Future Perspectives in Occupational Health and Safety in the EU
About WSH Institute

Problems, trends and future
Global and European estimates and numbers
Burden of diseases and injury
Forecasts
Economic burden, productivity and competitiveness

Solutions
Strategies and programmes
Global, EU, national, local and enterprise/organisation levels
About WSH Institute

Problems, trends and future
- Global and European estimates and numbers
- Burden of diseases and injury
- Forecasts
- Economic burden, productivity and competitiveness

Solutions
- Strategies and programmes
- Global, EU, national, local and enterprise/organisation levels
About WSH Institute

Governance structure
Helmed by Executive Director, Dr Jukka Takala, the WSH Institute comprises of 4 functional units

WSH Institute Governing Board

WSH Institute

Executive Director

Dy Executive Director

Research and Solutions

Leadership and Professional Development

Knowledge Hub

Planning and Evaluation
Singapore’s WSH Framework

Progressing WSH in Singapore

OSHD
Occupational Safety & Health Division

WSHC
Workplace Safety & Health Council

WSHI
Workplace Safety & Health Institute

REGULATOR
Legislation, Policies, Compliance Assistance & Enforcement

INDUSTRY PARTNER
Educating & Engaging Stakeholders, Promoting WSH

THINK TANK
Charting New Grounds for WSH Excellence and Innovation
What we do

Creating and enhancing WSH knowledge for our stakeholders

WSH Institute creates & enhances WSH knowledge

MOM / WSH Council
To make informed (evidence based) WSH policies and strategies

Businesses
To be equipped with solutions and information to address WSH issues faced

Leaders & WSH professionals
To be effective in managing & influencing safety and health aspects of workplaces
What we do

**Strategic Outcome 1**
Centre for WSH Knowledge

### Collation and analysis of WSH data
- Develop comprehensive information network
- Conduct studies and surveys to address information needs

### Anticipation of new and emerging risks
- Set-up a WSH risk observatory to anticipate and communicate changes in WSH landscape

### Evaluation of WSH policies and strategies
- Develop better understanding on the impact and effectiveness of national WSH policies and initiatives
## What we do

<table>
<thead>
<tr>
<th>Conduct applied research</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Conduct timely, relevant and practical-oriented research to protect and safeguard the health and safety of workers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Translate research to practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Work with stakeholders from the identification and prioritization of research needs to the communication and dissemination of knowledge and solutions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategic Outcome 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centre for WSH Research &amp; Solutions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provide research-based consultancy services</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Provide support to help businesses facing complex WSH issues where: (i) solutions are currently not readily available and; (ii) potentially possess industry-wide application and benefits</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provide WSH information resources for industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Disseminate information and knowledge generated from research and professional development</td>
</tr>
</tbody>
</table>
What we should keep in mind

Increase focus on long term health disorders

- Paradigm change: work should not just be safe from 9 am to 5 pm every day, but from 20 to 65 years, for all
- Objective: retire when still safe and healthy

Example: Occupational Cancer

- British Journal of Cancer: 8010 occupational cancer deaths in Britain, as compared to 212 deaths due to occupational injuries
- Finland: 839 deaths
- Singapore: ???

Costs of occupational disorders highest in

- Psychosocial factors causing disability
- Musculo-skeletal disorders
- Together count up to 75% of permanent disabilities and absenteeism in many countries
- Sweden: one of three workers excluded from workforce
ergo @ work

A Leading Institute for WSH Knowledge and Innovations
TOWARDS VISION ZERO
A Guide for Business Leaders
Towards a Safer and Healthier Workplace

About WSH Institute

Problems, trends and future
Global and European estimates and numbers
Burden of diseases and injury
Forecasts
Economic burden, productivity and competitiveness

Solutions
Strategies and programmes
Global, EU, national, local and enterprise/organisation levels
### Work-related Fatalities – World

