



# **Sustainable workplaces of the future**

## ***European Research Challenges for Occupational Safety and Health***

**Partnership for European Research in Occupational Safety and Health (PEROSH)**

# Partnership for European Research in Occupational Safety and Health




- Belgium: **Prevent**, Institute for Occupational Safety and Health, [www.prevent.be](http://www.prevent.be)
- Denmark: **NRCWE** - National Research Centre for the Working Environment, [www.nrcwe.dk](http://www.nrcwe.dk)
- Finland: **FIOH** - Finnish Institute of Occupational Health, [www.ttl.fi](http://www.ttl.fi)
- France: **INRS** - Institut National de Recherche et de Sécurité, [www.inrs.fr](http://www.inrs.fr)
- Germany:
  - **BAuA** - Federal Institute for Occupational Safety and Health, [www.baua.de](http://www.baua.de)
  - **IFA** - Institute for Occupational Safety and Health of the German Social Accident Insurance, Germany, [www.dguv.de/ifa](http://www.dguv.de/ifa)
- Italy: **INAIL Research** - Italian Workers' Compensation Authority, [www.ispesl.it](http://www.ispesl.it)
- Netherlands: **TNO** - Netherlands Organisation for Applied Scientific Research, [www.tno.nl](http://www.tno.nl)
- Norway: **STAMI** - National Institute of Occupational Health, [www.stami.no](http://www.stami.no)
- Poland: **CIOP-PIB** - Central Institute for Labour Protection - National Research Institute, [www.ciop.pl](http://www.ciop.pl)
- United Kingdom: **HSL** - Health and Safety Laboratory, [www.hsl.gov.uk](http://www.hsl.gov.uk)



# Challenges for future European OSH research

# 7 challenges for future European OSH research

1. Sustainable employability to prolong working life
2. Disability prevention and reintegration
3. Psychosocial well-being in a sustainable working organisation
4. Multifactorial genesis of work-related musculoskeletal disorders (MSDs)
5. New technologies as a field of action for OSH
6. Occupational risks related to engineered nanomaterials (ENM)
7. Safety culture to prevent occupational accidents



