

# Occupational Safety and Health in Europe: Lessons from the Past, Challenges and Opportunities for the Future

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**Abstract:** Europe has always played a key role in the field of Occupational Health and Safety (OHS) and can be considered the cradle of Occupational Health. The European policy framework has been set since the establishment of the European Union, but its strength lies in the enactment of the Framework Directive on Occupational Health and Safety (89/391/EC), which has had a strong positive impact on the assessment and management of occupational risk factors and has promoted the quick diffusion of common standards across Europe. Yet, some implementation issues still remain to be addressed, due to changes in the world of work, fragmentation, economic crisis and, more generally, to the impact of globalization. Therefore, actions need to be reviewed with respect to research plans and policy implementation so as to support the OHS social dimension fostering a broader concept of wellbeing at work.

**Key words:** Research priorities, Wellbeing, Policy development

## The Cradle of Occupational Health

Europe can be considered the cradle of Occupational Health: the first compendium on industrial hygiene dates from 1556, when Agricola described the toxicity of some minerals in his *De Re Metallica*<sup>1</sup>. In 1700, the study of the relationship between work and health-related problems received a great contribution thanks to the first comprehensive book on occupational health, *De Morbis Artificum Diatriba*<sup>2</sup> (*The diseases of workmen*) in which the Italian physician Bernardino Ramazzini, described the occupational diseases affecting most of the workers of his time.

Industrial hygiene received another major boost when Ulrich Ellenborg (1743) published his work about the toxicity of carbon monoxide, mercury, lead, and nitric acid

and Percival Potts (1774) identified the first form of cancer (scrotal cancer) in chimney sweeps<sup>3</sup>.

Besides the scientific aspects of occupational medicine, also the implementation of practical measures to protect workers' health dates back to the beginning of the 19th Century: in 1802, in Great Britain, the first labour inspectors (visitors) were appointed, as provided for in the "Moral and Health Act", and, in 1833, the "Althorp" Law led to the creation of an effective labour inspection service.

In 1824, the first workers' associations and organizations were born (e.g. Trade Unions), aimed at improving the working conditions, especially related to the reduction of working schedules and to the protection of female and child labour<sup>4</sup>.

In Milan, the first international scientific and professional association "*Commission Internationale Permanente pour l'Étude des Maladies du Travail*" was established in 1906 and it is still the largest, non-governmental organiza-

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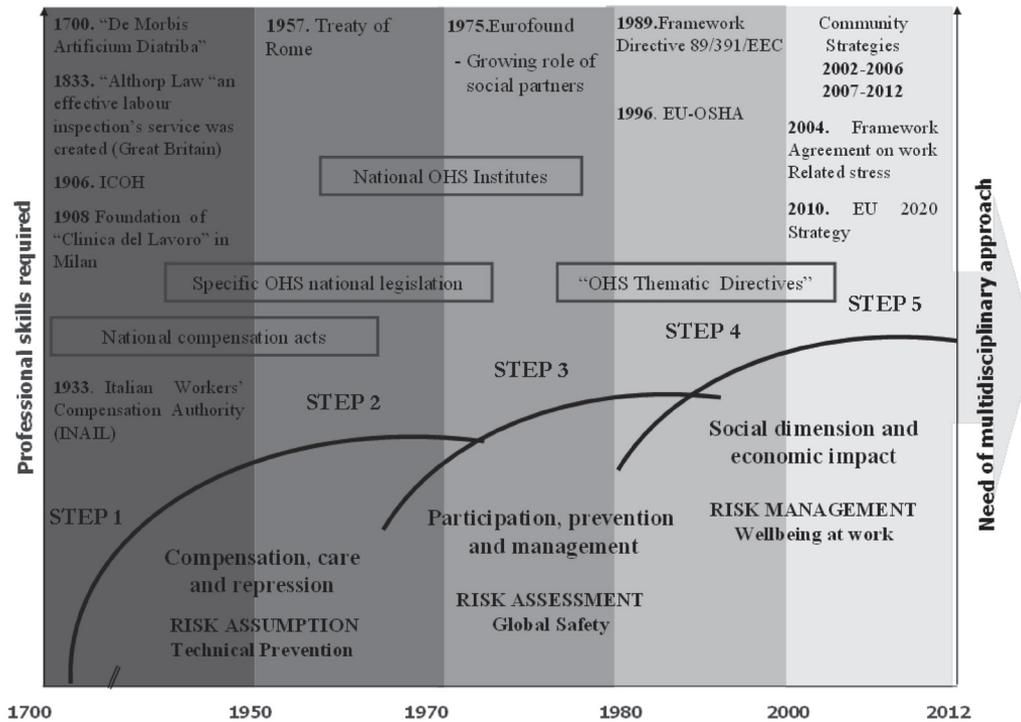