2.99 billion economically active

<table>
<thead>
<tr>
<th>Region</th>
<th>Economically active population</th>
<th>Fatal accidents reported to the ILO (2003)</th>
<th>Fatal accidents best estimate 2003</th>
<th>Accidents causing at least 4 days' absence Average est. 2003</th>
<th>Work-related diseases</th>
<th>Work-related mortality</th>
<th>Deaths caused by dangerous substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>EME</td>
<td>427,681,309</td>
<td>11,210</td>
<td>15,159</td>
<td>14,252,505</td>
<td>269,989</td>
<td>285,148</td>
<td>90,400</td>
</tr>
<tr>
<td>FSE</td>
<td>193,354,716</td>
<td>2,111</td>
<td>14,519</td>
<td>13,650,601</td>
<td>170,166</td>
<td>184,685</td>
<td>56,976</td>
</tr>
<tr>
<td>CHN</td>
<td>740,792,400</td>
<td>180</td>
<td>97,542</td>
<td>91,706,292</td>
<td>334,138</td>
<td>431,680</td>
<td>111,879</td>
</tr>
<tr>
<td>IND</td>
<td>473,300,000</td>
<td>179</td>
<td>46,928</td>
<td>44,120,055</td>
<td>355,863</td>
<td>402,791</td>
<td>119,153</td>
</tr>
<tr>
<td>OAI</td>
<td>457,166,678</td>
<td>1,247</td>
<td>80,567</td>
<td>75,746,706</td>
<td>269,541</td>
<td>350,107</td>
<td>90,250</td>
</tr>
<tr>
<td>SSA</td>
<td>273,414,298</td>
<td>15</td>
<td>57,771</td>
<td>54,314,626</td>
<td>364,551</td>
<td>422,322</td>
<td>122,062</td>
</tr>
<tr>
<td>LAC</td>
<td>222,632,385</td>
<td>2,196</td>
<td>31,165</td>
<td>29,300,625</td>
<td>107,180</td>
<td>138,345</td>
<td>35,887</td>
</tr>
<tr>
<td>MEC</td>
<td>128,010,251</td>
<td>929</td>
<td>14,296</td>
<td>13,441,062</td>
<td>73,687</td>
<td>87,984</td>
<td>24,673</td>
</tr>
<tr>
<td>Total 2003:</td>
<td>2,916,352,037</td>
<td>18,067</td>
<td>357,948</td>
<td>336,532,471</td>
<td>1,945,115</td>
<td>2,303,063</td>
<td>651,279</td>
</tr>
<tr>
<td>NEW 2008:</td>
<td>2,991,283,518</td>
<td>21,604</td>
<td>320,580</td>
<td>317,421,473</td>
<td>2,022,570</td>
<td>2,343,149</td>
<td>910,286</td>
</tr>
<tr>
<td>USA</td>
<td>146,510,000</td>
<td>5,575</td>
<td>6,857</td>
<td>6,446,752</td>
<td>84,155</td>
<td>91,012</td>
<td>38,016</td>
</tr>
<tr>
<td>EU-27</td>
<td>205,431,242</td>
<td>4,422</td>
<td>7,460</td>
<td>7,013,545</td>
<td>159,485</td>
<td>167,870</td>
<td>73,989</td>
</tr>
<tr>
<td>Singapore</td>
<td>2,152,000</td>
<td>55</td>
<td>68</td>
<td>63,932</td>
<td>1,213</td>
<td>1,281</td>
<td>406</td>
</tr>
<tr>
<td>Finland</td>
<td>2,620,000</td>
<td>43</td>
<td>49</td>
<td>56,268/46,068/1,862</td>
<td>1,911</td>
<td>871</td>
<td></td>
</tr>
</tbody>
</table>
Work-related Annual Deaths – World

Deaths attributed to work, 2.3 million/year

- 23% Communicable diseases
- 17% Cancer
- 32% Cancer
- 8% Circulatory diseases
- 18% Digestive systems diseases
- 0.4% Mental Disorders
- 1% Accidents and violence

Sources: Hämäläinen P, Takala J, Saarela KL; TUT, ILO, EU-OSHA, 2008
Work-related Annual Deaths – EU-27

Deaths attributed to work, 168 000/year

- Communicable diseases: 57%
- Cancers: 23%
- Respiratory Diseases: 6%
- Circulatory diseases: 4%
- Mental Disorders: 3%
- Digestive systems diseases: 0.4%
- Genitourinary system: 1%
- Accidents and violence: 5%

Sources: Hämäläinen P, Takala J, Saarela KL; TUT, ILO, EU-OSHA
Major causes of death by age group, EU-25, 2001

2) Cancer = Malignant neoplasms including leukaemias and lymphomas.
3) In the age group 0 (= less than 1 year) the principal causes of death were 'Certain conditions originating in the perinatal period' (48.0%) and 'Congenital malformations and chromosomal abnormalities' (27.7%), which in the chart are included in 'Other'.

Source: Eurostat – Mortality Statistics.
Magnitude of non-fatal work-related illnesses and accidents

Main Findings

**Accidents at work**
- 3.2% of workers in the EU-27 had an accident at work during a one year period, which corresponds to almost 7 million workers.
- Approximately 10% of these accidents were a road traffic accident in the course of work.

