Occupational cancer in Europe – working towards solutions

John Cherrie
Summary…

- Cancer
- Occupational cancer burden estimates highlight priorities
- The role of legislation and wider initiatives
- Temporal trends in risk determinants
- Interventions to reduce risk
Institute of Occupational Medicine, Edinburgh…

- IOM is a not-for-profit research and consulting company
- It carries out work for governments, industry, trade unions and charitable foundations
- Some of this work relates to carcinogens and occupational cancer
Cancer…

- In the UK there are more than 300,000 cases of cancer diagnosed each year
  - Age standardised rate 4 per 1,000
  - Just over half will survive 5 or more years
- In Australia there are 130,000 cases diagnosed each year
  - Age standardised rate 5.6 per 1,000
  - Around two thirds survive 5 years or more
Incidence...
Mortality...
• Monograph programme started in 1972
• Identifies carcinogens as:
  • Carcinogenic (Group 1), Probably carcinogenic (2a), Possibly carcinogenic (2b), Not classifiable (3) and Probably not carcinogenic (4)
• Identifies types of cancer caused
• IARC does not quantify the impact or degree of risk

Understanding the causes…

- In 1981 Richard Doll and Richard Peto were commissioned by the US government to assess the relative importance of the “environment” in causing cancer.
- Their aim was to identify the proportion of cancer that is preventable.
About 4% (2 – 8%)
Cancer burden in the UK…

- Designed to update Doll and Peto’s estimate for occupational cancer burden
  - Current burden (2010)
  - Future burden (to 2060+)
- Funded by HSE to inform policy
- Method based on:
  - Risk of Disease (relative risk from published literature)
  - Proportion of population exposed
- Estimation for IARC groups 1 (definite) and 2A (probable) carcinogens and occupational circumstances

Attributable fraction: 5.3% (4.6 – 6.6%)

Men = blue
Women = red
85% of the cancer cases come from the top ten chemical agents.
European legislation…

- Carcinogens and Mutagens Directive
  - First introduced 1990
  - Implemented in each country under national legislation
  - Amended once to revise the binding limit for benzene
- Latest updating efforts
  - Started 2004
  - Impact assessment published 2012
But legislation has not worked...

- Occupational cancer attributable fraction is still around 5%
- It does not include many of the main causes of occupational cancer
- Legislation is an ineffective instrument of change
- Updating the legislation is a political issue
- Awareness of the issues are very poor, even amongst health and safety professionals
In the run-up to the April 28th commemoration of International Workers’ Memorial Day – also known as World Day for Safety and Health at Work - the European Trade Union Confederation (ETUC) is criticizing the European Commission’s failure to promote occupational cancer prevention measures. The ETUC plans public actions on the issue in three European cities on April 28.
Baseline health costs...
No time to lose and Breathe freely…

- Two new campaigns in the UK
- Run by health and safety professionals
  - To inform members
  - And instigate change
- Both have prioritised action
  - Limited number of carcinogens
  - Construction sector

www.notimetolose.org.uk
www.breathefreely.org.uk
No time to lose campaign…

• Focusing on a ‘top five’:
  • Diesel engine exhaust particulate
  • Solar radiation
  • Silica
  • Shiftwork involving night work
  • Asbestos
Action plan…

• Government to:
  • highlight the cost to society
  • maintain a comprehensive national database on occupational carcinogen exposure
  • fund more research

• Regulator to:
  • Deliver more effective compliance with existing legislation
  • take a more proactive approach

www.notimetolose.org.uk/About-NTTL/Action-plan-for-the-UK.aspx
Action plan…

- **Professions to:**
  - raise awareness and engage workers in solutions
  - ‘join the dots’ between employers, health and safety professionals, GPs and consultants

- **Industry to:**
  - ‘design in’ exposure prevention measures to the complete work process
  - embed work cancer awareness in relevant apprenticeships and trade-based training
There is some good news...

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VCM levels in a English PVC plant

\[ y = 2 \times 10^8 e^{-2.003x} \]

\[ R^2 = 0.7406 \]
What changed?

- High pressure water jet cleaning
- Removal of VCM residues by stripping
- Improved general ventilation
- Use of scale inhibitors
- Extraction on open reactor vessels
- Reduce leaks
- Air monitor
- Breathing Apparatus
Interventions…

• Acceleration of technological innovation
• Application of simple solutions
• Appropriate use of personal protective equipment

• Improved compliance with existing legislation
• Tightening up exposure limits
Crystalline silica...

- Assessed baseline scenario: limit 0.1 mg/m³ and 33% compliance
- Introduction of new limit values:
  - 0.05 mg/m³ and
  - 0.025 mg/m³
- Improved compliance with limits:
  - From 33%
  - to 90%
Silica Cancer incidence

Baseline: 0.15 mg/m$^3$, 33% compliance

OEL = 0.025 mg/m$^3$, 33% compliance
Silica – Cancer incidence

- OEL = 0.1 mg/m³, 90% compliance
- OEL = 0.05 mg/m³, 90% compliance
- OEL = 0.025 mg/m³, 90% compliance
Silica – cancer incidence
Silica – cancer incidence
Simple solutions…

Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People.
Local extraction...

http://www.cdc.gov/niosh/topics/silica/tuckpointing.html
Respiratory protection...
We need to change our beliefs about workplace carcinogens…

We need an accelerated process of continuous improvement
Conclusions…

- We need better information about carcinogens in the workplace
- Legislation is necessary but not sufficient to solve the problem
- We should build coalitions to tackle the problem in a focused way
- As time goes on occupational exposure decreases, but we should do much better
- There are practical solutions available today
No Time to Lose...