Control banding – Risk management tools

EU-OSHA´s activities and perspective

Control banding conference

Dortmund, 21.06.2011

Dr. Elke Schneider
EU-OSHA, Bilbao

http://osha.europa.eu

European Agency for Safety and Health at Work

EU-OSHA

European Agency for Safety and Health at Work

http://osha.europa.eu

Placed in Bilbao, Spain, EU-OSHA acts as a catalyst for developing, collecting, analysing and disseminating information that improves the state of occupational safety and health in Europe. The Agency is a tripartite European Union organisation and brings together representatives from three key decision-making groups in each of the EU's Member States – governments, employers and workers' organisations.

The perspective of the workers

Exposure to dangerous substances unchanged (ESWC 2005)

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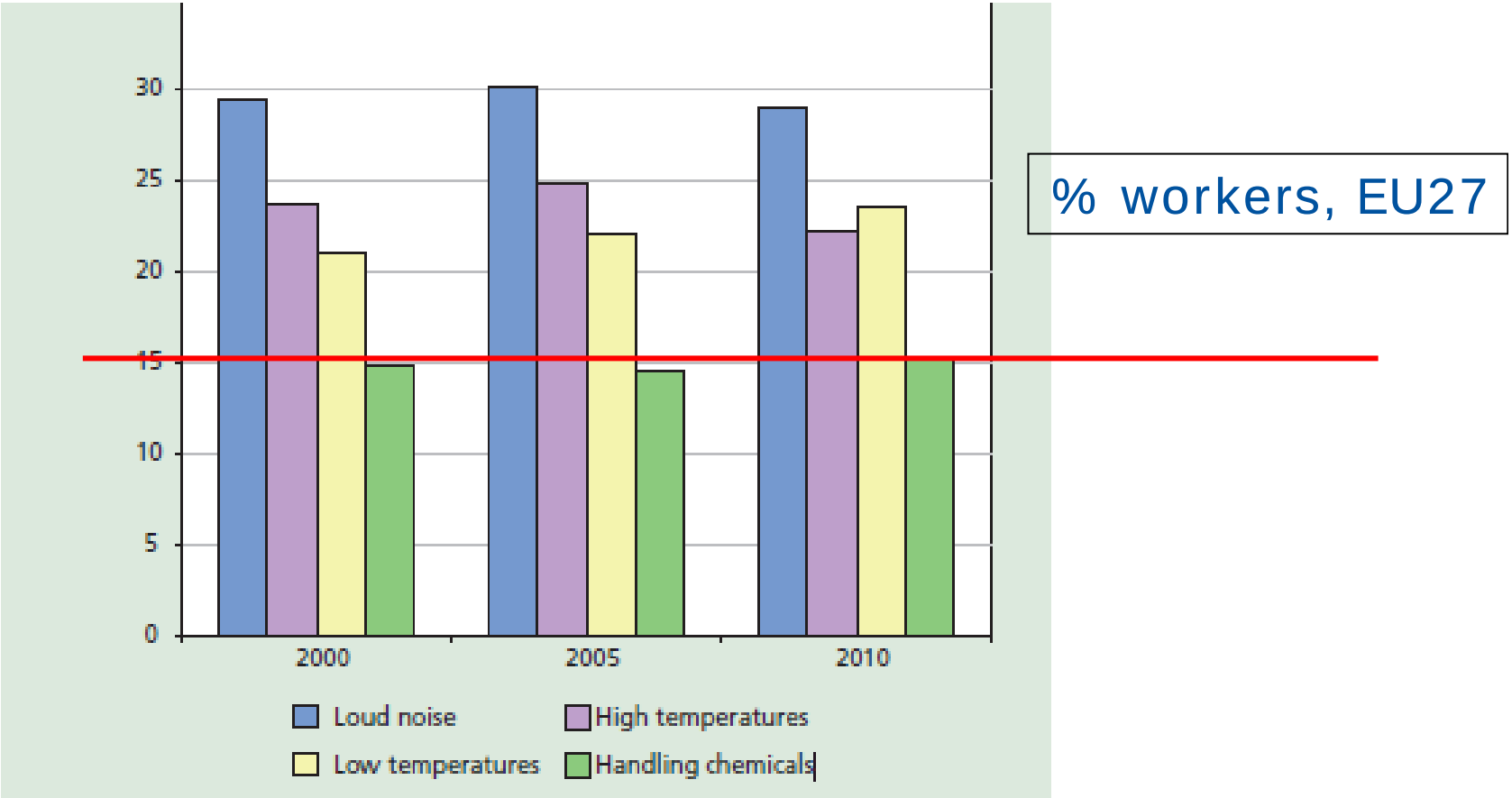
European Agency for Safety and Health at Work

Are you exposed to chemical products or substances?"
European Working Conditions Survey



Source: 2010 European Working Conditions Survey
European Foundation for the Improvement of Living and Working Conditions

"Are you exposed to chemical products or substances?"
2010 European Working Conditions Survey