**Work-related health problems**
- 8.6% of workers in the EU-27 experienced a work-related health problem in the past 12 months, which corresponds to 20 million persons.
- Bone joint or muscle problems and stress, anxiety or depression were most prevalent.

---

**Expected 678,803, reported 872,610 accidents in Spain, Europe: 7,013,545 (ILO)**

**680 000 accidents in Spain, 7 million in Europe in 2007**

**More than 1.1 million in Spain, 20 million in Europe 2007**
<table>
<thead>
<tr>
<th>Work-related cancer</th>
<th>Work-related circulatory diseases</th>
<th>Accidents</th>
<th>Infectious and parasitic diseases</th>
<th>Musculo-skeletal disorders</th>
<th>Psychosocial disorders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestos</td>
<td>Shift and night work, overwork</td>
<td>Lack of company policy, man. System, worker/employer collaborative mechanism, poor safety culture</td>
<td>Poor quality drinking water</td>
<td>Heavy lifting, loads, shapes of materials</td>
<td>Lack of control</td>
</tr>
<tr>
<td>Carcinogenic substances, processes, silica and other dusts</td>
<td>Strain by high demands, low decision making latitude</td>
<td>Lack of knowledge, solutions and good practices</td>
<td>Poor sanitation and sewage system</td>
<td>Repetitive movements</td>
<td>Poor work-life balance</td>
</tr>
<tr>
<td>Ionizing radiation, radioactive materials</td>
<td>High injury risk</td>
<td>Lack of guidance or poor gvt policies, poor legislation and poor enforcement and tripartite collaboration</td>
<td>Poor hygiene, lack of knowledge</td>
<td>Poor design of seats, tables, tools, processes</td>
<td>Poor organisational culture</td>
</tr>
<tr>
<td>UV-radiation</td>
<td>Chemicals</td>
<td>Lack of incentive-based compensation system</td>
<td>Protection against animals, insects, snakes</td>
<td>Low temperatures, vibration</td>
<td>Role ambiguity or conflict, unclear or changing priorities</td>
</tr>
<tr>
<td>ETS (passive smoking at work)</td>
<td>ETS (passive smoking at work)</td>
<td>Lack or or poor OH services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel engine exhaust</td>
<td></td>
<td>Poor recording and notification systems</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
For each of the following issues, please tell me whether it is of major concern, some concern or no concern at all in your establishment.

% establishments, EU27

Accidents: 20 (Major concern), 44 (Some concern), 35 (No concern), 18 (DK/NA)
MSDs: 21 (Major concern), 35 (Some concern), 41 (No concern), 18 (DK/NA)
WR Stress: 20 (Major concern), 41 (Some concern), 22 (No concern), 26 (DK/NA)
Dangerous substances: 41 (Major concern), 36 (Some concern), 31 (No concern), 19 (DK/NA)
Noise and vibration: 38 (Major concern), 30 (Some concern), 31 (No concern), 19 (DK/NA)
Violence or threat of violence: 62 (Major concern), 62 (Some concern), 62 (No concern), 19 (DK/NA)
Bullying or harassment: 62 (Major concern), 62 (Some concern), 62 (No concern), 19 (DK/NA)
Are there any particular reasons why these checks are not regularly carried out? Please tell me which of the following statements - if any - apply to your establishment?

% establishments, EU27
Note: establishments where risk assessment or similar measures are NOT carried out

[Bar chart showing percentages for different establishment size categories, with reasons for not carrying out checks indicated for each category.]
Concern regarding work-related stress and existence of procedures to deal with it

Main concerns and procedures in place

% establishments

Procedures to deal with work-related stress

Work-related stress major concern

EU-27 average

% establishments

Procedures to deal with work-related stress

Work-related stress major concern

EU-27 average
Trends influencing occupational safety and health

- Demographic trends
- Globalisation
- Economic crisis
- Changes in employment structures
- New technologies
Demographics – the ageing time-bomb

Trends in the population age structure EU-25

Source: UN World Population Prospects (2002 Revision) and Eurostat 2004 Demographic Projections (Baseline scenario).
Work life expectancy (WLE) and employment expectancy (EE) (years) constitute a holistic indicator for successful work life.

