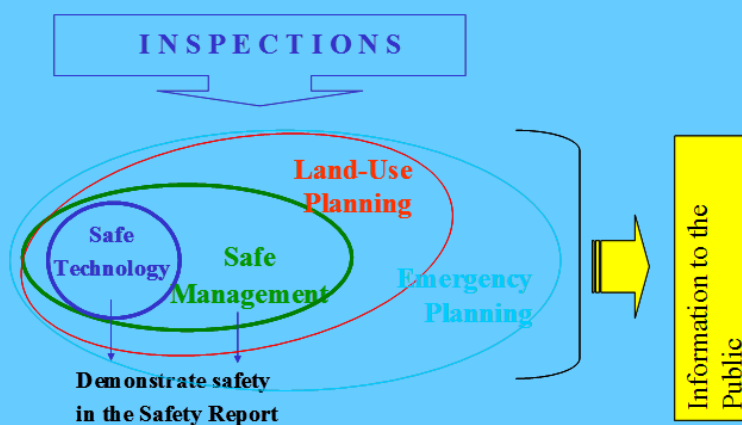


Optimism and stupidity are nearly synonymous.” Hyman G. Rickover



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M. D. CHRISTOU, M. STRUCKL and T. BIERMANN

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Key elements for SEVESO inspections

Inspections should focus on concrete examples and use these to go through the entire chain of: hazard identification > risk assessment>> scenario choices>>> mitigation prevention measures

Inspectors have to look for clear evidence of the risk having been taken into account in the emergency planning

Seveso inspection

- An Inspection Authority is not able to inspect all existing safety measures
- Compliance Control usually focuses on critical safety aspects.
-
- Bowtie risk assessment can be used to identify which safety measures should be considered as critical, and thus can be used to develop inspection programs.

What is bowtie?

- The Bowtie method is a risk evaluation method
- It can be used to analyze and demonstrate causal relationships in high risk scenarios
- Bowtie diagram benefits
 - It gives a visual summary of all plausible accident scenarios that could exist around a certain Hazard.
 - It identifies the control measures the Bowtie displays what a company does to control those scenarios.
 - It offers a visualization of interaction between the control systems and escalation factors
 - It gives an overview of what activities keep a Control working and who is responsible for Control
 - It has a highly visual and intuitive nature (understandable)

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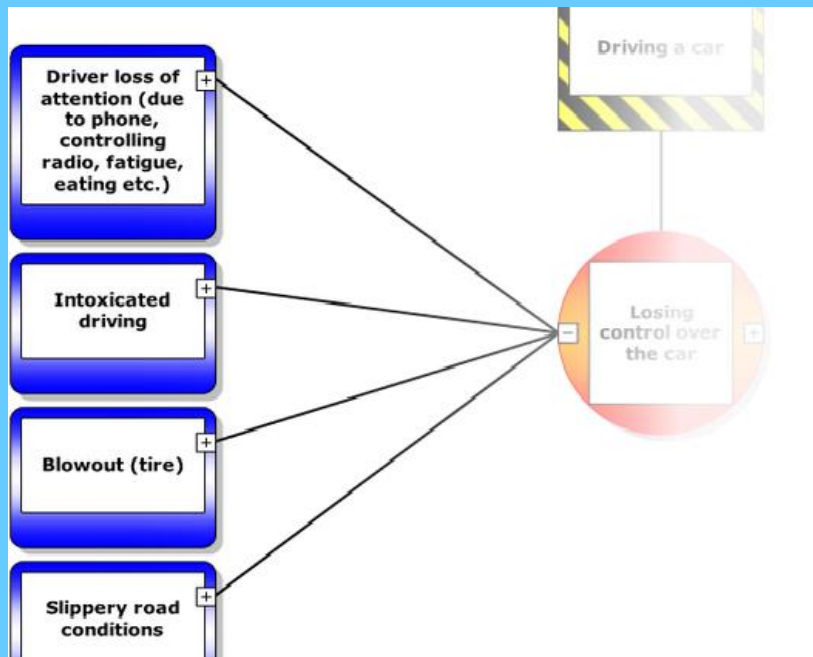
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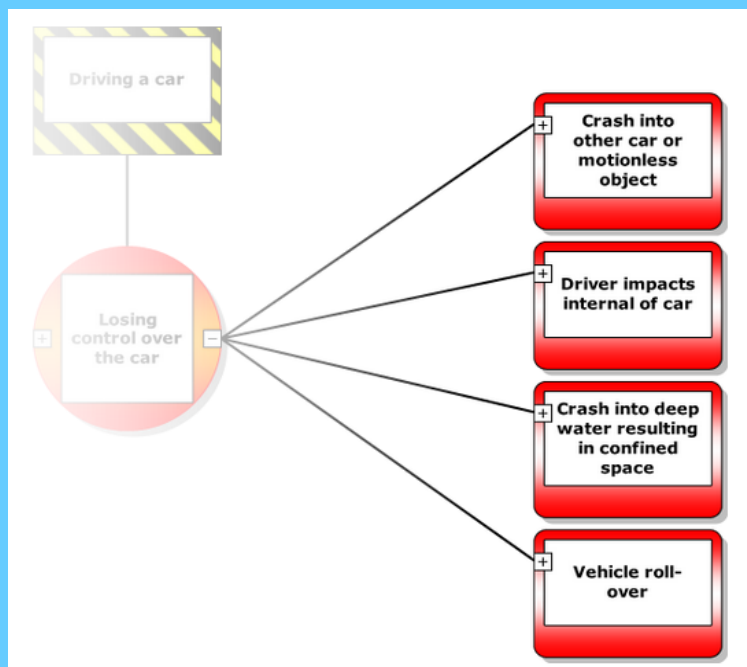