# Sustainable employability to prolong working life

# What is at stake?

- Demographic change and an ageing population

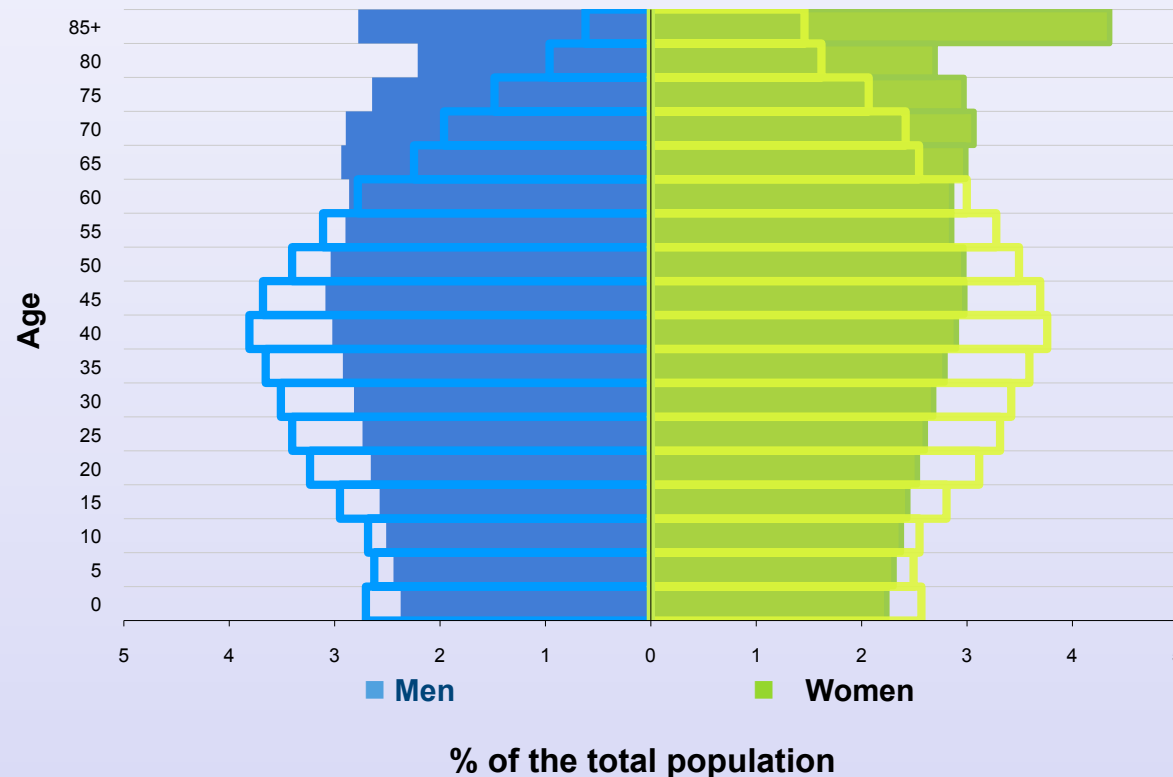


Figure 1: Population structure and ageing in 2010 (bordered) and 2060 (solid colours) in EU-27

## Research needs at EU level



- Individual and organisational determinants of the prolongation of working life while maintaining good health and high productivity
- Cost-effective individual and organisational interventions and measures (regulations, legislation) that extend working life in good health and productivity
- Cost-benefit analysis on the societal level demonstrating a positive return on investment on human capital will encourage the promotion of sustainable employability.

