SECOND PITSTOP MEETING MED-GEM NETWORK

22 October 2024

Preventing and mitigating the risk of industrial accidents in the European Union – the Seveso Directive

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Overview

- **Origin of the Seveso legislation**
- **EU action to prevent industrial accidents**
  - *The Zero Pollution Action Plan*
  - *The Seveso-III Directive*
  - *Transboundary Cooperation*
  - *Results*
- **Emerging challenges**

Origin of the Seveso legislation

Seveso (1976)

1982 – Seveso I

1996 – Seveso II

Bhopal
Mexico City

2003 – Seveso II amendment

2012 – Seveso III

Toulouse (2001)
Enschede (2000)

GHS

1 June 2015 – transposition period for Seveso III ended

European Commission

Impacts of major accidents

- **Human health and environment**
- **Economic damages**
- **Response and follow-up costs**
- **Socio economic impact**
- **Political impact**
- **→ Average human and economic cost of an industrial accident: € 150 million**

Location	Year	Fatalities	Cost (€)
Seveso	1976		
Bhopal	1996	5 000 – 25 000	> 470 Million (payments by union carbide)
Toulouse (France)	2001	29	> 2.5 million
Rouen	2019	-	> 50 million (complete estimation still pending)
Tarragona	2020	3	Pending estimation
Beirut	2020	More than 200	Pending estimation
Leverkusen	2021	5	Pending estimation

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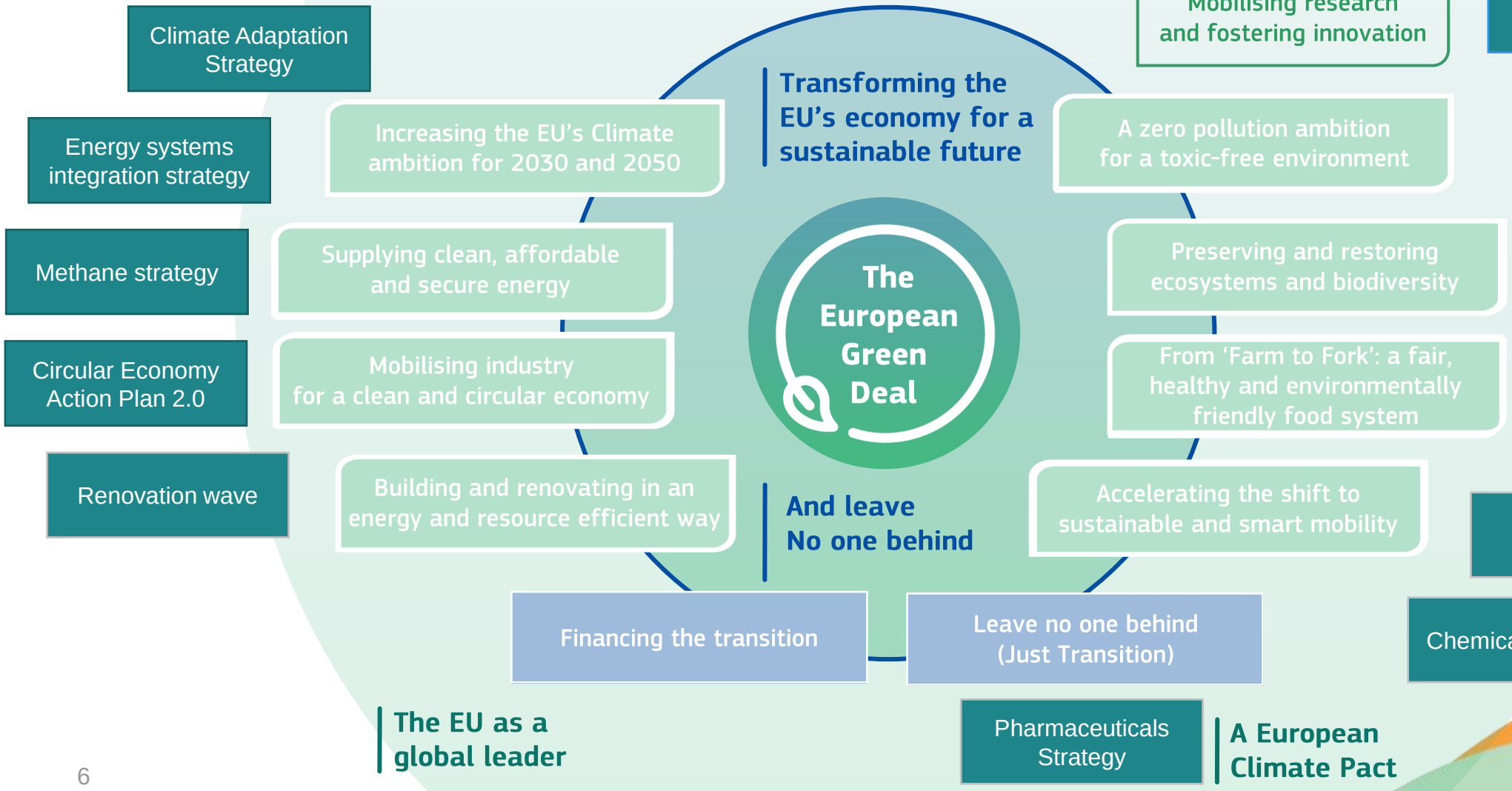
The European Green Deal