Source: ETK Finland 2010

And: Jorma Rantanen, WSH Conference Singapore, 2012
Important reasons for staying at work until statutory old-age retirement

- Decrease in workload and haste: 70%
- More challenges in work content: 67%
- Better rehabilitation opportunities: 64%
- Better leadership: 62%
- Improvements in work environment: 61%
- Higher salary: 60%
- More opportunities for education: 56%
- More flexible working times: 53%
- Better health care: 53%
- Sabbatical: 44%

Source: M. Ylikoski, FIOH,
Changes in employment structures

- Tertiarisation of the workforce
- Higher percentage of women in employment
- More non-standard employment
  - Part-time,
  - Multiple jobs
  - Self-employment
  - Precarious work
  - Informal sector / undeclared work
New and emerging risks

- New risks – e.g. Nanotechnologies
- New industries – e.g. Green jobs
- Old risks – new concerns: combined exposures
The challenge

• To achieve a sustainable working life
• The challenge to European Employment
• A holistic approach
The attributable fractions related work of various diseases. Fractions (%) are based on largely industrial country conditions while application of these fractions was adapted to conditions in selected developing countries.

<table>
<thead>
<tr>
<th>Causes</th>
<th>Attributable fraction</th>
<th>Attributable fraction, men</th>
<th>Attributable fraction, women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicable diseases</td>
<td>8.8</td>
<td>4.8</td>
<td>32.5</td>
</tr>
<tr>
<td>Malignant neoplasms</td>
<td>8.4</td>
<td>13.8</td>
<td>2.2</td>
</tr>
<tr>
<td>Respiratory systems diseases</td>
<td>4.1</td>
<td>6.8</td>
<td>1.1</td>
</tr>
<tr>
<td>Circulatory systems diseases</td>
<td>12.4</td>
<td>14.4</td>
<td>6.7</td>
</tr>
<tr>
<td>Neuro-psychiatric conditions</td>
<td>3.4</td>
<td>6.6</td>
<td>1.8</td>
</tr>
<tr>
<td>Digestive systems diseases</td>
<td>2.1</td>
<td>2.3</td>
<td>1.5</td>
</tr>
<tr>
<td>Diseases of the genitourinary system</td>
<td>1.3</td>
<td>3.0</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Overall work-relatedness of mortality, ILO: 6.7%
GDP loss, Australian method 5.9%
Global Burden of disease and injury in Europe, WHO 5.0%
<table>
<thead>
<tr>
<th>Disease</th>
<th>Attribution %, Overall: 6.7%</th>
<th>Reference: ILO, Decent Work-SafeWork, 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma, adult males</td>
<td>30</td>
<td>Karjalainen et al. 2001</td>
</tr>
<tr>
<td>Lung cancer</td>
<td>25-30</td>
<td>Axelsson 2001</td>
</tr>
<tr>
<td>Cardiovascular disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHD</td>
<td>5-30</td>
<td>Leigh 1997</td>
</tr>
<tr>
<td>Stroke</td>
<td>5</td>
<td>Leigh 1997</td>
</tr>
<tr>
<td>Musculoskeletal disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper extremities</td>
<td>15-40</td>
<td>EU OSHA</td>
</tr>
<tr>
<td>Low back</td>
<td>37</td>
<td>WHO 2002, Punnet et al. 2005</td>
</tr>
<tr>
<td>Mental health disorders</td>
<td>5-10</td>
<td>e.g. Toppinen et al. 1997</td>
</tr>
<tr>
<td>Diabetes II</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Breast cancer</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>
### New associations between work and health

<table>
<thead>
<tr>
<th>Condition</th>
<th>Outcome</th>
<th>RR, HR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Night shift</td>
<td>CHI</td>
<td>1.4</td>
</tr>
<tr>
<td>Demand-control imbalance</td>
<td>CHI</td>
<td>2.2</td>
</tr>
<tr>
<td>Effort-reward imbalance</td>
<td>CHI, Alcohol, Diabetes 2, Shoulder-neck, Low physical capacity, Poor mental performance</td>
<td>2.4, 1.9, 1.6, 1.4, 1.4</td>
</tr>
<tr>
<td>Condition</td>
<td>Outcome</td>
<td>RR, HR</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Chronic bullying</td>
<td>Depression</td>
<td>6.0</td>
</tr>
<tr>
<td>Downsizing</td>
<td>CHI</td>
<td>1.4 &gt; 5.0</td>
</tr>
<tr>
<td>Short sleep</td>
<td>Verbal performance, logical reasoning</td>
<td>Lowered</td>
</tr>
<tr>
<td>Downsizing</td>
<td>CHI</td>
<td>1.4 &gt; 5.0</td>
</tr>
<tr>
<td>Dusty work</td>
<td>Adult male asthma</td>
<td>30% of all asthma</td>
</tr>
</tbody>
</table>

Source: Jorma Rantanen, WSH Conference Singapore, 2012
The challenge to achieve a sustainable working life and the challenge to European Employment. A holistic approach is needed.