Fig. 1. Milestones and OHS development in Europe.

tion in the field on a global scale (International Commission on Occupational Health and Safety, ICOH).

Furthermore, even the Occupational Medicine boosted modernization with the foundation of the first Occupational Health Clinic in Milan (Clinica del Lavoro) in 1908, whose model has been adopted by different Countries when establishing their own institutions.

The 20th Century has witnessed a fast development of technology, with the introduction of new working methods and procedures as well as a number of new intrinsic health and safety hazards related to the processes themselves or to their use. At the same time, a policy development has taken place, starting from the initial focus on compensation and technical prevention, according to the evolution process of every single country (Fig. 1).

## The European Union Role in the Development of OHS

The European Union (EU) has always been establishing basic rules to protect the health and safety of workers: in fact, from the Treaty of Rome, which set up the European Economic Community (1957), occupational health and safety issues have been considered key areas of action for the European Community.

Even though such a provision gave hints for enact-

ing specific national laws in many different European Countries, the first common and comprehensive legislative framework on OHS has been enacted in 1989, when the Framework Directive (89/391/EEC) was published. Moreover 65 specific Directives in this field have been released, thus giving more detailed and precise provisions on particular aspects/hazards<sup>5</sup>.

Although sometimes considered too demanding and over detailed, the EU Directives (starting from the 1989 Framework Directive on) have represented a strong response to the maintenance and development of the social dimension in the changing world of work<sup>6</sup>. Their implementation in 27 Member States and the enlargement process have created a beneficial “common *acquis*” on a modern and advanced policy framework with some limits in implementation, in particular into small and medium enterprises (SMEs). Also the public sector shows significant shortcomings, though. High-risk workers are also found amongst young people, temporary workers and those with low qualifications<sup>7</sup>.

However, since the enactment of the Framework Directive in 1989, an active process of rethinking and implementing OHS issues has started, with a strong impact on Services organization and delivery as well as on Research infrastructures.

On the side of OHS Services, the EU Directives and

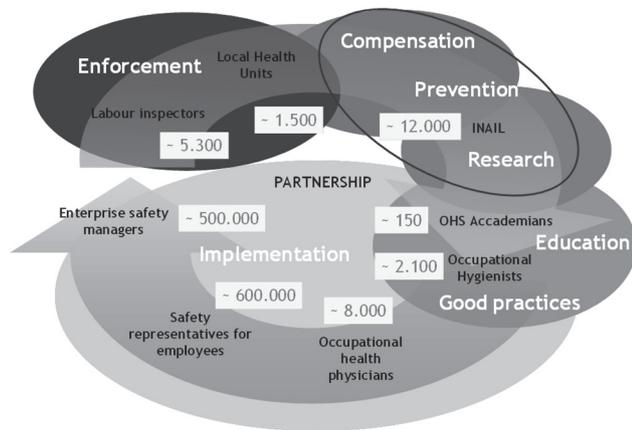


Fig. 2. Critical mass of human resources in OHS in Italy.

their ratification at National level, have favoured the improvement of health conditions at the workplace through the adoption of even more severe and efficient measures to protect workers' health at the workplace and the identification of the human resources, the so-called OHS professionals, needed for the enforcement and implementation of health and safety measures provided by law.

