Letter from Europe: Product Safety

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Following the article on the *Role of Measurement and Testing to Characterize Materials and Products* (*Metrologist* July 2015), this Letter deals with Product and Industrial Safety. It is based on a survey about *European Research in Industrial Safety* by Dr. Jürgen Lexow, BAM Berlin, and on the results of an International Safety Conference (Brussels, November 2015) jointly organized by CEOC, the International Confederation of Inspection and Certification Organisations; IFIA, the International Federation of Inspection Agencies; and EUROLAB, the European Federation of National Associations of Measurement, Testing and Analytical Laboratories (www.eurolab.org.webloc).

The Meaning of Reliability, Risk and Safety

The probability that a technical item will perform its required functions without failure for a specified time period (lifetime) when used under specified conditions is called *reliability*. *Risk* is the combination of the probability of an event and its consequence. In a technical environment, risk may be described in terms of the probability of an event leading to damage and the expected severity of damage. Safety is freedom from unacceptable risk. *Safety* is not a fixed value but it has to be defined in terms of risk and considering the chances as well as the potential failure. It is upon the stakeholders to agree in a social decision on a maximum acceptable risk that may be associated with the application and use of a product.

The European General Product Safety Regulation

To facilitate the free movement of goods, persons, services, and capital – while protecting essential public needs, e.g. safety, health, environment – the so-called *New Approach* was established 1985 in the European Union (EU) as flexible regulatory framework for market and trade. Within the EU, goods move freely and consumers and businesses can buy and sell products in the 28 EU Member States and the 3 EFTA/European Economic Area countries with a total population of more than 500 million.

The *General Product Safety Directive* (GPSD, 2001/95/EC) applies to all **suppliers**, e.g. manufacturers, importers, retailers, distributors, those who rework, repair or modify, service providers etc., but only if they are supplying a product as part of a commercial activity. It does not apply to personal transactions. The regulations place an obligation on suppliers for their products to be safe. They are required to provide consumers with all relevant safety information for safe use and to keep themselves informed of the risks. Suppliers are required to inform the authorities when they discover that they have placed an unsafe product on the market. For the supply of non-compliant products, there is a penalty. For example, in the UK it is 12 months imprisonment and/or a £20 000 fine.
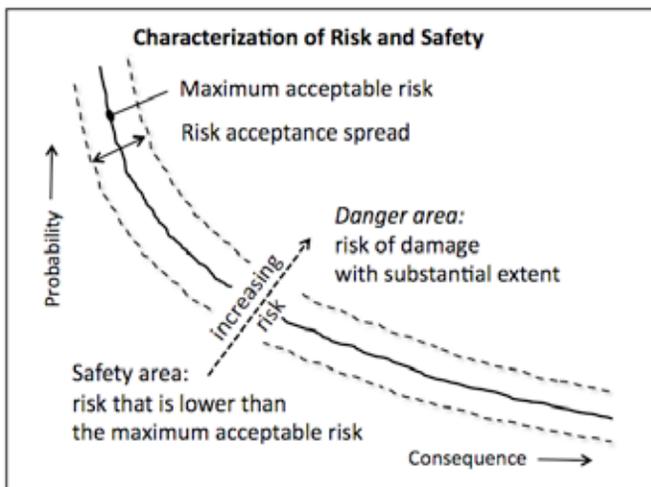
The **producer** is specifically required to provide information to enable consumers to assess the risks inherent with the product and provide information on precautions to avoid them. Adopt measures to enable a product user to be informed of the risks (e.g. recording safety related returns) and where necessary, enable him to withdraw unsafe products from the distribution chain. Such measures may include: provision of appropriate marking of product with the name and address of the producer, serial and model numbers, investigation and recording of complaints, and sample testing of products on the market

Assessment of Product Safety

The role of *Testing, Inspection and Certification (TIC)* to assess product safety was discussed at the 2015 International Safety Conference in Brussels, and results of the *2015 IFIA – CEOC Market Study* were presented. The aim of the study, which has been carried out for four consecutive years now, is to gauge the effectiveness of securing safety of consumer products by comparing (a) the self-declaration system of producers and (b) third-party testing and certification. This year the study focused on household appliances (e.g. electric fans, room heaters, luminaires, small power tools) purchased online, both in the EU, and the USA and Canada. The results were in line with the outcomes of the previous IFIA – CEOC studies:

a. 77% of the self-declared products (319 samples from the EU) were not in compliance with the relevant legislation, 14% had safety critical failures.

b. among the third-party certified products (139 samples from the EU and 185 from the USA and Canada), there were only 0.7% and 1% products respectively that showed safety critical failures.

It was concluded that in the assessment of product safety, the application of third-party testing, inspection and certification can reduce significantly the number of non-compliant products on the market, thereby increasing the safety of consumers significantly.