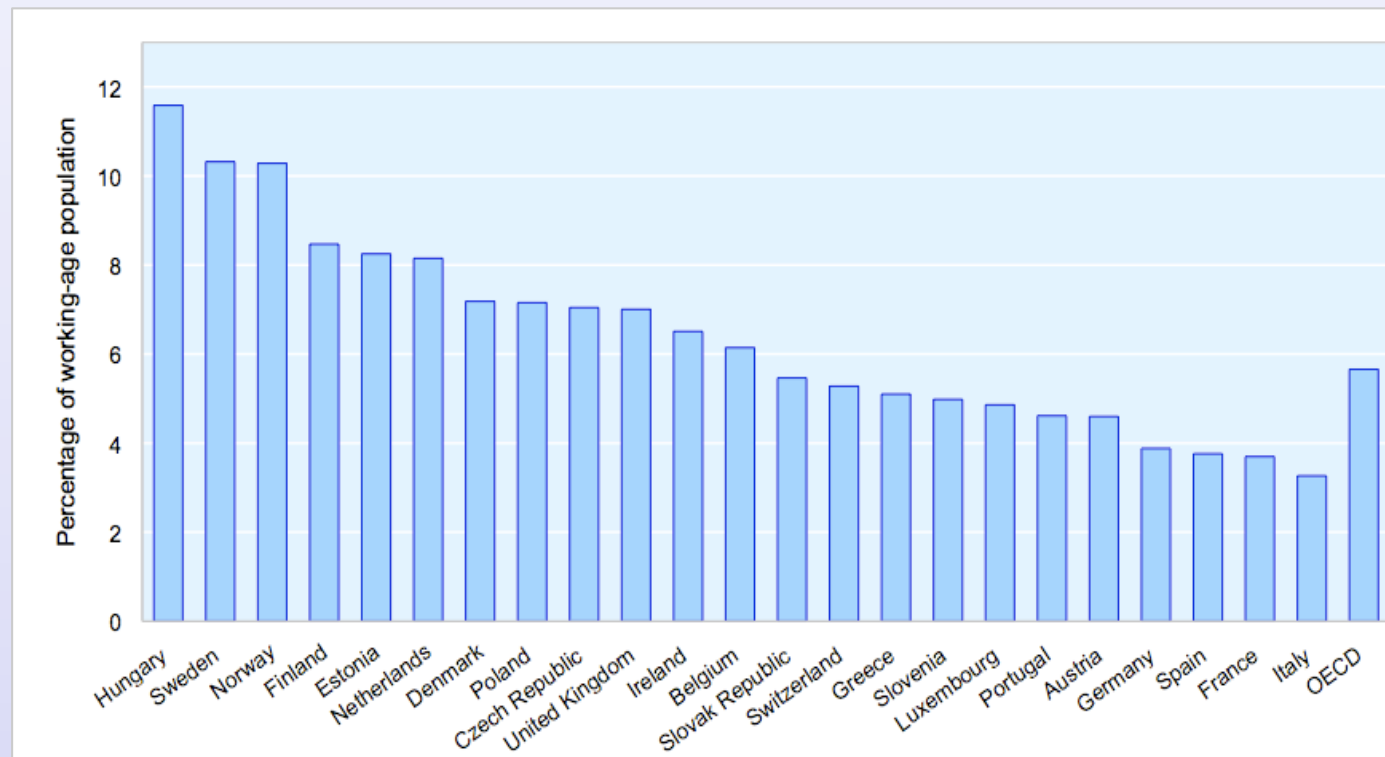


# Disability prevention and reintegration



# What is at stake?

- 6% of OECD working population leaves labour market prematurely due to health related problems



*Figure 2: Disability benefit recipients in percentage of the population aged 20-64 in a number of OECD countries for 2008 or latest year available*

Source: OECD, The OECD "Sickness, Disability and Work" project

## Research needs at EU level



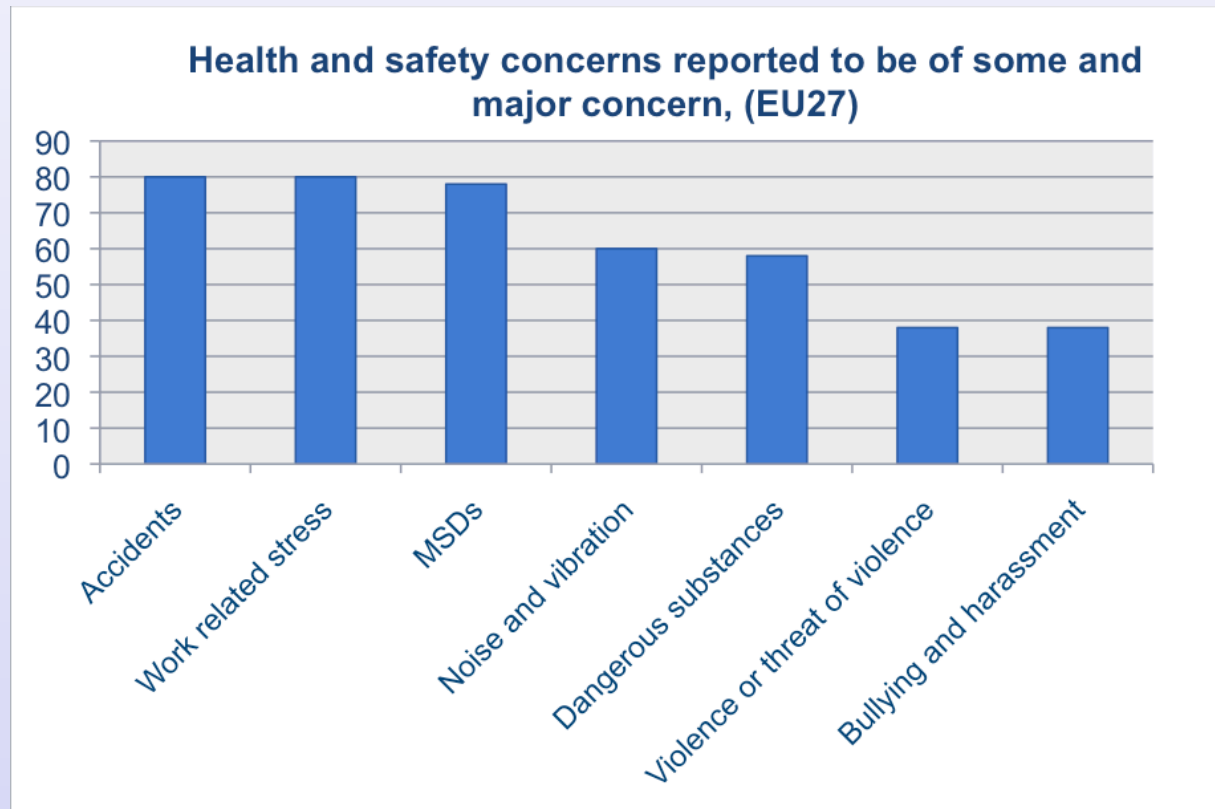
- Holistic approach of disability (multiple risk factors, supportive factors)
- Factors (work-related, socio-economic, individual) to prevent disability
- Factors to enhance the return to work
- Development of intervention strategies based on work modification, working hours, work organisation, lifestyle
- Studies into the role, quality and effectiveness of the health care provider and the occupational safety system in preventing work disability
- Models for integrated care and cooperation between different stakeholders



