

Title: The European Technology on Industrial Safety (proposal stage)

Home page: www.industrialsafety-tp.org

Overall Policy Objective

To gain Safety for Sustainable European Industry Growth

To bridge the different aspects of "industrial safety" (Occupational health and safety of the workers & environmental safety including prevention of major accidents and protection of the environment).

To facilitate and accelerate the breakthrough for progress in industrial EH&S via a co-ordinated, integrated research and implementation process.

Europe's technological position in a global context

According to European Statistics¹, in EU-15, because of an accident at work one worker becomes a victim every 5 seconds and one worker dies every two hours. In 2001, this means **7.6 million accidents at work**, 4.9 million of these resulted in more than 3 days of absence from work, and **4 900 fatalities**. The cost of accidents at work and occupational diseases in EU 15 ranges for most countries from 2.6 to 3.8% of Gross National Product (GNP). Additionally, in 2002 in new EU member states were almost 2.5 million accidents at work and 1 400 fatalities were recorded.²

Besides the accidents at work, major accidents take place resulting in extensive consequences to people, environment and the property. A major accident such as the Toulouse disaster on 21st September 2001 resulted in 1 500 million € of damages, 27 000 homes and 1 300 companies damaged. The explosion killed 30 people (21 on site with 10 employees and 11 sub-contractors, 9 off-site), 2 242 were injured (officially), and 5 000 persons have been treated for acute stress... This disaster has upset the public, traumatised an industrial city and led the politicians to close down the AZF plant (450 direct jobs) and the SNPE phosgene related activities (492 jobs, 600 sub-contracting jobs).

According to the MARS database³, about **30 major accidents happen each year**. By definition these accidents had the potential for major consequences to people and the environment. Fortunately, many of them do not have such serious effects, but they do have serious economic impacts for industry and for the communities which rely on them for employment. Thus they disrupt the process of sustainable industrial development, directly through the immediate response of the community and indirectly through restrictions placed on the whole industry as a result of these failures. Moreover, the development of modern technologies brings about many new industrial safety issues. New production technologies are sometimes accompanied by new, hardly foreseeable hazards, however providing at the same time new cost-effective and time efficient solutions to the occupational accident and disease prevention problem.

Even if accidents cannot be completely eliminated, the **current situation could notably be improved** by developing synergies centred on risk control. Improvement of industrial safety will promote the competitiveness of the European industry, which is today facing up to the competition of emerging developing countries which have the in-built advantage of an expanding consumer market. Therefore, improved risk control supporting the sustainable growth of the European industry needs a co-ordinated effort in research. Many of the most respected risk assessment and control methodologies have originated or been developed in Europe. Examples include Hazard and Operability Study (HAZOP), Quantitative Risk Assessment (QRA). Work continues in the field to develop further. However, this lacks formal coordination and targeted resource funding and is somewhat fragmented. It urges new means of networking, further improved regulations, access to new technologies provided by research.

Primary Technical, Economic and Political Justification for action

Conscious of the stakes and progress margins, a high level group from industry, unions, authorities, NGOs, banks, insurance and researchers has undertaken to create a **technology platform** to achieve **safety for sustainable European industry growth**. This initiative, which immediately obtained the support in principle of the DG Employment, DG Enterprise, DG Environment and DG Research, aims at preparing a strategic vision of the priority research in industrial safety and to implement a detail actions plan as soon as the 7th Framework Programme of the European Commission is launched.

Of course, there is a need of co-ordinated production of new knowledge, methodologies and processes, but improvement of industrial safety will also occur by a better transfer of existing knowledge towards the companies notably the Small and Medium Enterprise (SME) sector and the newest members of the European Union, better training and education of all the actors concerned by the environmental and professional risks, and

¹ Eurostat, Work and health in the EU, A statistical portrait, Data 1994–2002 (2004), ISBN 92-894-7006-2

² Accident and disease information, International Labor Organisation, <http://www.ilo.org>

³ Major accident reporting system. European Commission, Joint Research Centre, Ispra. <http://mahbsrv.jrc.it> Accident database where major accident (according to the criteria defined in the 96/82/EC Seveso Directive) are reported.

by the development of an 'incident elimination' culture.

The technology platform will intensify networking and stimulate technological and organisational improvement in risk management. It will be achieved thanks to a commonly agreed research agenda, but also by working on education, standardisation, transfer to industry and thanks to strong interactions with other TP concerned by risk issues (e.g. Sustainable Chemistry, Hydrogen, MANUFUTURE...). To create solid links and functioning networks and to engage with all stakeholders in the field of health and safety of the workers, protection of the environment and the prevention of major accidents, constitutes an ambitious challenge. The improvement of the situation will be **benefit to European citizens, to industrial companies and to workers of several industrial sectors** (processes, chemistry, manufacturing industry, construction...).