Horizon2020 + ICT4Water

Mobilising research and fostering innovation

Strategic Approach to Pharma in the environment

Climate Adaptation Strategy

Zero Pollution Action Plan for air, water & soil

Energy systems integration strategy

Marine Action Plan

Methane strategy

Plastics Strategy

Circular Economy Action Plan 2.0

Biodiversity Strategy

Renovation wave

Farm to Fork Strategy

Chemicals Strategy

Pharmaceuticals Strategy

Key actions in the Zero Pollution Action Plan

Improve human health:

- ✓ *reduce air and noise pollution*
- ✓ *reduce health inequalities*
- ✓ *support urban zero pollution action*

Boost change across society:

- ✓ *Showcase zero pollution solutions for buildings*
- ✓ *Create living labs for green digital solutions*

Protect natural ecosystems and biodiversity:

- ✓ *Reduce water and soil pollution*
- ✓ *Promote zero pollution across regions*

Implement and enforce pollution laws more strictly

Minimise the EU's external pollution footprint and promote change globally

Reduce pollution from production and consumption:

- ✓ *Reduce pollution from industrial installations*
- ✓ *Encourage the least polluting options for consumers*
- ✓ *reduce pollution from agriculture*

Promote digital solutions for zero pollution

Stimulate knowledge and innovation

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Seveso-III Directive Fundamentals

- **Objective:** Prevention of major accidents and limitation of their consequences for human health and environment
- **Scope:** industrial plants where dangerous substances are present above certain quantities (cf. list in Annex 1)
- **2 tiers approach:** Proportionate to the risk (tonnage threshold)

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Establishments handling hydrogen

- Hydrogen is mentioned in Annex I, Part 2, of the Seveso III Directive, which means that establishments where hydrogen is present in quantities equal to or in excess of the quantities listed in Part 2 (column 2 or 3) are covered by the directive.

PART 2

Named dangerous substances

Column 1	CAS number (1)	Column 2	Column 3
Dangerous substances		Qualifying quantity (tonnes) for the application of	
		Lower-tier requirements	Upper-tier requirements
1. Ammonium nitrate (see note 13)	—	5 000	10 000
2. Ammonium nitrate (see note 14)	—	1 250	5 000
3. Ammonium nitrate (see note 15)	—	350	2 500
4. Ammonium nitrate (see note 16)	—	10	50
12. Ethyleneimine	151-56-4	10	20
13. Fluorine	7782-41-4	10	20
14. Formaldehyde (concentration ≥ 90 %)	50-00-0	5	50
15. Hydrogen	1333-74-0	5	50
16. Hydrogen chloride (liquefied gas)	7647-01-0	25	250
17. Lead alkyls	—	5	50
18. Liquefied flammable gases, Category 1 or 2 (including mental hazards as the products referred to in points (a) to (d)	—	50	200
35. Anhydrous Ammonia	7664-41-7	50	200
36. Boron trifluoride	7637-07-2	5	20
37. Hydrogen sulphide	7783-06-4	5	20
38. Piperidine	110-89-4	50	200
39. Bis(2-dimethylaminoethyl) (methyl)amin	3030-47-5	50	200
40. 3-(2-Ethylhexyloxy)propylamin	5397-31-9	50	200
41. Mixtures (*) of sodium hypochlorite classified as Aquatic Acute Category 1 [H400] containing less than 5 % active chlorine and not classified under any of the other hazard		200	500