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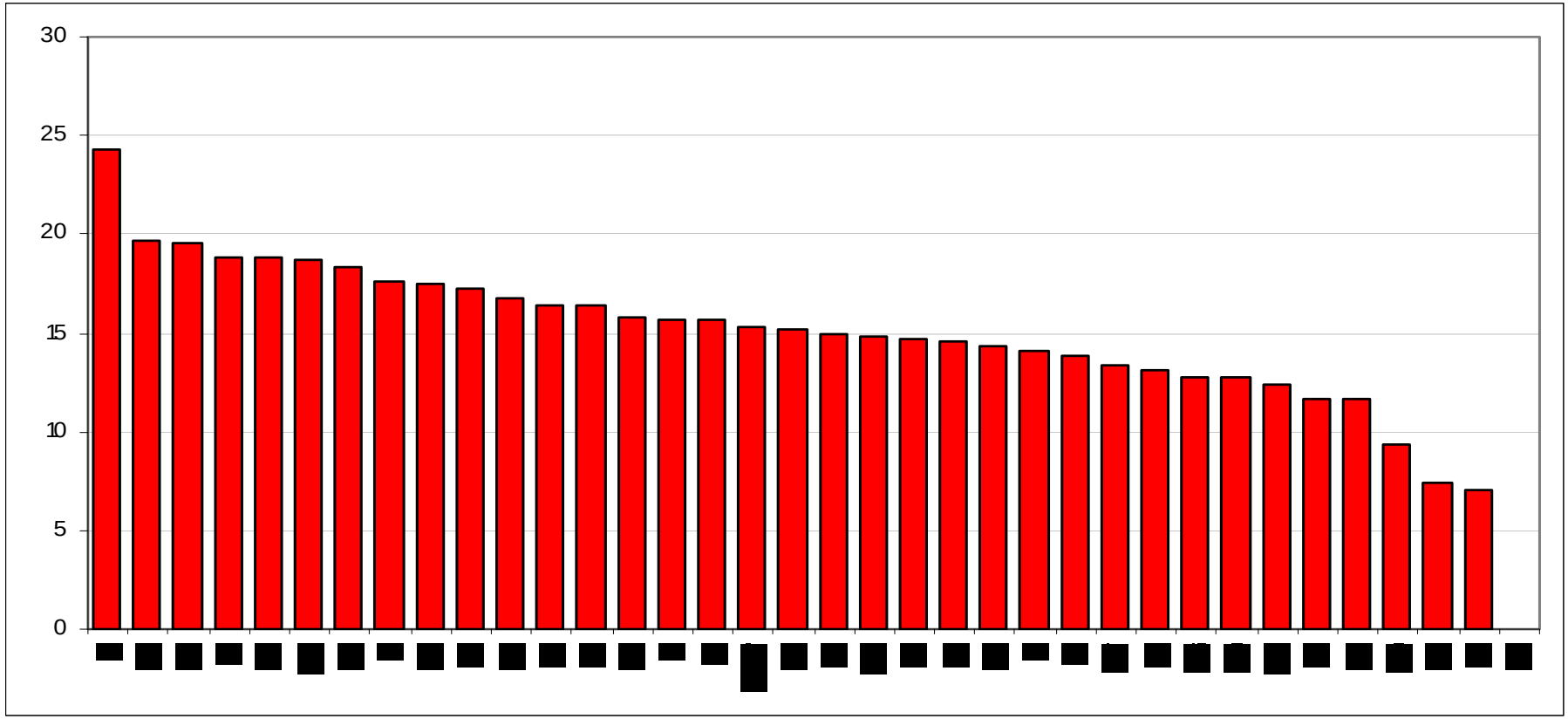
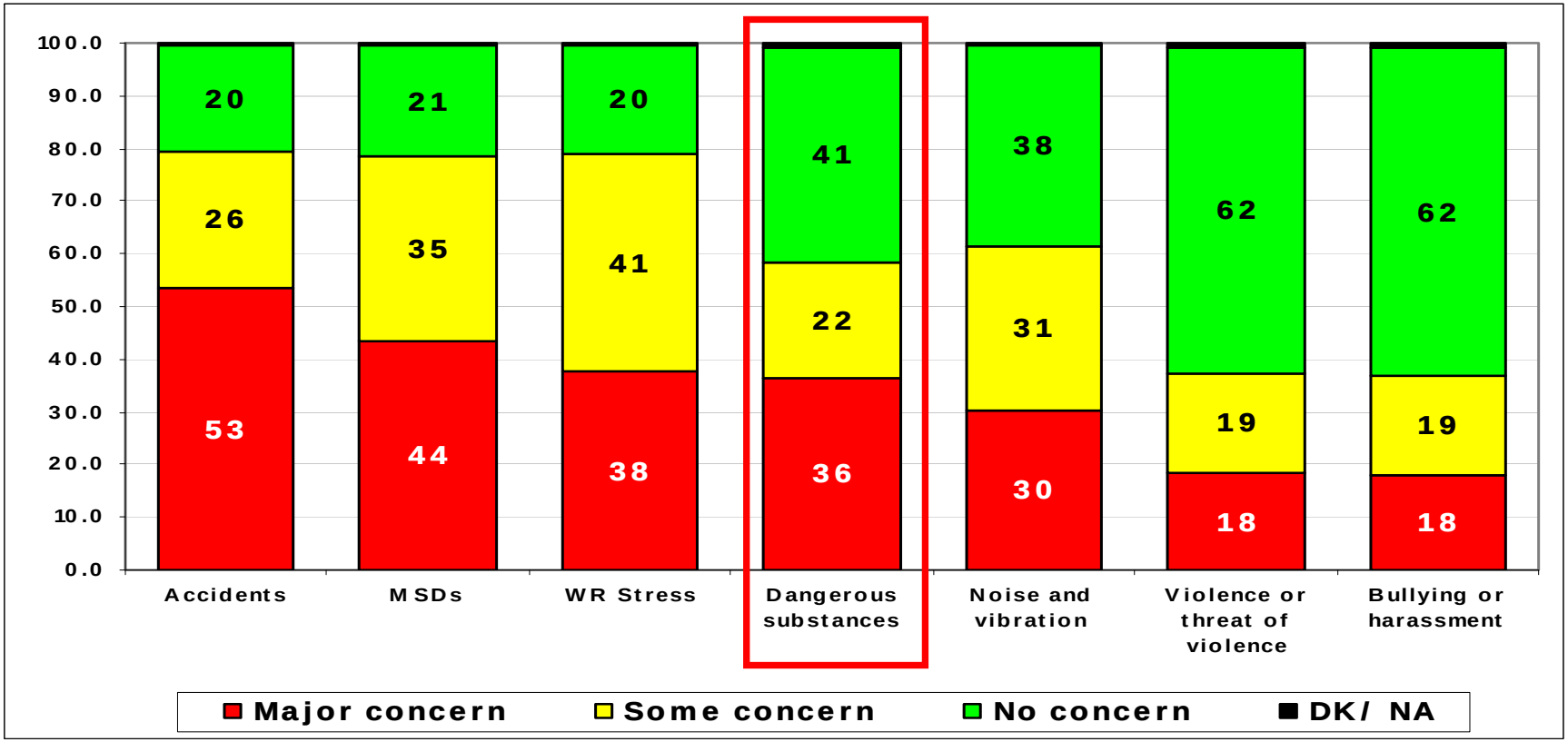
% workers, at least a quarter of the time



Source: 2010 European Working Conditions Survey
European Foundation for the Improvement of Living and Working Conditions

The perspective of the enterprises

"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"



Source: 2008 European Survey of New and Emerging Risks
European Agency for Safety and Health at Work

% establishments, EU27

"Dangerous substances: please tell me whether it is of major concern, some concern or no concern at all in your establishment"