# Psychosocial well-being in a sustainable working organisation

## What is at stake?

- 20% to 30% of workers in EU believed health was at risk due to work-related stress (EWCS, 2007)
- Work-related stress of major concern for 79% of managers (ESENER)
- Violence and harassment of major concern for almost 40 % of managers
- Between 50% and 60% of all lost working days have some link with work-related stress



*Figure 3: Health and safety concerns reported to of some and major concern (% managers, EU27)*

Source: Esener Survey, EU OSHA (2008)

## Research needs at EU level (1/2)




- Influence of organisational and work-related factors including new ways of working, innovations in the production system, use of Information Communication Technologies
- Underexplored factors: ethics, job insecurity, work-life balance, information overload, working hours
- Explore resources and positive factors that may influence workers' well-being and mental health (job motivation, organisational flexibility, social relations, career prospects)
- Investigate the effects of restructuring (company reorganisation, closures, acquisitions, downsizing, outsourcing, relocation)

## Research needs at EU level (2/2)



- Understand the link between vulnerable groups (ageing workers, gender differences, people in precarious employment) and psychosocial risks
- Analyse the underexplored impacts of work-related stress such as work engagement and workaholism
- Effective organisational and workplace interventions to reduce work-related stress, violence and harassment
- Assess the socio-economic impact of work-related stress and its consequences in terms of cost and effects on workers and productivity