Scope

The Directive applies to establishments = the whole location under the control of an operator where dangerous substances are present in one or more installations, including common or related infrastructures or activities

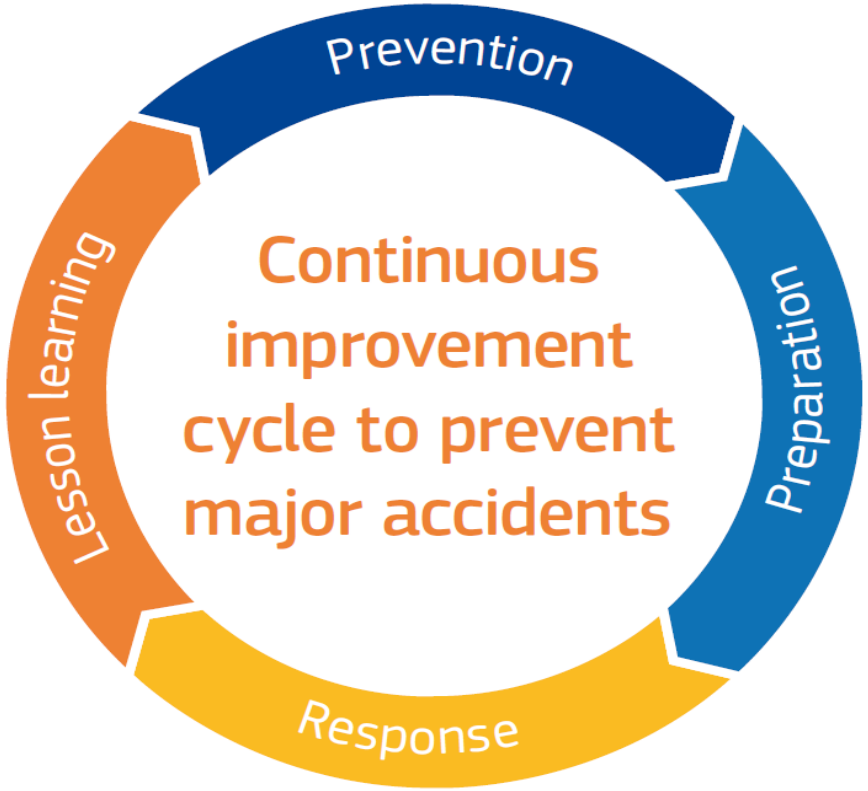
Establishments are either lower-tier establishments or upper-tier establishments

EXCEPTIONS

- **military establishments, installations or storage facilities;**
- **hazards created by ionising radiation originating from substances**
- **Transport of dangerous substances** (outside establ.)
- **exploration, extraction and processing of minerals in mines and quarries** (with some exceptions)
- **Offshore**
  - Exploration and exploitation of minerals, including hydrocarbons
  - Storage of gas
- **Waste landfills** (with some exceptions)

Seveso-III - Key pillars

Lessons learnt
Review legislation,
Share experiences,
Adjust provisions, permit…



Prevention - Limit risk
Identification,
Safety management,
Land-use planning
Inspection

Response
Inform and act
Cooperation
Remediation

Preparation - Limit impact
Emergency plans,
public participation

The JRC - MAHB

- Provides scientific and technical support for policy associated with chemical safety
- Collects and makes available to EU Member State **data on chemical accidents to support lessons learning** and also on **EU hazardous (Seveso) sites** (eMARS and eSPIRS databases)

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Cooperation with Member States

- Fostering knowledge, experience and information exchanges between EU Member States via SEG and implementation support project (2023-2025).
- Ensuring harmonization, coherence and streamlining of the Seveso-III Directive with other EU policies such as:
  - The Union's civil protection mechanism (incl. preparedness and response to disasters)
  - Security policies such as the Directive on European Critical entity resilience

➔ Working towards a shared and harmonised approach.