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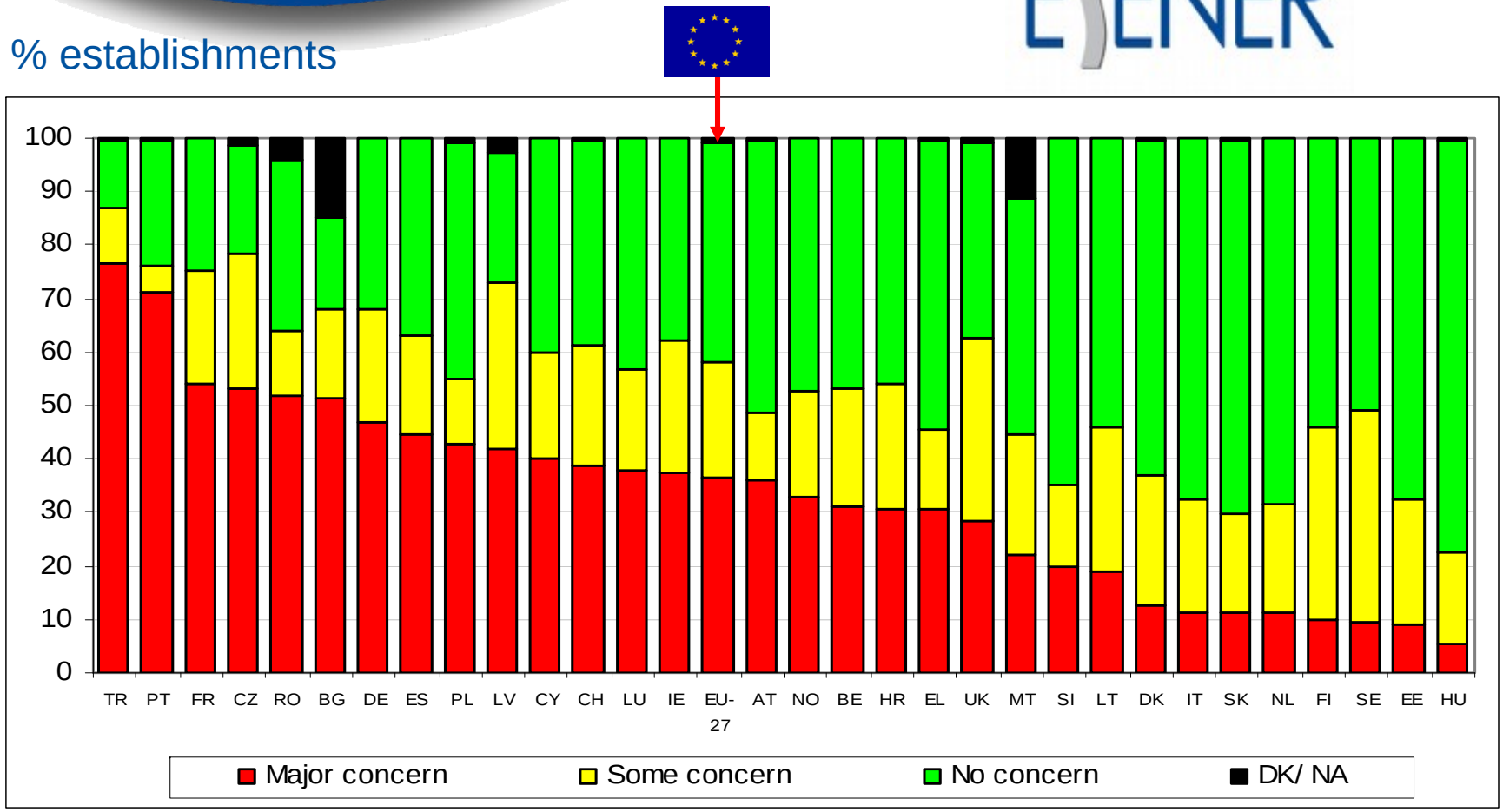
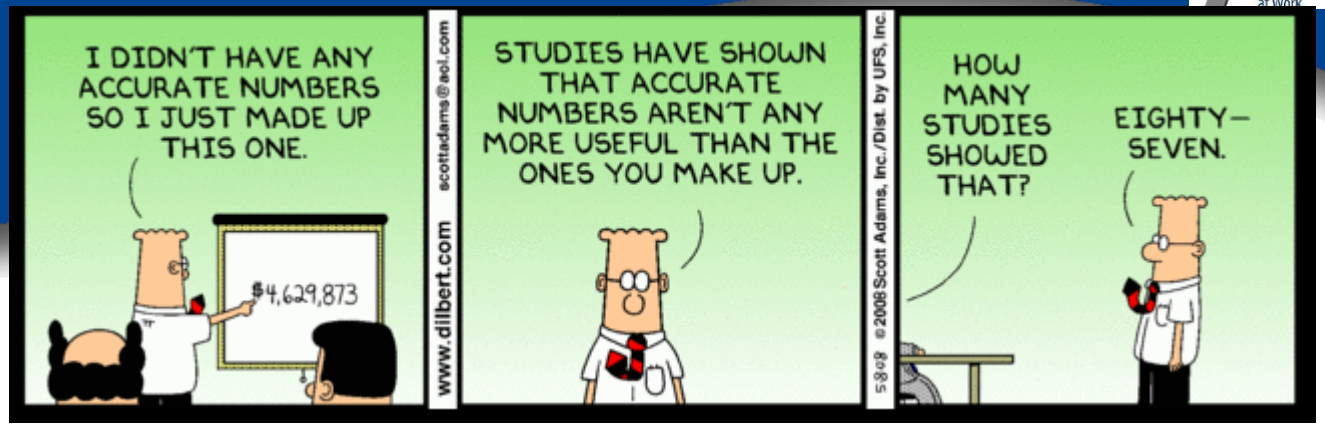
ESENER

% establishments



Source: 2008 European Survey of New and Emerging Risks
European Agency for Safety and Health at Work

Estimation of work-related Fatalities – EU 27



- 205 million people in employment
- 167,000 fatalities attributed to work-related accidents and diseases in EU, and within that:
- 159,000 fatalities attributed to work-related diseases
- 7,460 fatalities caused by accidents at work
- 74,000 fatalities attributed to hazardous substances at work (asbestos included)
- 95,581 work-related cancer deaths annually (9.6% of all cancer deaths estimated to be attributable to work) (2002)

Dangerous substances – EU-OSHA´s activities

European Agency for Safety and Health at Work

http://osha.europa.eu

- Website information online and paper publications
  - Occupational exposure limits
  - Good practice examples and case studies
  - Links to Member state information
  - Fact sheets in all official languages
- EU Risk observatory:
  - Expert surveys, targeted studies, e.g. on nanoparticles
- Campaigns:
  - European Week 2003 activities and products
  - Support to SLIC campaigns on asbestos and workplace risk assessment of dangerous substances
  - European Week 2010-2011 on safe maintenance

Comparative study of 11 substitution and risk assessment models

European Agency for Safety and Health at Work

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RESULTS: Comparative study of 11 substitution and risk assessment models.