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Control and Recovery Barriers

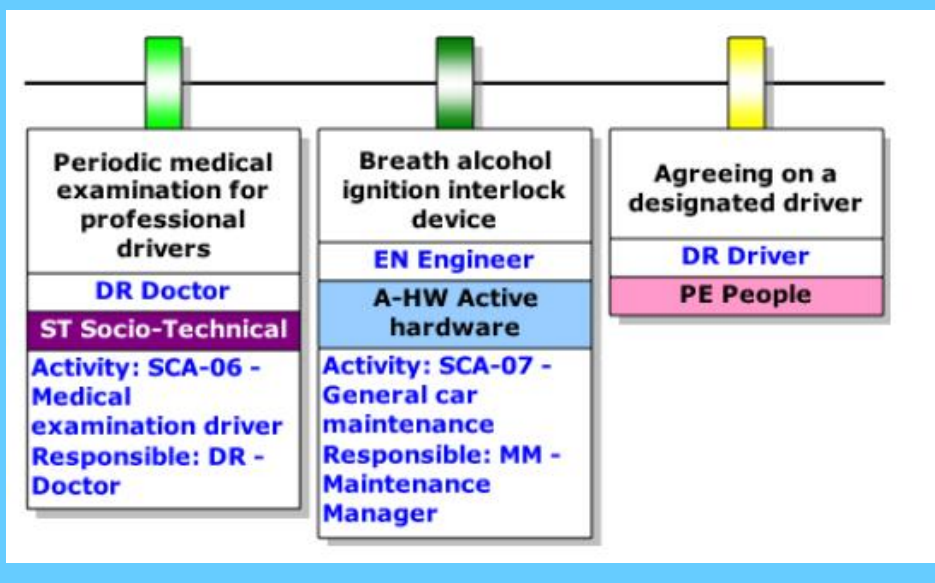
Barriers in the Bowtie appear on both sides of the Top Event.

Barriers interrupt the scenario so that the threats do not result in a Loss of Control (the Top Event) or do not escalate into an actual impact (the consequences)

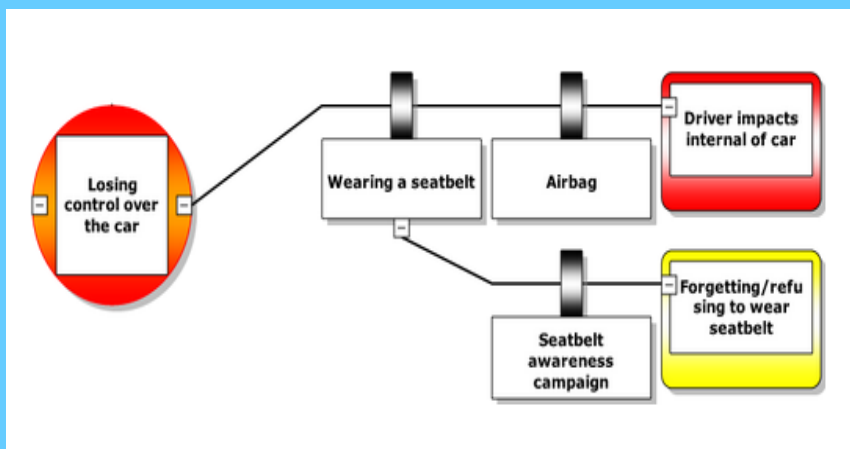
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Barriers



Barriers



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Bowtie for risk-based inspection

- The Bowtie methodology is a risk evaluation method that can be used to analyze and demonstrate causal relationships in high risk scenarios.
- Bowtie is less complex in comparison with Fault trees and Event trees
- It uses barriers instead, making it an excellent tool for risk communication and risk based inspections.