An example of comprehensive OHS system's implementation can be provided by illustrating the Italian "critical mass" of OHS experts (Fig. 2): over 1 million professionals work together to reach the highest levels of law enforcement, service delivery, research outputs and implementation of services.

Furthermore, the EU established two European Institutions which work towards the harmonization of good practices and research in the field:

- the European Foundation for the Improvement of Living and Working Conditions (Eurofound) in 1975, aimed at providing information, advice and expertise on living and working conditions for key actors in the field of EU social policy.
- the European Agency for Safety and Health at Work (EU-OSHA) in 1995, aimed at improving working life in the EU with a focus on raising awareness, dissemination of good practices and analysis of scientific researches and statistics for the anticipation of new and emerging risks.

## OHS Indicators

The drivers for research and implementation of measures both from the legislative and the practical points of view are mainly represented by standardized indicators

that highlight needs and gaps to be filled.

Traditional indicators are represented – at European level – by the statistical data on work accidents and occupational diseases that are granted by the Eurostat, which retrieves reliable data from National compensation and statistical institutions. Further support to this analysis is provided by a number of surveys carried out by international research and statistics institutions (e.g. Labour Force Surveys [LFSs] by Eurostat; European Working Conditions Surveys [EWCSs] by Eurofound; European Survey of Enterprises on New and Emerging Risks [ESENER] by EU-OSHA) to combine statistical data with the perception of workers.

As regards work accidents, data from 2007 show that 3.2% of workers (6.9 millions of people) suffered an accident at work in the EU and 5,580 workers died in a fatal accident. The categories of workers most involved are young men with low educational level and it has been shown that the sectors of activities most involved are construction, manufacturing, agriculture, hunting and forestry. Body movement under stress results often the causal agent. The occurrence of accidents at work slightly decreases from 3.5 to 3.2% in the two subsequent LFSs in 1999 and 2007.

In the meantime, approximately 23 million persons in working age, representing about 8.6% of people from 15 to 64 yr old, reported a work related health problem (during working activity or after retiring). This occurrence increases with age and among lower education level workers. The type of problem is related to education level too: high-educated persons identified frequently stress, depression and anxiety, whereas musculoskeletal problems and backache were more often indicated by lower educated workers. In the opposite direction with respect to accident, the occurrence of occupational diseases shows an increasing trend from 4.7% in LFS in 1999 to 7.1% in 2007. The greater awareness about occupational aetiology for neurological, lung and skin diseases and work related stress is certainly involved in this trend<sup>8)</sup>.

On the other side, concern for occupational cancer looks at stake, even though the CAREX<sup>9)</sup> information system estimated a substantial proportion of workers (15.8%) exposed to carcinogens (considering IARC group 1 agents) still at the end of the 90s.

About the evolution of the workforce in Europe, it must be taken into consideration the increasing rates of employment of women and older people<sup>10)</sup>, together with a major mobility of workers in EU and the still great attractiveness for non-EU citizens. Even the increasing proportion of part-time or temporary workers and the decreasing work-

force rates in the industry and agriculture sectors such as the highly skilled manual workers need to be considered.

These data reflect the continuous and rapid changes taking place in the world of work, and emphasize the need to take into account new indicators related to the new organization of work (24 h/7 d working society) and its impact on work-speed and work-pace, to the introduction of new forms of working contracts raising a number of health and social issues in terms of job insecurity and fragmentation, to the demographic changes of the working population due to ageing of the workforce and intensive migration between EU Countries and from non-EU Countries.

## Research and Transfer of Knowledge

Besides policy development, Europe has played a leading role in the field of OHS research: by the way of example, the first European studies on the relation between asbestos and cancer or benzene exposure and leukemia<sup>11, 12)</sup> can be considered milestone discoveries in the field of OHS in the 20th Century.

