Enviroment and Climate Regional Accession Network ECRAN

THE SEVESO DIRECTIVE

Ike van der Putte

Source: RPS/EC, DG Environment/ECENA

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Seveso II Directive - Aim

- **prevention** of major accidents involving dangerous substances
- **limitation of the consequences** of accidents on man and the environment

high level of protection
for man and the environment throughout the European Union

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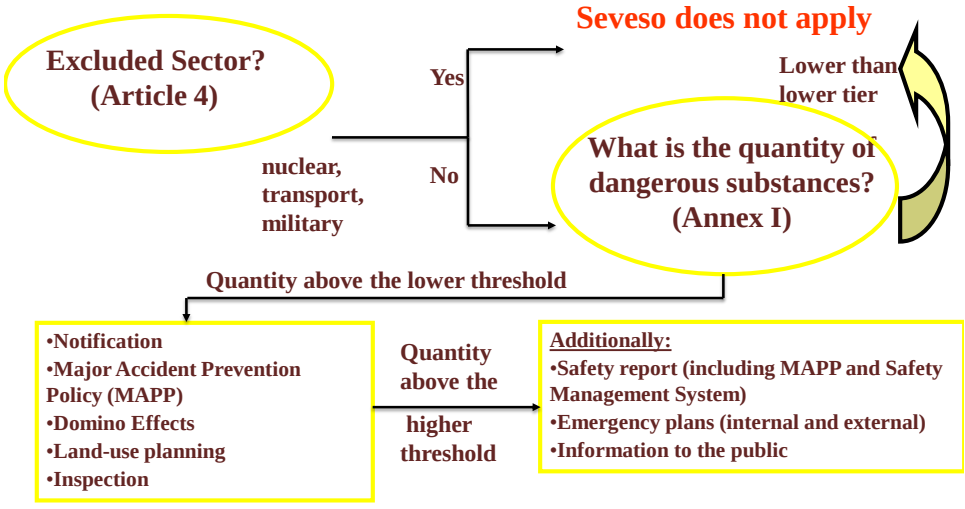
Seveso Directive – Scope & main obligations



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Seveso Directive – Scope, Methods

- ~ 4000 upper + ~ 4000 lower tier establishments storing dangerous substances -EU
- Mainly chemical and petrochemical industry, storage, big industrial production and energy installations
- Criteria: Hazard: Quantity of dangerous substances present

- .. the Seveso II Directive contains no detailed procedures and guidelines for risk assessment and management.
- A variety of such procedures is currently in use, employing different terminologies and underlying philosophies, making cross-comparison of results difficult.

Seveso Directive – Control measures aimed at Prevention

Upper and lower tier:

- General obligations
- Notification
- Major Accident Prevention Policy
- Domino Effects
- Inspection by Competent Authorities

For upper tier only:

- Safety Report
- Safety Management System

Seveso Directive – Control measures aimed at limitation of the consequences

Upper and lower tier:

- General obligations
- Land-Use Planning
- Information to the Public

For upper tier only:

- Emergency Planning
- More information to the Public on MAH

2015 – Seveso III

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As a result of the review process, on 21 December 2010 the Commission adopted a proposal for a new Directive, replacing the current SEVESO II Directive by 1 June 2015.

- to align Annex I to the Directive to changes to the EU system of classification of dangerous substances (CLP)
- to include corrective mechanisms to adapt Annex I in the future
- to strengthen the provisions relating to public access to safety information, participation in decision-making and access to justice,
- to introduce stricter standards for inspections of installations to ensure the effective implementation and enforcement of safety rules.
- Stricter Landuse planning requirements

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CORRELATION WITH OTHER EU LEGISLATION

- CLP Directives
  - Definition of Hazardous Substances & Preparations
- REACH
  - Chemical Safety reports
  - New Studies on Chemicals – New Classification possible
- GHS
  - New Classification Rules – Downstream Effect
- Labour safety
  - Complementary to each other

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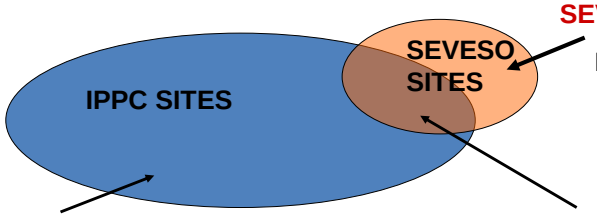
CORRELATION WITH OTHER EU LEGISLATION

IPPC Directive - Different scope



SEVESO SITES ONLY

Major Accidents

IPPC SITES ONLY

Minor and Major Accidents

IPPC/SEVESO SITES

Minor Accidents/Spills IPPC

Major Accidents Seveso

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CORRELATION WITH OTHER EU LEGISLATION

IPPC Directive

- **Synergies**
  - Use of management systems
  - Use of less hazardous materials at the site
  - Reduction in the volume of hazardous material stored at the site
- **Differences**
  - **Seveso** - protection of human health and environment from the negative effects of major accidents through prevention of major accidents using SMS
  - **IPPC** - protecting environment and human health on a long term basis by preventing and minimising pollution through use of BAT and EMS
- **Potential Conflicts**
  - Safety over Environment ?
  - Siting of establishments
  - Technical measures