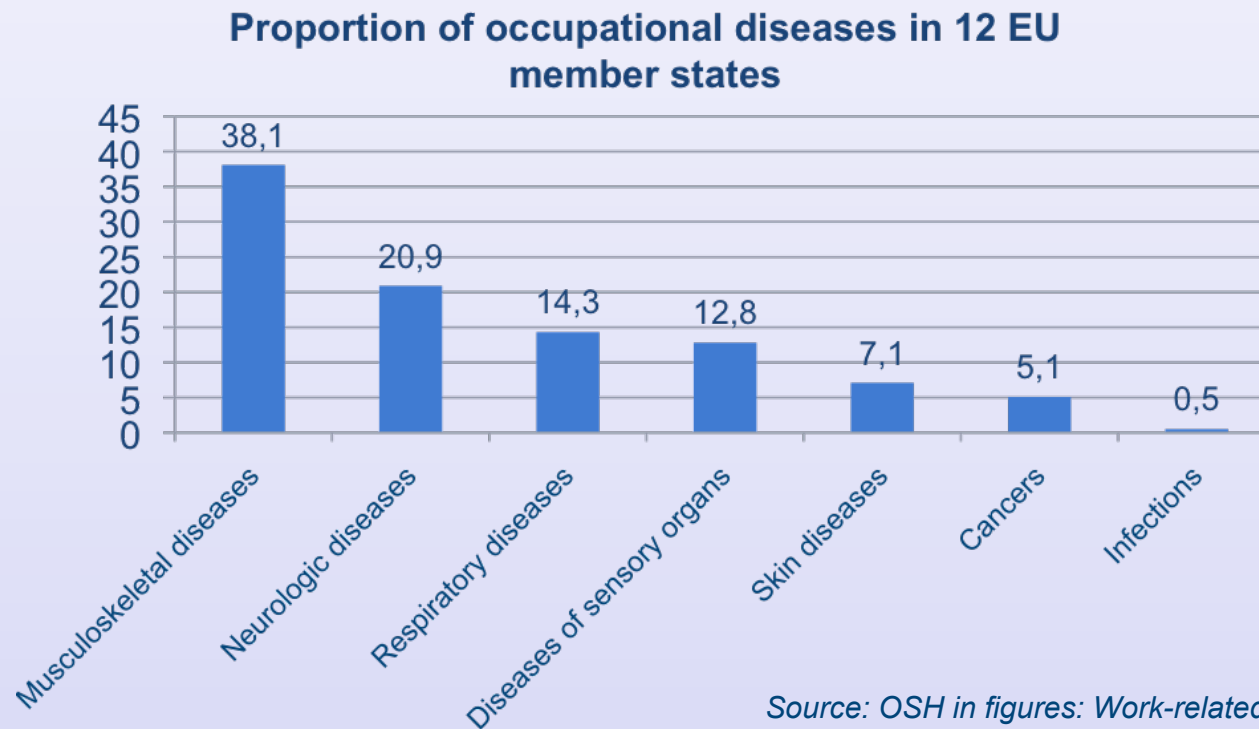


# Multi-factorial genesis of work-related Musculoskeletal Disorders (MSDs)



## What is at stake?

- More than one third of European workers suffer from work-related MSD leading to a high percentage of sickness absence, rehabilitation cases and early retirements
- MSD are main occupational disease category affecting European workers
- Widespread in all occupational sectors but predominant in agriculture and construction sector



*Figure 4: Proportion of occupational diseases in 12 EU member states according to the European Occupational Diseases Statistics obligatory list*

Source: OSH in figures: Work-related MSD in the EU - EU-OSHA, 2010

## Research needs at EU level



- Interaction of combined physical and psychosocial risk factors on genesis of work related MSD
- Links between MSD and individual physical capacity
- Epidemiological studies, e.g. analysis of specific work disability patterns
- Risk assessment tools and prevention strategies with regard to mixed exposures
- How workplaces accommodate employees with MSD
- Exposure databases and data exchange within OSH research organisations
- High quality MSD intervention studies (technical, organisational, person-oriented, cost-effectiveness interventions)

# New technologies as a field of action for OSH

# What is at stake ?

- The emergence of new technologies is changing the working conditions and environment (e.g. increase of telework and use of new Information Communication Technologies applications).
  - new technologies offer opportunities for **new and advanced solutions** regarding well-known **issues in OSH** (e.g. the design of the man-machine interface, the real time monitoring of work environment parameters).
  - the implementation of new technologies changes familiar work environments and may thereby **lead to the emergence of new hazards and risks**