OHS actions for PMWA

Individual & Group approach:
- Basic check
- Age groups >45
- WHP
- LLL, HE
- PMWA

Actions to Work & work environment:
- Regular risk monitoring & assessment
- Structural prevention
- Primary prevention

Long-term healthy, Excellent work ability 28%?

Healthy, Good work ability 42%

Diseases, able to work 15%

Significant loss of health, Poor or no work ability 15%

Other actions:
- Early DG
- WRDs
- WRD Prevention
- Early intervention
- Good care
- PMW RTW
- Good care
- 2nd & 3rd Prevention
- Early rehab.
- PMWA

Job placement
- Job adjustment
- Work practices

Job and work environment adjustment
- Lightened work
- Part time work
Impact of the economic crisis

<table>
<thead>
<tr>
<th>EFFECT</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accidents, overall number</td>
<td>↓</td>
</tr>
<tr>
<td>Accident frequency, (less new/young workers)</td>
<td>↓</td>
</tr>
<tr>
<td>Temporary work, contract work, part time work, self-employment, fragmentation</td>
<td>↑</td>
</tr>
<tr>
<td>Negative effects on health of restructuring</td>
<td>↑</td>
</tr>
<tr>
<td>Female workers employment</td>
<td>←→</td>
</tr>
<tr>
<td>Migrant workers employment</td>
<td>↓</td>
</tr>
<tr>
<td>Psychosocial disorders</td>
<td>↑</td>
</tr>
<tr>
<td>Cardiovascular disorders, deaths</td>
<td>↑</td>
</tr>
<tr>
<td>Risk of long-term disability, if more than 6m out</td>
<td>↑</td>
</tr>
<tr>
<td>Working and OSH-Culture</td>
<td>↓</td>
</tr>
</tbody>
</table>
Cost of injury and illness, Australia, March 2009 and 2012

5.9% of the GDP in Australia in 2005-06

4.8% of the GDP in 2008-09

Calculation by Australian Government, source:

www.safeworkaustralia.gov.au/

Competitiveness and WSH: World (selected countries)

Source: WSH Institute and World Economic Forum 2012-2013
Competitiveness and WSH: EU27 +

Fatal accidents / 100,000 workers 2008

Competitiveness Index

Source: WSH Institute and World Economic Forum 2012-2013
The "Balance of Horror" in the European Labour Market

200 Bill € / year
- Training
- OHS
- WA promotion
- Recreation and culture
- Corporate fitness
- Communication

3000 Bill € / year
- Early retirement
- Sick-leaves
- Accidents
- ****
- (Presenteeism)

Source: Prof. G.Ahonen, Dr. J.Takala
### Price of premature retirement Finland/EU27

<table>
<thead>
<tr>
<th>Finland</th>
<th>EU</th>
</tr>
</thead>
<tbody>
<tr>
<td>77.109/7.7 million new retirements/year</td>
<td>712,108 million € in Europe = 712 billion (US billion = mrd =10^9)</td>
</tr>
<tr>
<td>Average age 58.1 years</td>
<td>16 billion</td>
</tr>
<tr>
<td>Loss 6.9 years/person</td>
<td>1.600 billion</td>
</tr>
<tr>
<td>Average value (cost) of one work year 45.405 €</td>
<td>24 billion</td>
</tr>
<tr>
<td>EU27 estimate</td>
<td></td>
</tr>
<tr>
<td>Annual average salary: 30.000 eur</td>
<td>2.400 billion</td>
</tr>
<tr>
<td>GDP/employed 73.500 eur</td>
<td>39 billion</td>
</tr>
<tr>
<td>3.900 billion</td>
<td></td>
</tr>
</tbody>
</table>


GDP in 2007: 178 billion (US billion= 1000 million =10^9 euro = mrd) euro, population of Finland 5.2 million

Based on Australian estimate on poor work environment costs.
A multifaceted approach to prevention

TCL: Policy, strategy, programmes, management

2: Laws and regulations

3: Knowledge, information

4: Systems approach

5: Technical assistance, advice, OSH Services

6: Promotion, advocacy

7: Collaboration

8: Enforcement, compliance, inspection

9: Infra-structures

TOOLBOX FOR SAFETY AND HEALTH
Conclusion

Occupational Diseases Are Common

Common Diseases are Occupational
Thank You