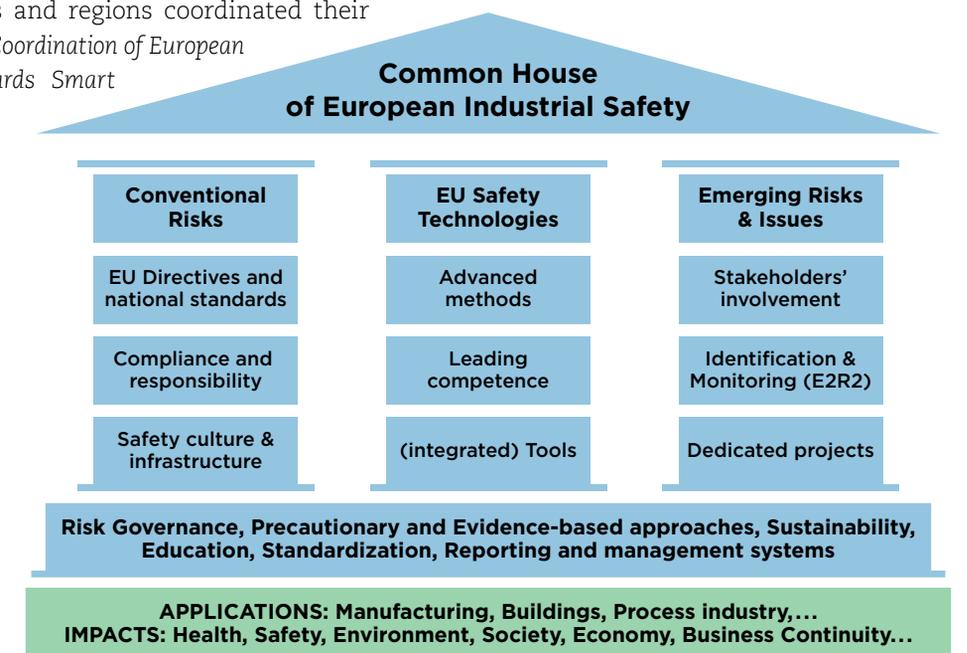## The European Technology Platform on Industrial Safety

In order to enhance research investment in industrial safety, the European Technology Platform on Industrial Safety was set up (www.industrialsafety-tp.org). It is an industry driven forum representing enterprises from chemical, oil, automotive, energy, transport, food, construction, and manufacturing industries, including reinsurance companies as well as academia and regulating authorities. Today, it is an open forum of more than 800 experts who share ideas, prepare future work and disseminate results in focus groups, technical workshops and conferences. ETPIS provides input to education and training. It is in a continuous exchange of thoughts with the European Commission (EC) and was evaluated by the EC in 2013 and confirmed as a valuable partner to provide advice and insight to trends in industrial safety. The activities of ETPIS can be illustrated with the following examples:

- In the large integrated research project, *Early recognition, monitoring and integrated management of emerging, new technology related risks*, initiated by ETPIS and supported by the European Commission, 87 companies and organizations combined their research efforts and prepared 240 official deliverables, i.e. reports, documents, software and demonstrators. One of them is the pre-standardization CEN Workshop Agreement "Managing emerging technology-related risks." This pre-standardization document provides guidance in the Emerging Risk Management Framework and is not specific to any industry but can be applied in all industries and sectors. (www.integrisk.eu-vri.eu/)

- In another ETPIS initiated and EC supported project, 20 partners from 11 European countries and regions coordinated their research programs. This project, *Coordination of European Research on Industrial Safety towards Smart and Sustainable Growth - SAF€RA* (www.safera.industrialsafety-tp.org), is built on the assumption that the sustainable presence of industrial activity, developing essential economic added value, rests upon continued acceptance by the population, on continued reduction of the environmental impact and of risks to workers and local citizens. Insights from safety research can help achieve these goals whilst also reducing losses, providing a competitive advantage to the industry.

Future research needs on industrial safety were discussed with stakeholders in an EC workshop. Five main challenges for safety research have been identified:

3. New materials
4. New emerging technologies
5. Workplace and different types associated with it
6. Integration of safety and security
7. Communication and trust building

A vision that combines the various aspects and lines of discussion is demonstrated in the "*Common House* of the European Industrial Safety." The three main pillars are (i) conventional risks, (ii) safety technologies/products/services, and (iii) emerging risks. They have in common the disciplines risk governance, precautionary and evidence-based approaches, sustainability, standardization, reporting and management systems. Their applications go into the various sectors of manufacturing, building and infrastructure, process industry and many more.

Common House of European Industrial Safety

Conventional Risks	EU Safety Technologies	Emerging Risks & Issues
EU Directives and national standards	Advanced methods	Stakeholders' involvement
Compliance and responsibility	Leading competence	Identification & Monitoring (E2R2)
Safety culture & infrastructure	(integrated) Tools	Dedicated projects

Risk Governance, Precautionary and Evidence-based approaches, Sustainability, Education, Standardization, Reporting and management systems

APPLICATIONS: Manufacturing, Buildings, Process industry,…
IMPACTS: Health, Safety, Environment, Society, Economy, Business Continuity…

Source: ETPIS