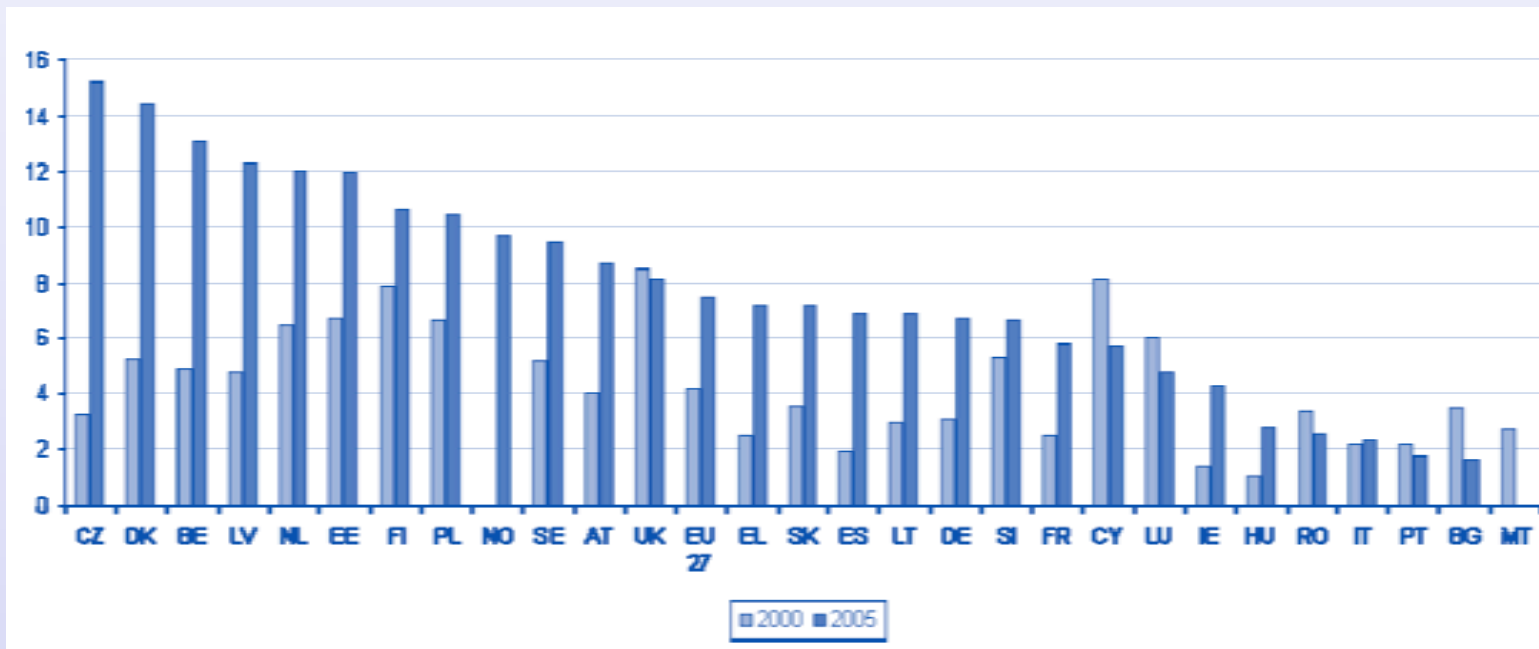


Figure 5. Development of telework in the EU27 and Norway, 2000 and 2005 (%)

## Research needs at EU level



- Adapt the protective efficiency and functionality of personal protective equipment to new hazards and changes in the working environment
- Use of virtual reality applications to design safe workplaces
- Effects of the implementation and use of adaptive wearable Information Communications Technologies in work environments in terms of prevention
- Improvement of the quality of air and the acoustic comfort of rooms in the working and living environment by using innovative technical solutions
- Analysis and improvement of OSH for mobile workplaces
- Cognitive aspects of new technology usage
- Technology-mediated influence of user's attitudes and behaviour
- Impact assessment of work environments controlled by Work Assistance Systems



# Occupational risks related to engineered nanomaterials

## What is at stake?



- Expansion of nanotechnology applications and use
- Employment generation impact of nanotechnologies is estimated around 2.3 million jobs worldwide by 2015, of which 0.9 million in USA and 0.4 in Europe.