Cooperation with international fora

- UNECE TEIA Convention
- OECD’s programme on chemical accidents
- Actions to control major accident hazards also contribute to the international efforts to achieve the UN Sustainable Development Goals and to the UN Sendai Framework for Disaster Risk Reduction.

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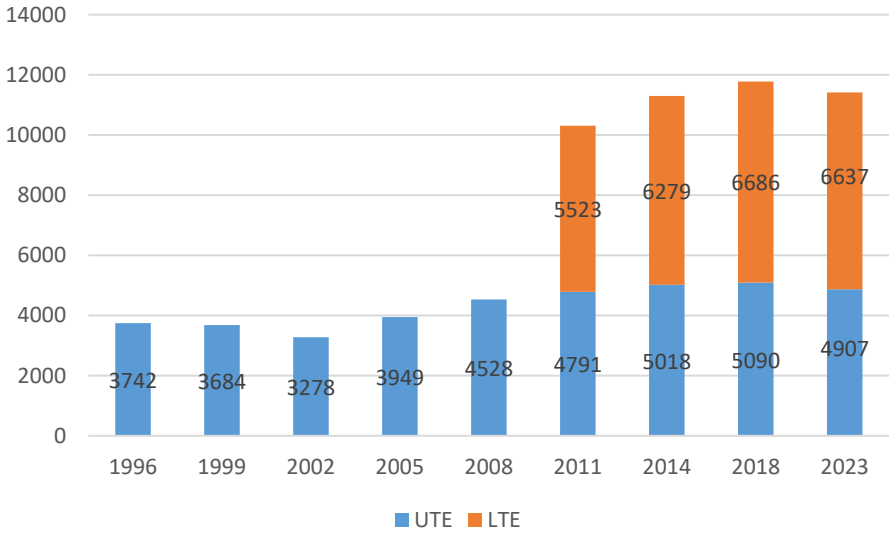
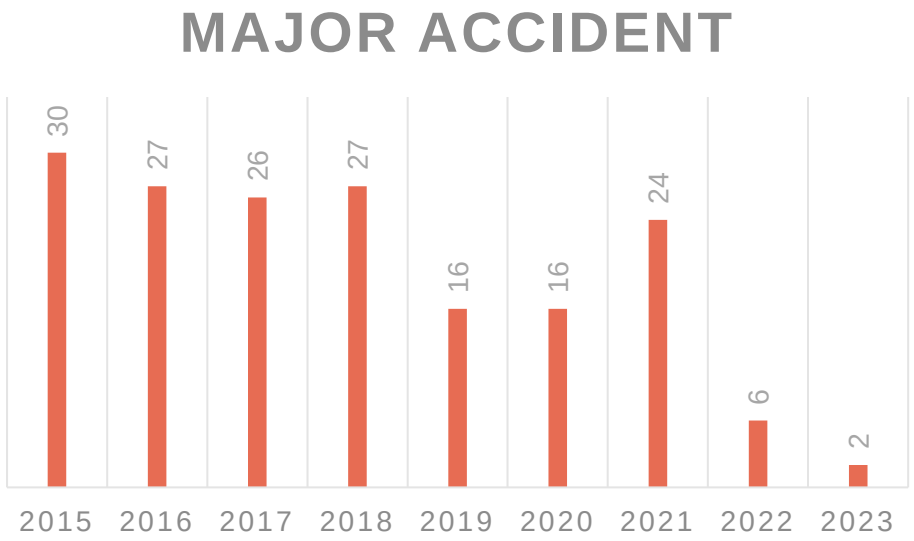
Results