In most of European Countries, National Research Institutes (e.g. FIOH in Finland; INRS in France; HSE in the UK; BAuA in Germany; ISPESL [now merged with the Italian Workers' Compensation Authority, INAIL] in Italy) have been established with a positive impact in promoting the harmonization of research agenda, in creating a critical mass of OHS researchers and in fostering the development of prevention measures and policies at national level. More recent cooperation among national institutes has led to the foundation of the Partnership for European Research on Occupational Safety and Health (PEROSH), a research network which includes 13 national research Institutes across Europe, aimed at improving the quality of work and working life through joint research collaborations, sharing of knowledge and resources and a proactive dialogue with the EU.

Today, the globalization of economies, the changes of demographic structures and working organization, the introduction of new technologies, summing up of traditional risk factors with new and emerging risks, as well as the consequences on health (especially psychological health) of downsizing or restructuring of many enterprises represent the key drivers for the redefinition of research priorities to propose adequate solutions and interventions.

As a response to these needs and to implement and strengthen its policy on safety and health at the workplace, the European Commission has adopted two subsequent Community Strategies (2002–2006 and 2007–2012) focus-

**Table 1. PEROSH research priorities in OHS**

a. Demographic changes: ageing and migration
b. Mental health, work ability, and return to work
c. Adapting the workforce to organizational changes
d. Impact of lifestyles on occupational health
e. New technologies
f. Globalization
g. Climate changes
h. Traditional risks (physical, biological, chemical and psychosocial factors)
i. New forms of employment, <i>commuting time</i> and telework
j. OSH and <i>outsourcing</i>
k. Wellbeing

ing on the concepts of global and integrated promotion of wellbeing at work.

Consequently, main research priorities for the future, also on the basis of the outcomes of forecasting activities carried out by a network of European research institutions, lay in those innovative areas which are meeting the needs of changing workforce, impact of globalization and new technologies<sup>13)</sup> (Table 1).

## Challenges and Opportunities for the Future of OHS in Europe

The positive impact of EU process in creating competent critical mass of OHS experts, the positive impact in reducing the critical hazards and the control of traditional risks might create the false opinion in decision makers that OHS is reasonably under control and not a priority in time of economical crisis. On the contrary, globalization and the economic crisis have and will continue to have a deep impact on the quality of the working environment and the work organization, leading to lower occupational safety and health standards. Several worrying indicators are in this direction:

- The growing tendency of outsourcing occupational health services.
- The creation of new and competent OHS professionals is at stake: many academic programs have been downsized or closed<sup>14)</sup>. The turnover is insufficient particularly among occupational hygienists and nurses.
- The investments in OHS research are suffering relevant cuts: a number of national research institutions have been facing restructuring processes or even closures, and that is what happened to the National Institute of Working Life in Sweden<sup>15)</sup>.
- The scarce recognition and acceptance, in many sec-

tors of society, of the potential of Occupational Health investments to improve productivity and wellbeing.

On the other side, according to EU-OSHA, the production loss from people being excluded from work on health and disability grounds at 3,000 billion Euros every year. Jukka Takala, former head of the EU-OSHA, introducing the Agency's 2010 annual report, affirms that "wellbeing of the European workforce is key to a sustainable economic recovery"<sup>16</sup>.

In order to meet the society's needs in the changing world of work, the culture of occupational prevention must be raised across Europe.

At the same time, OHS experts community must be effective in intercepting the needs of society also in consideration of the impact of the economical crisis and the changing world of work. The economical and social dimension should be a key element for a more integrated approach of occupational safety and health towards a broader ambitious goal of well being of European workers.

The structural synergy between research, compensation and prevention fields of action as well as reassessing OHS indicators more duly than merely injuries and occupational diseases statistics, could support this strategy.

In fact, in order to meet one of the 5 key goals of the European Union Strategy 2020: 75% employment rate for women and men aged 20–64 by 2020 (achievable by getting more people into work, especially women, young, older, low-skilled people and legal migrants), quality of work life and good occupational health must be key elements to drive action.