feature	model											
	COSHH	EASE	AUVA	Column model	TRGS 440	Giscode	Malcode	INRS	CSST	TNO	Enviro-derm	Riskof-derm
experts	●	●	●	●	●	●	●	●	●	●	●	●
non-experts	●		●	●		●	●					●
Hazard:	●	●	●	●	●	●	●	●	●	●	●	●
— R-phrases	●		●	●	●			●	●	●		●
— no R-phrases		●	(●)	(●)	(●)	●	●		(●)		●	●
Exposure:	●	●	●	●	●	●	●	●		(●)	●	●
— inhalation	●	●	●	●	●	●	●	(●)				
— skin	(●)	(●)	(●)			(●)	(●)	(●)		●		●
Other factor:			●			●				(●)		●
— some						●						
— detailed			●							(●)		●
Risk:												
— digits			●		●			●	●			●
— classes	●	●	●	●				●		●	●	●
— labels						●	●					
Control m.	●	●	(●)	(●)		●	●				●	●
Available as:												
— booklet	●		●	●	●	●	●	●		●	●	✶
— programme		●				●			●			✶
Publisher:												
— authority	●	●		●	●		●					
— work insur.			●			●						
— private org.										●	●	
— research								●	●			●

● well included or dealt with (●) partially included or dealt with ✶ not yet available for the public

Allgemeine Unfallversicherungsanstalt, Austria.

COSHH Essentials, UK
EASE model, UK
Guidance on workplace monitoring, AUVA, Austria
Column model, Germany
TRGS 440, Germany
Giscode, Germany
MALcode, Denmark
Ranking of potential risks, INRS, FR
CSST: Solvents, skin hazard index, Canada
Strategy for protective glove selection, TNO,NL
Enviroderm Risk Assessment Scheme, UK
Riskofderm, EU-project, international

EW 2003 Campaign material

- Fact sheets
  - Introduction to DS in the Workplace
  - Elimination and Substitution of DS
  - Communication of information about dangerous substances
  - Respiratory sensitisers
  - Skin sensitisers
  - Biological agents
- Report: Case studies of successful communication measures for information relating to DS
- Magazine
- Report - Good practice awards
- Dedicated multilingual Website:
  http://ew2003.osha.europa.eu

Recent relevant publications related to dangerous substances

European Agency for Safety and Health at Work

- Literature review and links collection on nanotechnologies
- Literature review on noise and ototoxic substances
- Expert survey about chemical emergings risks
- Member State survey on OELs for CMRs
- Report on skin diseases and dermal exposure
- Input to FP 7 – Priorities for EU research, incl. chemicals

Emerging chemical risks survey

European Agency for Safety and Health at Work

http://osha.europa.eu

BACKGROUND

- Expert survey - Delphi studies
- Questionnaire for chemical and biological agents
  - Risks-substances-products-procedures
  - Health effects-diseases
  - Supporting references
- Part of an overall assessment incl. also
  - Physical and mechanical
  - Human, social and organisational

RESULTS

- Exposure to nanoparticles and ultrafine particles
- Validation and improvement of models of assessment for worker exposure to chemicals Difficulties in assessing the exposure especially in SMEs and for outsourced activities
- Skin exposure
- Measuring, modelling and risk assessment
- Exposure in waste treatment activities
- Lack of information on effects of reprotoxicants

Nanomaterials
Workplace risk management

- Obligation to assess the risks and 'hierarchy of control' apply
- But risk assessment difficult: many uncertainties
  - health risks
  - characterisation of exposure
  - lack of information on nanoproducts down the user chain
- Control-Banding: an alternative in the context of uncertainties
  - A. Maynard; "CB Nanotool" by Paik, S. Y. et al. Ann Occup Hyg 2008; French Anses (http://afsset.fr/index.php?pageid=2820&parentid=805)
- Control measures currently recommended: closed systems, conventional ventilation, engineering control and filtration used against ultrafine dust and aerosols
- Precautionary principle

“CB Nanotool”: Risk Level matrix as a function of severity & probability

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Severity \ Probability	Extremely Unlikely (0-25)	Less Likely (26-50)	Likely (51-75)	Probable (76-100)
Very High (76-100)	RL 3	RL 3	RL 4	RL 4
High (51-75)	RL 2	RL 2	RL 3	RL 4
Medium (26-50)	RL 1	RL 1	RL 2	RL 3
Low (0-25)	RL 1	RL 1	RL 1	RL 2

Control bands:

RL 1: General Ventilation

RL 2: Fume hoods or local exhaust ventilation

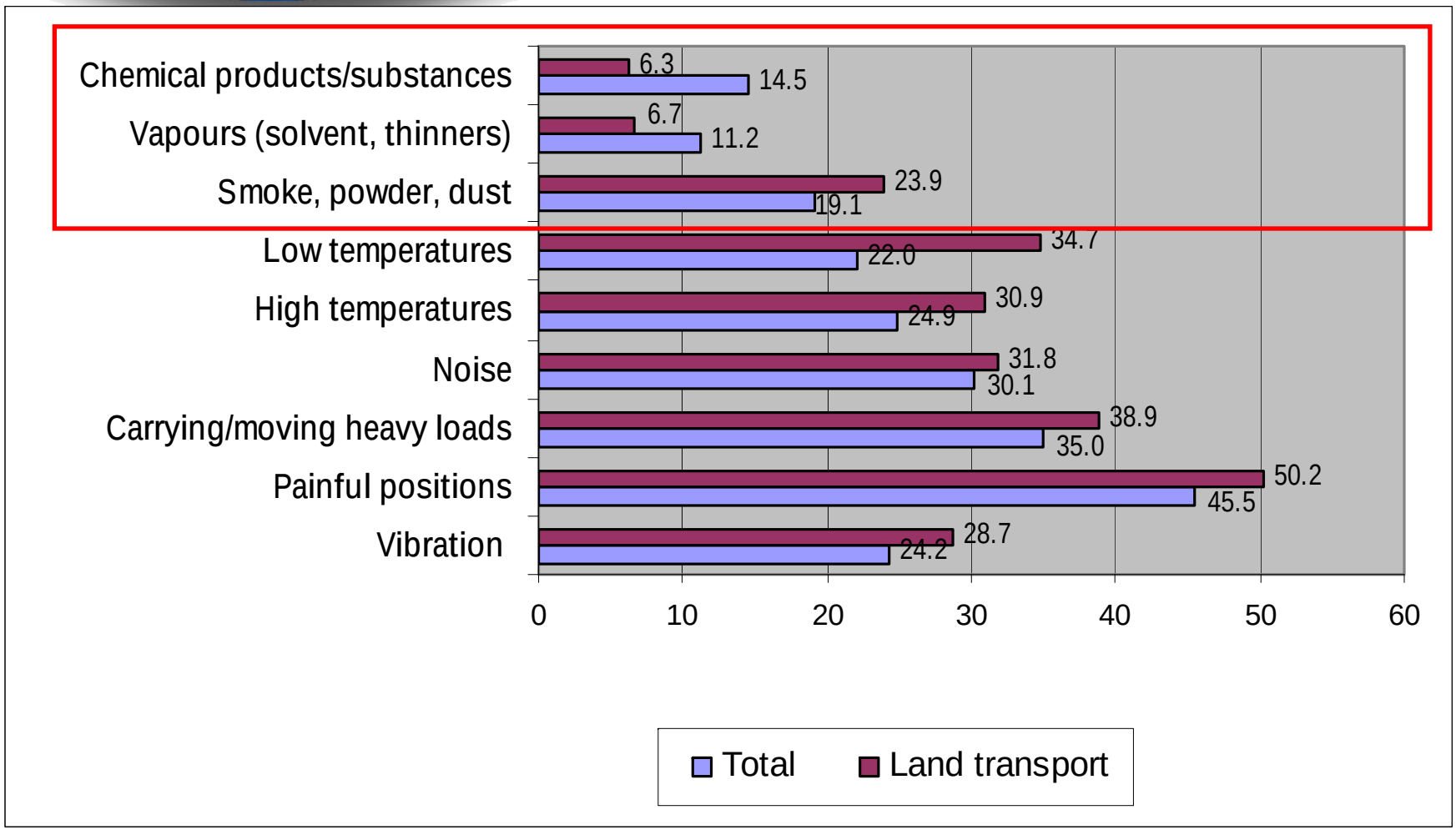
RL 3: Containment

RL 4: Seek specialist advice

The Annals of Occupational Hygiene

Paik, S. Y. et al. Ann Occup Hyg 2008 52:419-428; doi:10.1093/annhyg/men041

Sectoral level: an example
Transport – a sector with low level of awareness



Transport
Dangerous substances

European Agency for Safety and Health at Work

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Substance	Source	Workers
•Solvents, VOCs, •Exhaust fumes, Diesel exhaust and particles •Road and ambient dust •Disinfectants •Textile fibres (e.g. cotton) •Asbestos •Fumigation and storage chemicals	•Dangerous goods •Cargo loads and foodstuff on long-distance transport •Cleaning products •Insulation materials •Brakes (buses, trucks) •Waste •Fuels	•Cleaners, service and maintenance workers •Catering staff •Cargo workers •Drivers, delivery and attendants •Workers who handle container goods
Biological and infectious agents	•Animals •Foodstuff, perishable goods, raw materials •Insects, other vectors •Contact with passengers •Confinement, long-distance travelling	•Contact with foodstuff, infected travellers and goods •When travelling abroad •Contact with animals

Gender issues



- Exposures underestimated and awareness low
- Occupational diseases reflect male industry jobs
- Men and women work in different sectors, and within one sector, in different jobs
- Risk assessment of exposure to dangerous substances needs to be targeted to women
- Personal protective equipment to be designed for women
- Identify combined exposures typical for female jobs
- Accidents data not available for major sectors
- How to ensure OSH for female workers in multiple jobs (e.g. cleaning, home care) and informal work

Green jobs… safe jobs? Photovoltaic cells (PV)

- "The greatest possibility of human health risks associated with photovoltaic devices is in manufacturing"
- Requires large quantities of chemicals - many are highly toxic
  - solvents and acids for cleaning the semiconductor parts
  - gases for depositing the ultra-thin layers of material
  - metals, depending on the type of PV module being made
- Leaching from cracked or broken modules may occur while they are still in service or after they have been disposed of

Source: Electric Power Research Institute, 2003

Hazard Classification of Chemicals Typically Used in PV Module Manufacturing

Material	DOT Hazard Classification*
Arsenic	Poison
Arsine	Highly Toxic Gas
Cadmium	Poison
Diborane	Flammable Gas
Diethyl Silane	Flammable Liquid
Diethyl Zinc	Pyrophoric Liquid
Dimethyl Zinc	Spontaneously Combustible
Hydrochloric Acid	Corrosive Material
Hydrofluoric Acid	Corrosive Material
Hydrogen	Flammable Gas
Hydrogen Selenide	Highly Toxic Gas
Hydrogen Sulfide	Flammable Gas
Indium	Not Regulated
Methane	Flammable Gas
Molybdenum Hexafluoride	Toxic and Corrosive Gas
Oxygen	Gaseous Oxidizer
Phosphine	Highly Toxic and Pyrophoric Gas
Phosphorus Oxychloride	Corrosive Material
Selenium	Poison
Silane	Pyrophoric Gas
Silicon Tetrafluoride	Toxic and Corrosive Gas
Tellurium	Not Regulated
Tertiarybutyl Arsine	Pyrophoric and Highly Toxic Liquid
Tertiarybutyl Phosphine	Pyrophoric Liquid
Tetramethyl Tin	Pyrophoric and Highly Toxic Liquid
Trimethyl Indium	Pyrophoric Solid
Trimethyl Aluminum	Pyrophoric Liquid
Trimethyl Gallium	Pyrophoric Liquid
Tungsten Hexafluoride	Toxic and Corrosive Gas