- 11 544 establishments reported in December 2023



- Major accidents published in eMARS over time



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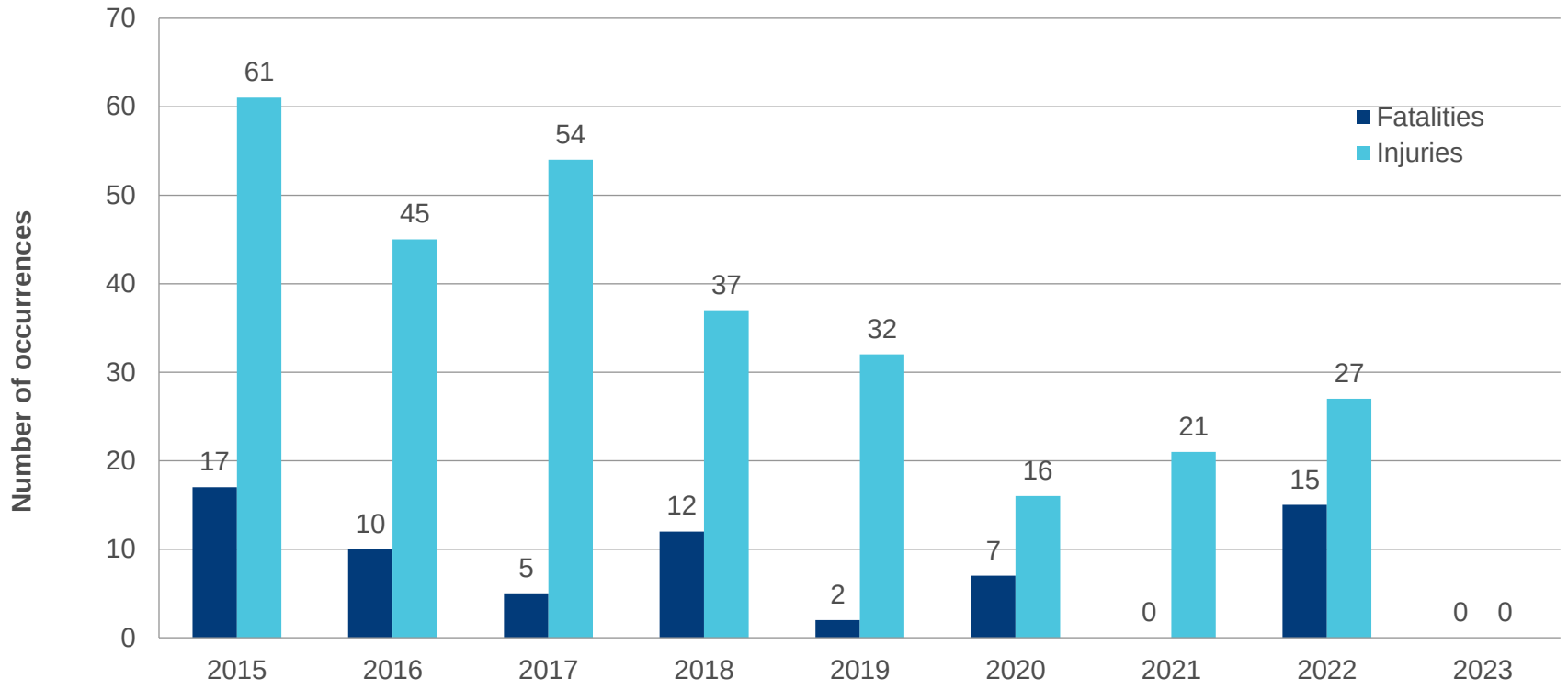
Results



- Fatalities and injuries over time

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Emerging challenges

1. Maintain adequate safety culture
2. Maintain expertise on industrial safety
3. New risks related to decarbonisation
4. Natech risk
5. Cybersecurity
6. Environmental and long-term consequences of industrial accident
7. Polluter pays principle application
8. Enhance consideration under the IED and IEPR

Emerging challenges

New risks with decarbonisation

- New risks with deployment and use of alternative energy sources (e.g. from hydrogen, ammonia), development of renewable energy technology (e.g. from solar, wind and water) requiring extraction and processing of critical minerals and use of large-scale energy storage systems
- Recent accidents in Europe and worldwide : fires in lithium-ion battery energy storages, tailing dam failures.

➔ Possible impacts on environment and new challenges for the implementation of the Seveso III Directive

- Specific safety issues linked to hydrogen due to its hazardous properties : more reactive than hydrocarbons, potentially more ignitable, etc…

Thank you for your attention

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SEG - CIRCABC

https://environment.ec.europa.eu/topics/industrial-emissions-and-safety/industrial-accidents_en