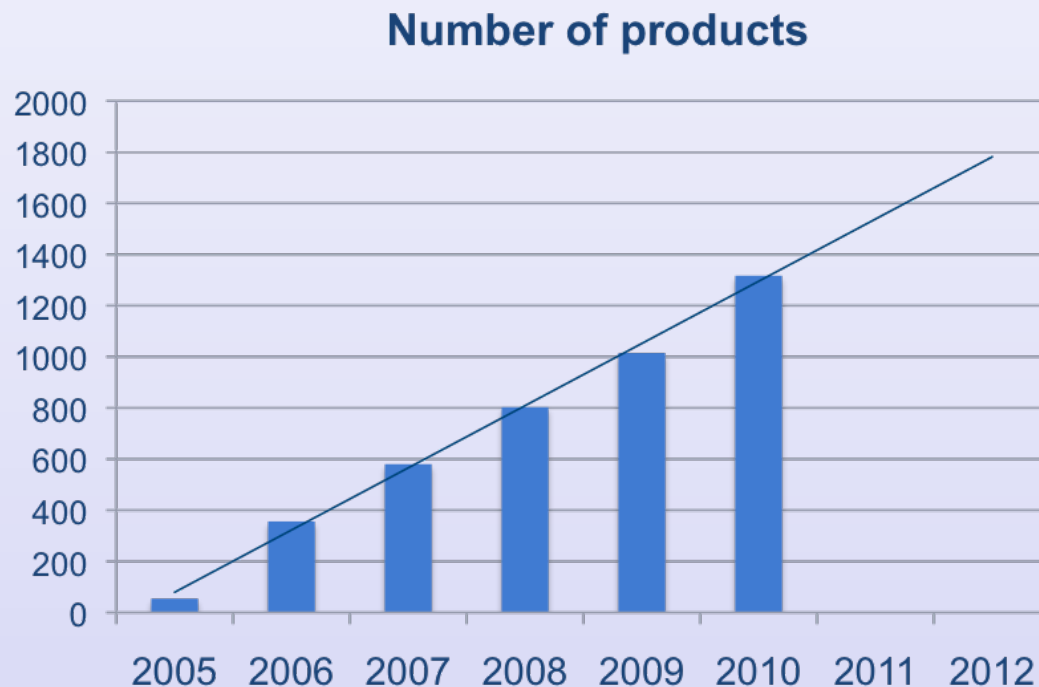


Figure 6: Progression of products listed in the Consumer Products Inventory



## Research needs at EU level (1/3)

### Understand the specific biological properties of nanomaterials (ENM) and identify their adverse effects

- Exploring the nanoparticles characteristics that contribute to biological effects
- Investigating effects and mechanisms of different types of nanoparticles on biological systems
- Development of new methods for predicting the toxicity of ENM (dose – response relationship)
- Need for a safety classification of ENMs based on physical and chemical characteristics
- Perform epidemiological research

## Research needs at EU level (2/3)



### Research in nanomaterials characterisation and metrology

- Harmonised methods to assess occupational exposure and preliminary work for standardisation
- Test the effectiveness of instruments and develop improved measurement tools
- Define which characteristics of ENMs should be measured in workplace monitoring
- Understand the potential release and the fate of ENMs after emission (nanodustiness)
- Validation of existing exposure models when applied for ENM and for new model approaches (for regulatory risk assessment)