REACH/CLP → **IPPC/SEVESO ?**

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REFERENCES

1. Chemical Accidents (Seveso I, II and III) - Prevention, Preparedness and Response
http://ec.europa.eu/environment/seveso/

2. **I.van der Putte. RENA- Working Group 4- ECENA**
http://www.renanetwork.org

3. Report on the Application in the Member States of Directive 96/82/EC on the control of major-accident hazards involving dangerous substances for the period 2009-2011 .Final REPORT FROM THE COMMISSION
Brussels, 28.6.2013 C(2013) 4035

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To whom does SEVESO apply

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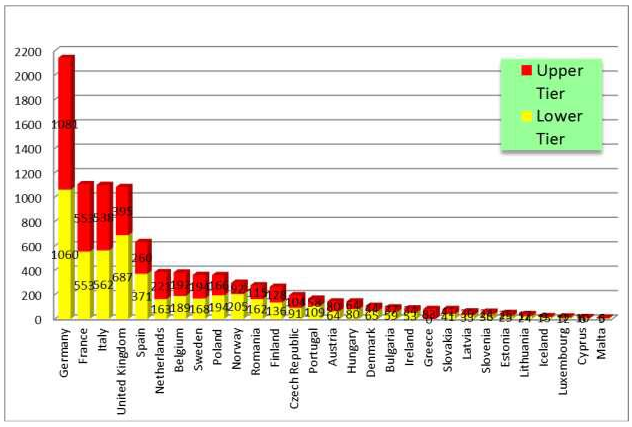
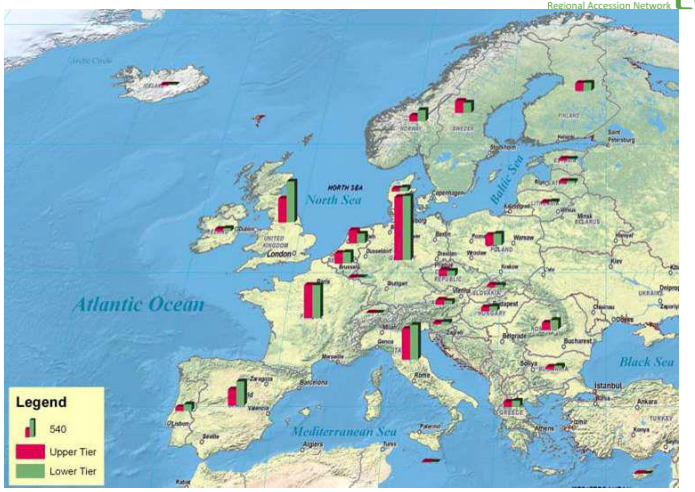
SEVESO Examples Tier approach

- Two Tier approach is used
- Maximum quantities of dangerous substances (existing or anticipated) are considered
- Compared against threshhold quantities



Upper tier and lower tier establishments per country in ranked order (Source: EC-JRC-MAHB 2012)



Mapped illustration of upper and lower tier Seveso establishments per country (EU and EEA) order (Source: EC-JRC-MAHB, 2012)

PRELIMINARY LIST OF SEVESO PLANTS SERBIA

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In total approx. 105 installations

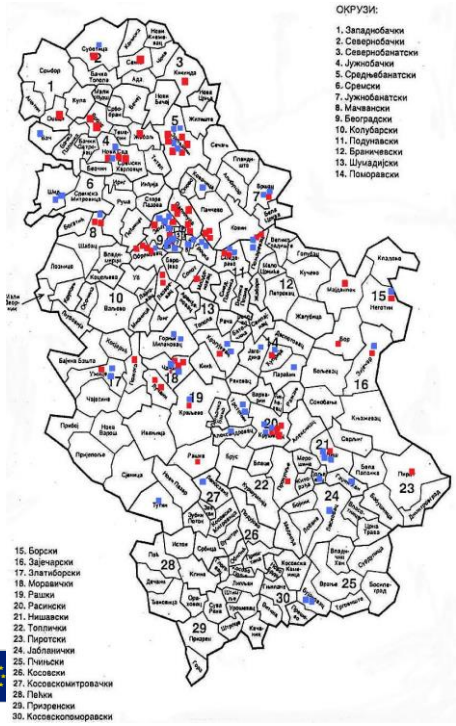
Lower tier plants: 59 installations

Upper tier plants: 46 installations

Accident prevention policy Notification

Safety report Accidents protection plan

Ref. Ljiljana Stanojevic 2012



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Seveso plants in Republic of Serbia

Upper tier installations

Lower tier installations

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Two Tier Approach

- Consequences for Establishment:
- Quantities below lower tier have no obligations
- Quantities above lower tier must be reported to Local Authorities
- Quantities above upper tier have full obligations

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(What Are Full Obligations?)