Moreover, the OHS dimension is a fundamental part of the responsible and sustainable development of rapidly growing new technologies (nanotechnologies and green jobs), which will expose to emerging risks an increasing number of workers in the forthcoming years. For this reason, a cultural evolution is needed to enhance the value of occupational health for a wider audience of stakeholders: from decision makers to OHS experts, employers, workers and their representatives and, in the end, the society at large.

## References

- 1) Agricola G (1556) *De re metallica*, Book 12. English translation 1912, Mining Magazine, London.
- 2) Ramazzini B (1700) *De Morbis Artificum Diatriba*. In: Patavino Archi-Lyceo Practicae Medicinæ Ordinariæ Publici Professoris. Mutinae, Typis Antonii Capponi (in Latin).
- 3) Herbert K, Abrams G (2001) A short history of occupational health. *J Public Health Pol* **22**, 34–80.
- 4) Baldasseroni A, Carnevale F, Iavicoli S, Tomassini L (2009) Alle origini della tutela della salute dei lavoratori in Italia. *Nascita e primi sviluppi dell'Ispektorato del Lavoro (1904–1939)*, ISPESL, 11-326, Rome.
- 5) Hämmäläinen RM (2008) *The Europeanisation of occupational health services: a study of the impact of EU policies*. People and Work Research Reports 82. Finnish Institute of Occupational Health, Helsinki.
- 6) Rantanen J (2008) Challenges to global governance in the changing world of work. In: *Risks in modern society*, Bischoff HJ (Ed.), 17–59, Springer, Mannheim.
- 7) European Commission (2004) *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions on the Practical Implementation of the Provisions of the Health and Safety at Work Directives 89/391 (Framework), 89/654 (Workplaces), 89/655 (Work Equipment), 89/656 (Personal Protective Equipment), 90/269 (Manual Handling of Loads) and 90/270 (Display Screen Equipment)*. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2004:0062:FIN:EN:PDF>. Accessed November 15, 2011.
- 8) EUROSTAT (2010) *Health and safety at work in Europe (1999–2007): a statistical portrait*. EUROSTAT Statistical books. Publications Office of the European Union, Luxembourg.
- 9) Kauppinen T, Toikkanen J, Pedersen D, Young R, Ahrens W, Boffetta P, Hansen J, Kromhout H, Maqueda Blasco J, Mirabelli D, de la Orden-Rivera V, Pannett B, Plato N, Savela A, Vincent R, Kogevinas M (2000) Occupational exposure to carcinogens in the European Union. *Occup Environ Med* **57**, 10–8.
- 10) Giannakouris K (2008) Ageing characterises the demographic perspectives of the European societies, *Statistics in Focus*, 72/2008. Publications Office of the European Union, Luxembourg.
- 11) Doll R (1955) Mortality from lung cancer in asbestos workers. *Brit J Ind Med* **12**, 81–6.
- 12) Vigliani EC (1969) Benzene, chromosome changes and leukemia. *J Occup Med* **11**, 148–9.
- 13) Iavicoli S, Rondinone BM, Buresti G, Boccuni F (2009) Forecast on Future Occupational Safety and Health Challenges in Europe and Italy. In: *Working Environment Challenges for the Future*, International Expert Seminar Copenhagen 24–25 September 2009. 35–8, Danish Working Environment Authority and Partnership for European Research in Occupational Safety and Health (PEROSH), Copenhagen.
- 14) Agius R (2005) Academic occupational medicine: its role and its future. *Occup Med* **55**, 247–9.
- 15) Elstrand K (2008) The rise and fall of NIWL. *OSH & Development* **9**, 63–78.
- 16) European Agency for Safety and Health at Work (EU-OSHA) (2011) *Annual Report 2010*. EU-OSHA. Office for Official Publications of the European Union, Luxembourg.