The European Lookout to Industrial Safety

Analysing the present...
Envisioning the future

Enrico Zio

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EU Industrial Safety

Present
EU Industrial Safety at Present

• $7.6 \times 10^6$ accidents at work ($4.9 \times 10^6 > 3$ days absence; $4.9 \times 10^4$ fatalities)

• $\sim 30$ major accidents/year in “Seveso 2” industry sectors

• Accident costs $\sim 2-4\%$ of GNP
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Future
EU Industrial Safety: vision for the future (2020)

- 25% reduction in accidents
- Programmes in place to continue accident reduction at a rate \( \geq 5\% \)
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From present to future: The Roadmap

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How to get to 2020?

Research & Education

ETPIS
The European Technology Platform on Industrial Safety
EU Industrial Safety

ETPIS
Technology Platform?

- Strong mobilisation of actors (research, industry, regulatory and finance stakeholders, public and private) for a European long-term vision on high impact sectors of leading technologies

- Objective: industrial competitiveness and leadership
ETPIS Focus

• Occupational Health and Safety of the workers in industry

• Environmental Safety

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ETPIS Scope

- Integrated and coherent treatment and management of safety in the design, production and operation of industrial products and systems
- Improved safety levels at acceptable costs
- Early safety control on emerging technologies
Sharp-end Operators

Roles

Top Manager

Organisational

Technological

Human

Supply Chain

Areas of Application

Operational

Safety Management

Training

Safety Analyses

Sources of Hazard

Areas of Application

Natural Hazards

1 Design
2 Exploration & Drilling
3 Construction
4 Commissioning
5 Operation
6 Modifications, Maintenance & Repair
7 Decommissioning
Research Objectives

• Relevance (real needs, costs/benefits)
• Quality (audit, approval, review, live testing and feedback from stakeholders)
• Applicability and use (benefit judgment and valorisation, also SMEs)
• Safety Management & Audit
SAFETY:
The ‘parmesan’ cheese model

No Hazard

Hazard

barrier
SAFETY: Multiple Barriers

Redundancy  Training  Safety Reviews

No Hazard  Hazard

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Redundancy: Example
The ‘swiss cheese’ model

- Faults in Redundancies
- Procedural Errors
- Human Errors

Hazard
Research Contents

- Technological improvement (inherently safer design, flexible plants, industrial parks, nano-production...)
- Risk assessment and management (quantitative risk assessment, costs/benefits analysis, multiple barriers approaches)
- Human and organisational factors (VR)
- Safety culture: knowledge dissemination and transfer
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ETPIS: Education

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Education

• Various levels of education and training programmes to increase industrial safety (VR)

• Early risk information and sensitisation in the education system
Early risk information and sensitisation ...
Research Actions: The Focus Groups

1. Methods and technologies to reduce risks at work, for the environment, major accidents
2. Methodologies for risk assessment and risk management
3. Human and organisational factors
4. Education and training
5. Emerging and cross-cutting risk and safety issues
6. Structural safety
7. Research hubs (e.g. nanosafety)
Conclusions

The challenge is out
Future developments

Safety Research + Safety Education = Research + Education

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Thanks for your patience
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