*DOT, Department of Transportation

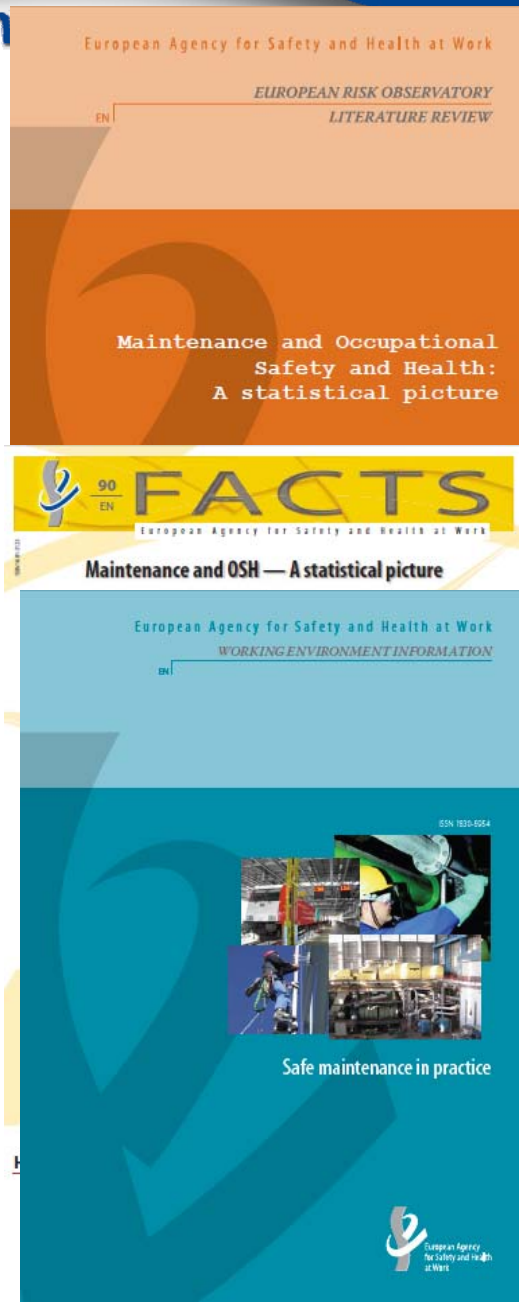
Maintenance-related publications

HEALTHY WORKPLACES
GOOD FOR YOU. GOOD FOR BUSINESS.
A European campaign on Safe Maintenance

http://osh

European Agency for Safety and Health at Work

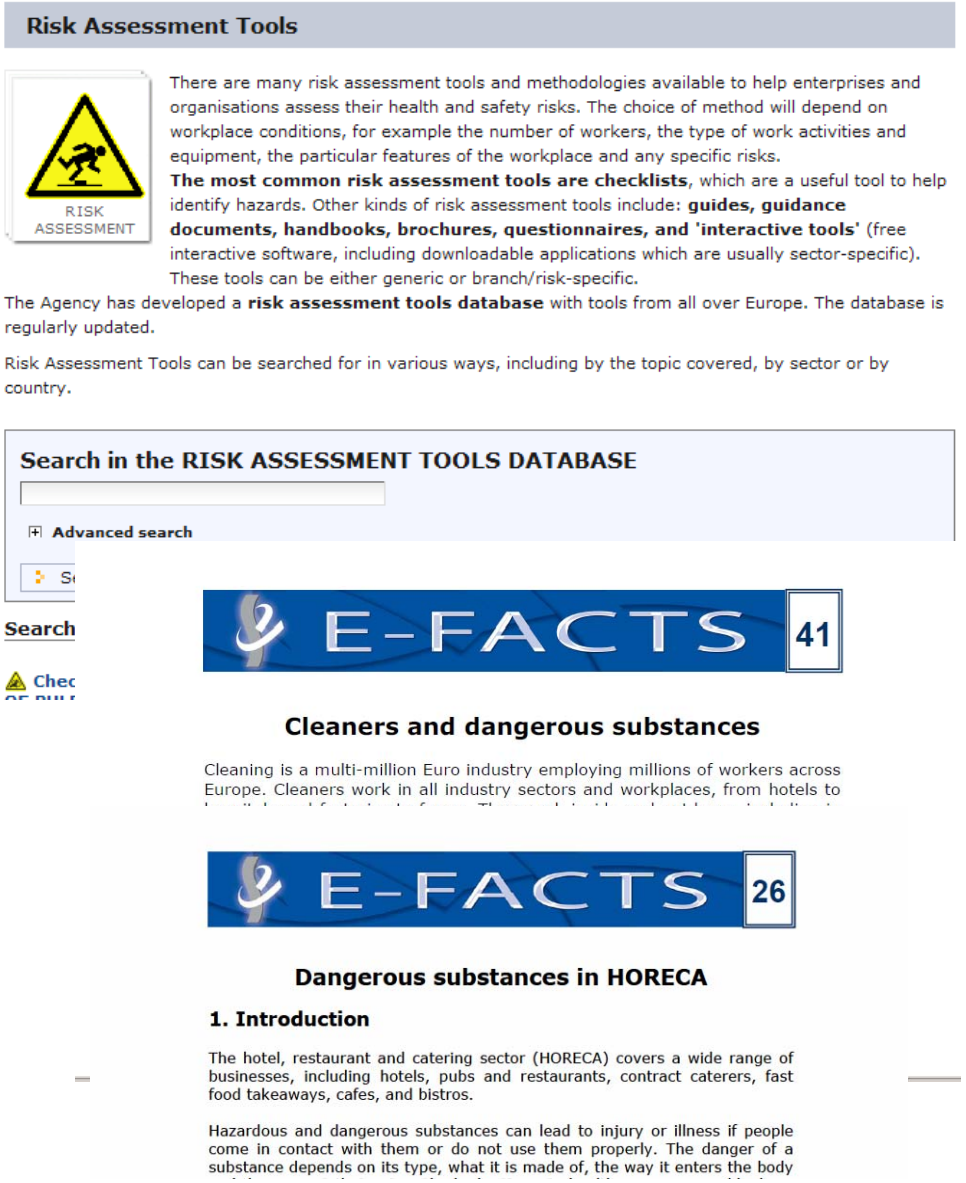
- Factsheet 96 - Safe maintenance in practice – Success factors
- E-fact 48: Safe maintenance – asbestos in building maintenance
- Factsheet 89 - Safe maintenance – For employers
- Factsheet 88 - Safe maintenance — Safe workers
- Lit. Review - Maintenance and Occupational Safety and Health: a statistical picture
- Report - Safe maintenance in practice



Recent relevant publications and tools

Dangerous Substances and Risk Assessment

- Powerpoint presentation on risk assessment of dangerous substances in 22 languages
- Risk assessment tools database
- Generic workplace risk assessment tool http://www.oiraproject.eu/
- E-facts for specific activities/sectors, e.g. Cleaners, textile industry, HORECA, laboratories, etc...



Risk Assessment Tools

RISK ASSESSMENT

There are many risk assessment tools and methodologies available to help enterprises and organisations assess their health and safety risks. The choice of method will depend on workplace conditions, for example the number of workers, the type of work activities and equipment, the particular features of the workplace and any specific risks.
The most common risk assessment tools are checklists, which are a useful tool to help identify hazards. Other kinds of risk assessment tools include: **guides, guidance documents, handbooks, brochures, questionnaires, and 'interactive tools'** (free interactive software, including downloadable applications which are usually sector-specific). These tools can be either generic or branch/risk-specific.

The Agency has developed a **risk assessment tools database** with tools from all over Europe. The database is regularly updated.

Risk Assessment Tools can be searched for in various ways, including by the topic covered, by sector or by country.