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A communication tool for Compliance Promotion

- The bowtie diagram is perfectly suitable for communication. The diagram is easily understandable and 'the picture paints a thousand words'.
- Inspectorates can use the diagram to communicate information to the industry. For example, in case of non-compliance, the inspectorate can use Bowtie diagrams to show the non-compliant organization which (mandatory) barriers have to be implemented or should be adjusted to achieve the level of compliance.
- Also, when new legislation comes into force, Bowtie diagrams can be used to communicate and 'promote' the new legislation, by visualizing the new mandatory safety measures

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- **Romanian SEVESO INSPECTION REPORT (Annex of Order of Ministry of Internal Affairs no 89/2013)**

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- **INFORMATION REPORT IN CASE OF MAJOR ACCIDENTS HAZARDS** where are involved hazardous substances

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Conclusions & recommendations Safety report

- **Approval criteria:** The criteria for approval are still very unclear, and it is therefore difficult both for operators and the inspectors to define what is “good enough”.
- **Scenarios:** Choosing and advising on choice of scenarios is an issue where opinions vary. Should the worst cases or the most probable cases be chosen?
- **Level of risk assessment:** How much can an operator be expected to do? Can a consequence/probability matrix be demanded from the operators?

Adapted from Ylva Gilbert, Jatta Aho, Leena Aho, Maureen Wood, Anne-Mari Lähde " THE ROLE OF SAFETY REPORTS IN PREVENTING ACCIDENTS

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Conclusions & recommendations

Hazard identification and risk assessment in the safety report

- Hazard identification and risk assessment appears to be among the most challenging issues both for the operators to produce and for the authorities to evaluate.
- This is of some concern as accurate hazard identification and consequent risk assessment and consequence modelling are the fundamental cornerstones of a safety report.

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Conclusions & recommendations 2

- The scenario choices and descriptions appear to be found lacking in many cases. There are large differences between countries in how many scenarios are expected to be included in the safety report, as well as how these should be presented.
- There is a calling for better definitions of what a scenario actually is. It appears that what can be seen as a good scenario selection in one country may not be acceptable in another.

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Conclusions and recommendations 3

- The need for presenting methods used and justification of methods used for hazard identification and risk assessment in the safety report divided opinions.
- Whilst some saw the need for justifications and descriptions, others were less convinced of this need and suggested any methods can be used as long as these are internationally recognized.
- However, as the quality of the assess will inevitably be dependent on the methodology.

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Conclusions and recommendations 4 risk management and the safety report

- If hazard identification and risk assessments were identified as challenging for many operators regardless of the country, linking the identified and assessed risks to safety control measures and the emergency plan appears to be at least equally challenging.
- It is hardly the case in practice that operators identify and implement safety control measures on a random basis without clear reasons for it.
- Assessing the level of risk management and site safety is of course not an easy task to do from a document, not matter how well prepared. It requires verification on site and discussion with personnel to assess how good the practice is.
- Nevertheless, the safety report is – and should be – the first review of the adequacy of the risk management approach

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Conclusions and recommendations 5

Using the Safety Report for inspections

- Inspection should be focus on concrete examples and use these to go through the entire chain of hazard identification, risk assessment, scenario choices, mitigation and prevention measures, and to look for clear evidence of the risk having been taken into account in the emergency planning.
- In addition, checking the linkage between maintenance, technical testing, work process and task descriptions and safety management was highlighted as being particularly relevant
- The objective would be to identify effective verification measures for safety reports as verifications during the inspection are seen as impacting most on the actual safety level. The starting point should always be the actual safety level of a site, and targeted discussions on how to progress towards better standards could contribute to this.

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References

- Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC
- Ylva Gilbert, Jatta Aho, Leena Aho, Maureen Wood, Anne-Mari Lähde "THE ROLE OF SAFETY REPORTS IN PREVENTING ACCIDENTS"
- CGE "Bowtie risk assessment for Inspection Authorities"
- Romanian TEHNICAL NORMS *on the organization and development of inspection and control activities in the environmental protection field - INFORMATION REPORT IN CASE OF MAJOR ACCIDENTS HAZARDS* Where are involved hazardous substances and Seveso inspection report pattern

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Thank you for your attention

Questions?



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