## Research needs at EU level (3/3)



### Research on exposure control and risk management

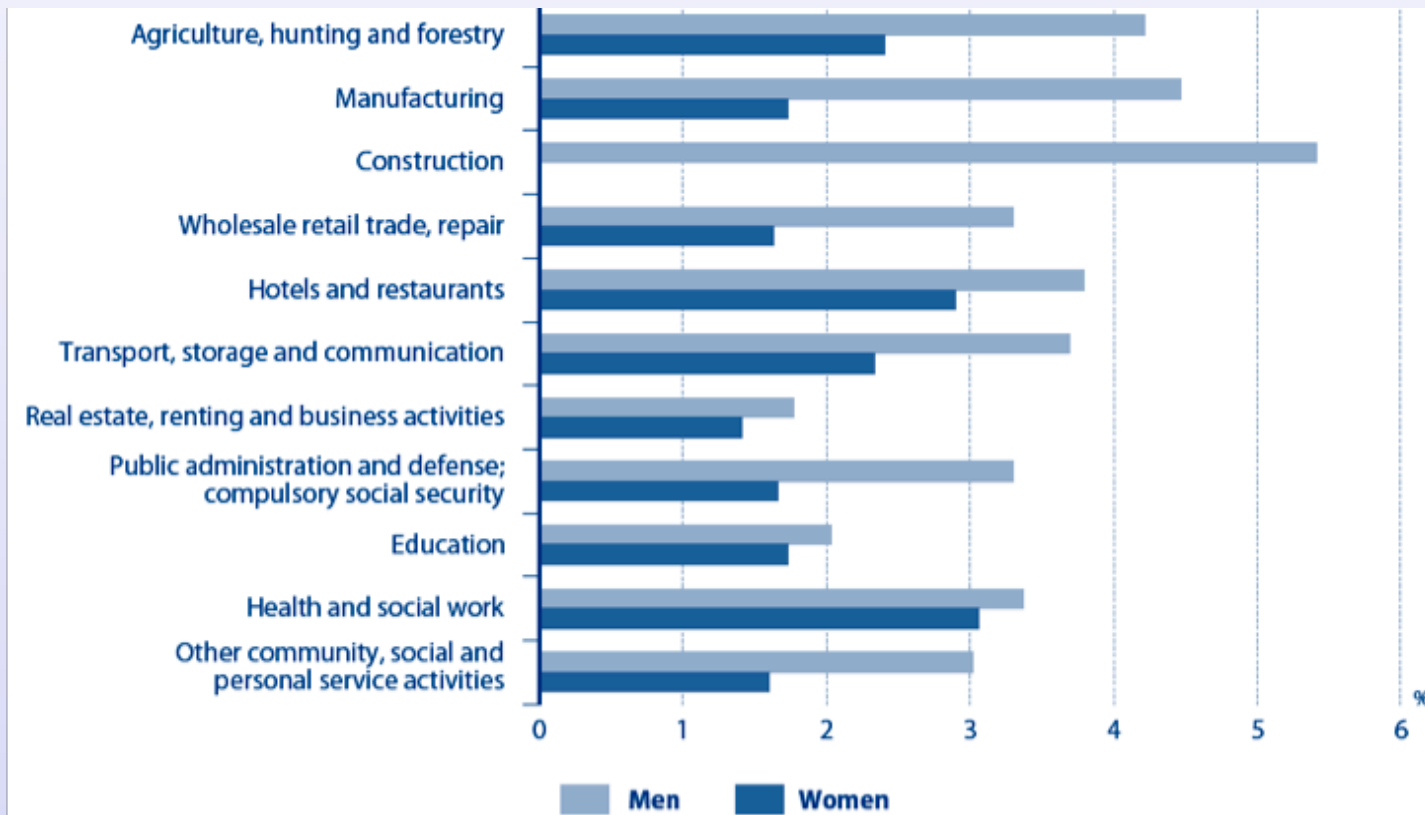
- Quantitative evaluation of the efficiency of ventilation and capture devices at workstations producing/handling ENMs.
- Study the effectiveness of respiratory protective devices in lab and workplace
- Development of risk management guidance (appropriate control banding techniques).



# Safety culture to prevent occupational accidents

## What is at stake?

- Accidents at work still result in high rates of fatal and serious injuries, hospitalisation, work absence, disability and premature retirement.
- An estimated 6.9 million people in the EU27 had one or more accidents at work in 2007, 5,580 of which were fatal



*Figure 7: Workers in the EU27 reporting one or more accidental injuries at work or in the course of work in the past 12 months in their main job in different sectors (%)*

Source: Eurostat (2010)

## Research needs at EU level



- Factors leading to an increased accident risk for certain groups of workers (young, older, migrant, newly appointed workers)
- The conditions and factors to establish a positive safety culture in enterprises of any size (regulation, social responsibility, leadership commitment, safety climate)
- The effectiveness of methods to promote a 'zero accident vision' and workplace safety culture (at enterprise level)
- Develop comprehensive instruments for the assessment of safety climate and other OSH factors



# Thank you for your attention

*Download the report at:*

<http://www.perosh.eu/p/OSHresearch2020>

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