Search in the RISK ASSESSMENT TOOLS DATABASE

Advanced search

Search

E-FACTS 41

Cleaners and dangerous substances

Cleaning is a multi-million Euro industry employing millions of workers across Europe. Cleaners work in all industry sectors and workplaces, from hotels to

E-FACTS 26

Dangerous substances in HORECA

1. Introduction

The hotel, restaurant and catering sector (HORECA) covers a wide range of businesses, including hotels, pubs and restaurants, contract caterers, fast food takeaways, cafes, and bistros.

Hazardous and dangerous substances can lead to injury or illness if people come in contact with them or do not use them properly. The danger of a substance depends on its type, what it is made of, the way it enters the body

Online risk assessment tool (OiRA)

European Agency for Safety and Health at Work

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OiRA aims:

- To contribute to the “development of simple tools to facilitate Risk Assessment” (Community Strategy 2007-2012)
- To develop and promote practical tools to help MSEs to put in place the RA process
- To help demystify the RA process among MSEs
- To build a critical mass of social partners (EU and national), governments, public institutions interested in developing and disseminating RA tools tailored to the specificities and needs of European MSEs
- Pilots in Cy, SE–Hairdressing, BE- Generic Tool, FR-Road Transport, live performance

http://www.oiraproject.eu/

Website

European Agency for Safety and Health at Work

ean Agency for Safety and Health at Work

English

erous Substances

Dangerous Substances

Dangerous substances – meaning any liquid, gas or solid that poses a risk to workers' health or safety – can be found in nearly all workplaces. Across Europe, millions of workers come into contact with chemical and biological agents that can harm them.

According to recent research, 19 % of EU workers report being exposed to toxic vapours for a quarter or more of their working ti
dangerous substances as part of their daily work.

If the risks of using dangerous substances are not properly managed, workers' health can be harmed in a variety of ways, with e
to asthma, reproductive problems and birth defects, and cancer. This can be through a single short exposure, or multiple exposu
the body.
By law, employers in the EU must protect their workers from being harmed by dangerous substances in the workplace. Employer
them. Legislation also governs the identification and labelling of the thousands of different substances that are registered in the
Reducing the risks of working with dangerous substances is not just a moral and legal imperative – there is a strong business ca
things go wrong, – through lost productivity, and increased liability to prosecution and claims for compensation -, as well as workers.
Fortunately, a large amount of guidance is available for employers and workers in dealing with dangerous substances. And across Euro
practice to learn from.
By taking appropriate action, workers can be kept safe while using dangerous substances.
Employers are also obliged to provide workers with information on the risks posed by hazardous substances, and training in how to us
marketed products and to the waste and by-products resulting from production processes.

- Occupational exposure limits
- Legislation
- REACH (registration, evaluation and authorisation of chemicals)
- Classification, Labelling and Packaging (CLP)
- Biological Agents
- What are the health effects?
- How do I keep safe? Advice for **workers**
- What do I have to do? Advice for **employers**:
  - Risk assessment
  - Elimination and substitution
  - Prevention measures
  - Communication
- Advice for producers of chemicals
- Risk observatory

Search

Google™ Custom Sear

OSH Global Search
A-Z Index

More about...

Practical solutions: useful links, risk assessment tools, case studies, providers, FAQs
European Risk Observatory
European Week 2003 Campaign
European Chemicals Agency (ECHA)

Publications

OSH in figures: Occupational safety and health in the transport sector — an overview
E-fact 53: Risk assessment for biological agents
Mainstreaming OSH into business management
E-fact 48: Safe maintenance – asbestos in building maintenance
Factsheet 90 - Maintenance and OSH — A statistical picture

More...

Our Events

Chemical substances at work: facing up to the challenges
FOD Werkgelegenheid, Arbeid en Social Overleg (FPS Employment, Labour and Social Dialogue) 1, Ernest Blerotstraat Brussels, Belgium , 02.03.2009

Occupational risks from biological agents: Facing up the challenges

Links to databases, risk observatory information

Publications

News and events

http://osha.europa.eu/en/topics/ds

EU-OSHA working in partnership
Other activities

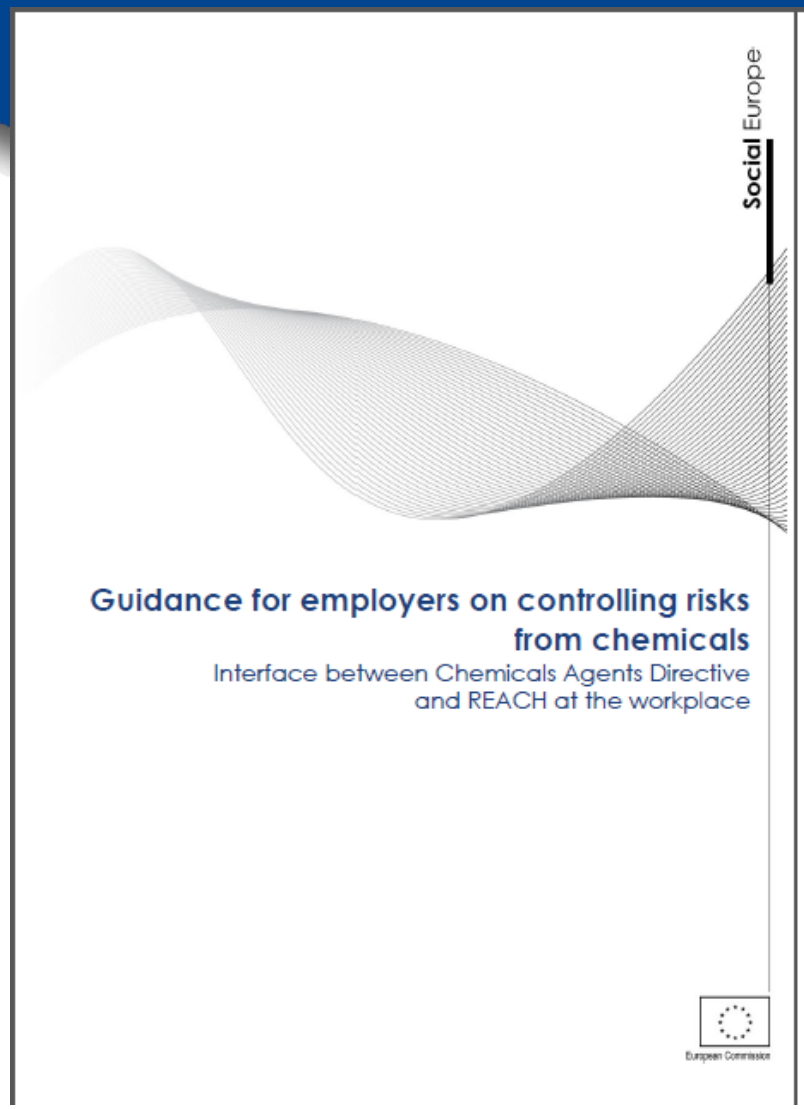
http://osha.europa.eu

European Agency for Safety and Health at Work

- **REACH-related:**
  - **CLP information updated & cooperation in CLP awareness-raising – NAPO to support the actions**
  - **Planned activities:**
    - REACH and workplace issues – which information is available?
    - Examples of guidance and documents, possibly at the sectoral leve
  - **Working at the sectoral level**
- **Mainstreaming into work on vulnerable groups**
- **Facilitating contacts between different stakeholders,**
  - **e.g. Substitution projects**
    - SUBSPORT project – scientific committee
    - DG EMPL project – survey among informed users and substitution guide
- **Green jobs and nanotechnology**
- **A future campaign?**