The technology platform in industrial safety will be **transversal** and will have an impact on several other technology platforms which will be able to optimise the risks taken in business opportunities. As this vision translates into a charter and detailed objectives, firm, measurable goals and 'milestones' will be defined to ensure that real gains are made and can be identified as outcomes of the Technology Platform. It will significantly contribute to a **sustainable growth of the European industry**.

A modern approach to consider several, sometimes even conflicting, criteria in location, design, operation and maintenance, will lead to improved safety and productivity as well as new business opportunities to European industry if properly implemented. This is the aim of the Technology Platform for Industrial Safety.

For a number of years, the trend has been an improving one but much remains to be done. Legislation has played its part as have the self motivated efforts of employers and those involved in training. Innovation has been involved in almost all the improvement processes and it has been made possible by research, some of which has been funded or driven by European Union initiatives.

This is a partial success story, but there are underlying flaws in the process. These include:

- Projects which although apparently meet criteria for funding and fulfilling their objectives, are not fully deployed or employed
- Duplication of effort leading to inefficient use of valuable resources. This is not specific to EC funded projects, but remains a concern
- Projects whose objectives meet the needs of a narrow range of or even a single stakeholder and whose beneficial impact is minimal or non-existent

In the following, important topics to meet this goal are presented:

- Research content for safety of the workers and environment (prevention of major accidents and protection of the environment) :
 - technological improvement : inherently safer design, process intensification, flexible plants, chemical parks...
 - risk assessment and management : safety barriers approaches, quantitative risk assessment, performance of safety equipment, cost-benefit analysis...
 - human factors : human-machine interaction, organisational safety, organisational learning...
 - risk management of complex systems: dynamic production networks, logistics, societal infrastructure...
 - risk management at Small and Medium Enterprises (SMEs)
- Education, standardisation and regulations : on-going work, pro-active work, anticipation of standardisation
- Communication and governance :
 - creation of safety performance indicators understandable for the public and authorities.
 - exchanges of experiences in risk communication and governance.
- Transfer to industry for implementation
- Support to other Technology Platform by providing methods, tools, knowledge

Development of the platform (State of play)

- **January 04** : Brainstorming meeting towards a technology platform in industrial safety
- **July 04** : First meeting, creation of a group to prepare the TP and start of the elaboration of a vision paper
- **September 04** : Vision paper circulating, and start of the establishment of an Advisory Council representing research, industry, Member States, civil society, financial institutions and EU Institutions
- **October 04** : Workshop for orientation and creation of the Advisory Council for the preparation of the strategy and action plan with coopted members, as well as co-ordinators of EU, national and regional projects and initiatives
- **December 04** : Official communication of the vision paper during a major event
- **January 05** : Communication of a coherent strategy and action plan including strategic research agenda

Activities (existing and planned in short term)

- **Projects funded under the 5th FP**

Growth programme: benchmark exercises on risk assessment, human factors in process safety, new technologies to improve maintenance and reliability of safety equipments

Environment and Sustainable Development programme: development of methodologies to determine acute exposure thresholds for land-use planning and emergency plans, risk assessment methods for Seveso plants, network on information related to disasters

- ***New relevant projects under the 6th FP***

NMP programme : coordination action for integrated of risk management, risk related to nanoparticles, improving safety using virtual reality techniques

IST programme : improvement of risk management with new technologies

Sustainable development, global change and ecosystems : safe use of hydrogen and hydrogen technologies

- ***The networking activities within the competent authorities like IMPEL and Mutual Joint Visit***
- ***Relevant links to EUREKA***

Improvement of technologies to reduce risk to the people and the environment.

- ***Standardisation activities***

CEN Working Group on risk assessment WG 160

- ***Activities of the DG JRC***

Particularly those on Health-Safety-Environment issues carried out by the Major Accident Hazard Bureau (IPSC) and the IPPC Bureau

- ***National and regional projects and programmes***

Specific Deliverables (short to medium term)

- ***Public-private partnerships to gain safety for sustainable European industry growth***
- ***Strategic Research Agenda*** - including ways to leverage private and public R&D investment.
- ***Deployment strategy*** - including recommended policy measures, lighthouse demonstration and deployment projects.
- ***Policy Interface / Framework*** - for interaction with regulators and political institutions.
- ***Enterprise interface*** – for increased dialogue with stakeholders and public awareness.
- ***International co-operation strategy*** – to increase technology transfer and links with developing countries.
- ***Progress monitoring system***