- Establishment has to prepare:
- Safety Management System
- Safety report for the Establishment
- Internal Emergency Plan
- Local authorities update external emergency plan
- Involving the public

Threshold Quantities

- Given in SEVESO III Annex 1 for two categories of dangerous substances:
  - Generally Classified Substances (part 1)
  - Named Substances (part 2)

Generic Category of Substances (Part 1):

SEVESO II
Toxic
Very Toxic
Oxidising
Explosive
Flammable
Highly Flammable
Extremely Flammable
Dangerous for the Environment
Other

SEVESO III
Health Hazards H 1, 2, 3
Physical Hazards, P
- Explosives 1a, 1b
- Flammable gases, 2 cat 1 and 2
- Flammable aerosols, 3a, 3b
- Oxidising gases, 4
- Flammable liquids, 5b, 5c
- Selfreactive & mixt & peroxides, 6a, 6b
- Pyrophoric liquids, 7, cat
- Oxidising liquids and solids

Environmental Hazards E, E1, E2
Other

List of "Named" Substances (Part 2), e.g.

Bromine
Chlorine
Hydrogen
Methanol
Automotive Petrol and Other Petroleum Spirits

Named Substances

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- Examples from Annex 1, Part 2:

Dangerous Substances [CAS Number]	Lower Tier (t)	Upper Tier (t)
Ammonium Nitrate [6484-52-2]	350	2500
Chlorine [7782-50-5]	10	25
Hydrogen [1333-74-0]	5	50
Liquefied High Flammable Gases (Incl. LPG) and Methane	50	200
Polychlorodibenzofurans and Polychlorodibenzodioxins		0.001

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Generic Classification is based on:

In SEVESO II

•Classification, Packaging and Labelling of Dangerous Substances and Preparations (67/548/EEC)

•Use LD_{50} or LC_{50} values if available, e.g. very toxic if LD_{50} orally in rats is <25 mg/kg

•Use 'R' phrases if available, e.g. risk phrase R11 indicates a highly flammable liquid

In December 2008 the European Parliament and the Council adopted a new Regulation on classification, labeling and packaging of substances and mixtures (CLP - Regulation (EC) No 1272/2008) to align existing EU legislation with the GHS.

In SEVESO III (2015) adaptations were required in classifications (Annex I)

Generally Classified Substances

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- Examples from SEVESO III Annex 1, Part 1:

Group of Dangerous Substances		Lower Tier (t)	Upper Tier (t)
1.	VERY TOXIC (SEVESO III – H1)	5	20
2.	TOXIC (SEVESO III – H2, H3)	50	200
3.	OXIDIZING (SEVESO III – P8)	50	200

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Rule On Addition

- Formula:

$$\sum_i \frac{q_i}{Q} > 1$$

Triggering criteria regarding

Lower or Upper Tier

q_i - the quantity of dangerous substances *i*

Q - the relevant threshold quantity to be applied for all dangerous substances

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Rules In Annex 1

- Mixtures and Preparations → as Pure Substances (Properties)
- Ignore $q_i/Q < 0.02$
- Add separately q_i/Q for Toxic (H= health hazards), Flammable/Explosive/Oxidising (P = Physical Hazards) and Environmental Hazardous Substances (E = Environmental Hazards)
- In the case of dangerous substances with properties giving rise to more than one classification, the lowest qualifying quantities shall apply.

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Example 1

•Name	•Amount •(q)	•Low •Tier (Q)		•Upper Tier •(Q)	
	•tons	•tons	•q/Q	•tons	•q/Q
• Hydrogen	•10	•5		•50	
• Propane	•20	•50		•200	
• Methanol	•50	•500		•5000	
• Sum:	•80	•-	> 1?	•-	•> 1?

Lower Tier !

Upper Tier !

EXAMPLE 2

	Chemical	Classification	Quantity On Site (tonne)	Thresholds (tonne) Lower Tier	Thresholds (tonne) Upper Tier
A	Ethylene Oxide	Named substance, Toxic and Extremely Flammable	3	5	50
B	Methanol	Named substance, Toxic and Highly Flammable	400	500	5000
C	Misc. Flammable Liquids	Flammable	3500	5000	50000
D	LPG	Named Substance, Extremely Flammable	10	50	200
E	Misc. Substances	Extremely Flammable	1	10	50
F	Misc. Toxic Substance	Toxic	5	50	200
G	Aqueous Waste Stream	R50, Dangerous for the Environment (E2)	15	200	500
H	Di-tert-butyl peroxide	Highly Flammable and Oxidising	20	5000 and 50	50000 and 200

Typical Oil Terminal

Storage capacity:

- Kerosine 2000 tonnes (flammable)
- Petrol 3500 tonnes (named substance)
- Diesel 1600 tonnes (not classified)
- Heavy Fuel Oil - 5000 tonnes (not classified)

This is a Seveso lower tier site

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Typical Pharmaceutical/
Chemical Company

Storage Capacity

- Flammable chemicals - 20000 tonne
- Benzene - 100 tonnes (toxic)
- Acetonitrile - 150 tonnes (toxic and flammable)
- Hydrochloric acid - 100 tonnes (not classified)
- Sodium hydroxide - 150 tonnes (not classified)

This is a Seveso top tier site