REACH guide from the ACSH

European Agency for Safety and Health at Work

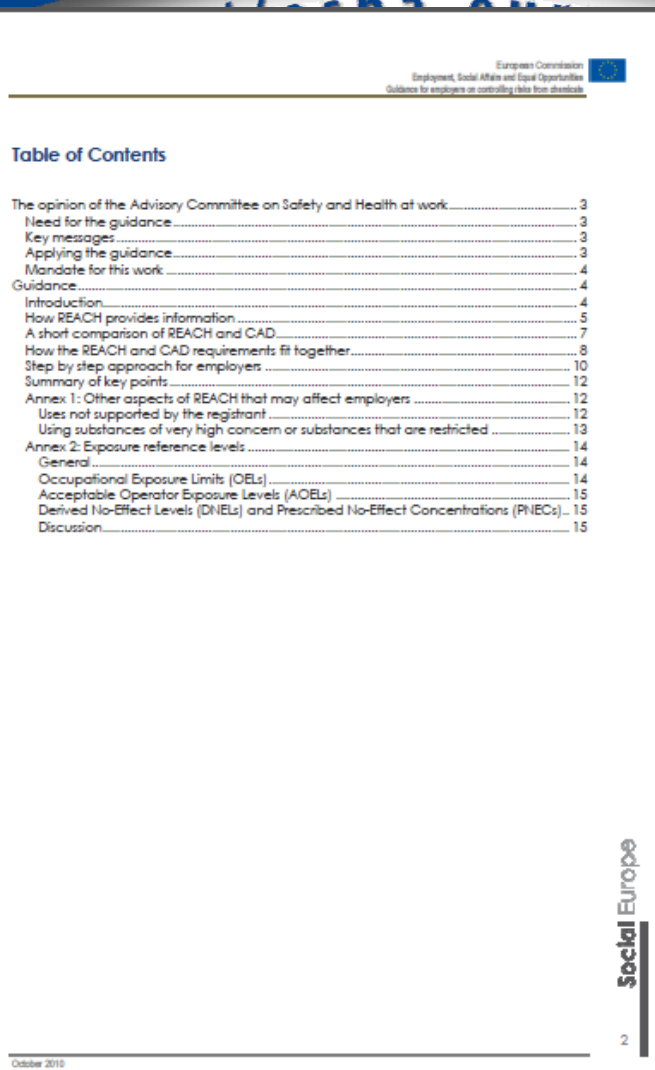


Social Europe

Guidance for employers on controlling risks from chemicals

Interface between Chemicals Agents Directive and REACH at the workplace

European Commission



European Commission
Employment, Social Affairs and Equal Opportunities
Guidance for employers on controlling risks from chemicals

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Social Europe

2

October 2010

http://ec.europa.eu/social/BlobServlet?docId=6126&langId=en

Risk Assessment in the use of dangerous substances European Campaign

SLIC campaign on dangerous substances

- SLIC – the Senior Labour Inspectors Committee - launched in 2010 a campaign of communication, information and inspection for risk assessment on the use of hazardous substances in workplaces, in EU Member States.
- Sectoral approach:
  - Wood and Furniture
  - Motor Vehicle Repair
  - Bakery
  - Industrial cleaning
  - Dry Cleaning

Some interesting findings

Risk Assessment in the use of dangerous substances European Campaign

- **Communication/campaigning**: role of labour inspectorate/preventive services:
  - Risk is substantially better understood by companies that were previously controlled.
  - where risk assessment is applied, more thoughts about substitution (of CMR)
- Solutions tailored to include **training**:
  - "vulnerable population groups", particularly young workers in vocational training or in apprenticeship period are concerned
- Important to strengthen **partnerships with professional organisations** - formalise concrete commitments to improve prevention
- **Smaller companies more potential to improve** then bigger ones
- Majority of investigated companies do not have systematic approach, need more awareness but are cooperative
- **Missing overview** of (dangerous) substances used or present in workplaces

Changes in the world of work
Issues to be addressed as regards dangerous substances

http://osha.europa.eu

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- Trend to multiple jobs, how to assess exposures and protect workers
- Move from industry to services
  - Statistics insufficient (e.g. EU accidents data do not cover education and health services)
- Increasing number of female workers & insufficient knowledge
- Increasing number of migrant workers & insufficient knowledge
- Subcontracting
- Informal work. e.g. in home care, cleaning, agriculture
- Move away from the one worker/one workplace concept, how to work at client´s premises
- Unsolved problems regarding combined exposures, including with physical risks, and dermal exposure
- Impact of new technologies – nano, green jobs, etc...

More thoughts...

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- How to help enterprises set up an inventory
- How to make use/link to data generated by REACH
- Information needs to be translated!
- How to ensure consultation (bottom up)
- Put in place a process (process guidance rather than substance information?)
- Don´t forget substitution!

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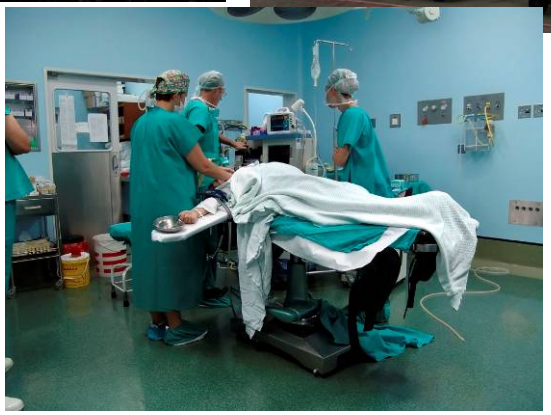
Discuss with us!

schneider@osha.europa.eu



http://osha.europa.eu/en/topics/ds