

The cost of occupational cancer in the EU

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Background to the study

- 1.3 million cancer deaths in the EU each year
- Many caused by occupational factors
- Previous studies: 2-12% due to occupational factors
- Some carcinogenic agents under-researched
- Particular gap: female workers
- Occupational cancer is an important issue for TUs
- Reliable data required to tackle the problem

What can be quantified?

- Long latency periods
- Current burden reflects past exposure patterns
- Exposed workforce & concentrations change
- Current exposure will impact in the future
- Improved knowledge/evidence over time
- Occupations vs chemical agents
- Which carcinogenic agents?

Study objectives

Aim:

- Estimate the **current economic burden** resulting from **past occupational exposure to 25 selected agents**

Specific objectives:

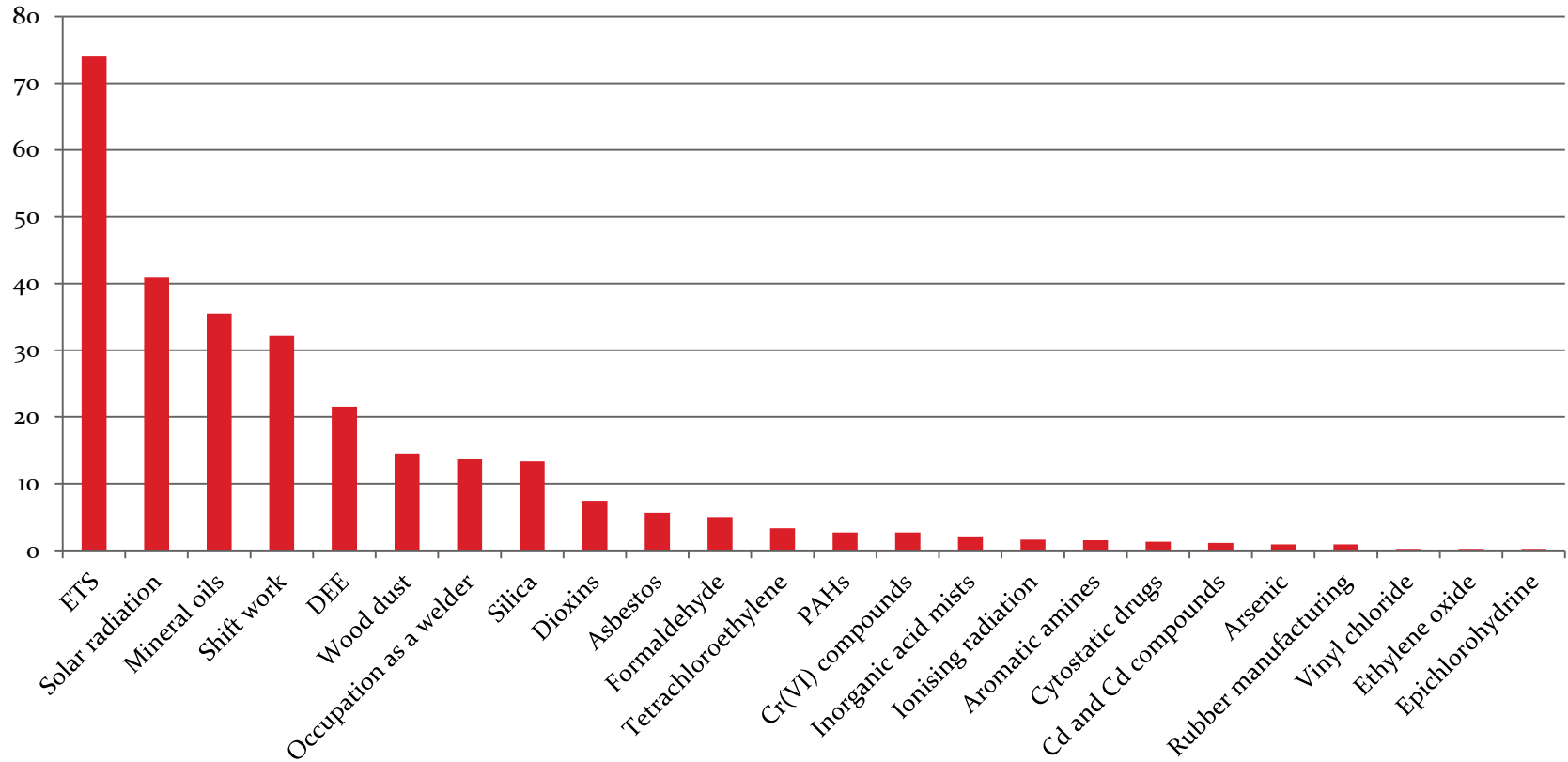
- Estimate the current incidence of occupational cancer
- Assess the associated economic costs
- EU-28 and each Member State
- Carefully consider gender-relevant aspects

Scope of the study

The 25 carcinogenic agents

Diesel exhaust emissions (DEE)	Solar radiation
Silica	Environmental tobacco smoke (ETS)
Asbestos	Epichlorohydrine
Formaldehyde	Tetrachloroethylene
Benzene	Shift work
Mineral oils	Dioxins
Cd and Cd compounds	Inorganic acid mists containing sulphuric acid
Wood dust	Rubber manufacturing industry
Arsenic	Ionising radiation
Vinyl chloride	Cr(VI) compounds
Ethylene oxide	Aromatic amines
PAHs (from coal tars and pitches)	Cytostatic drugs
Occupation as a welder	

Occupationally exposed populations



Occupationally exposed populations surviving to 2015,
million people, central scenario, 1966-2005
(excluding agents only relevant to 1996-2015)

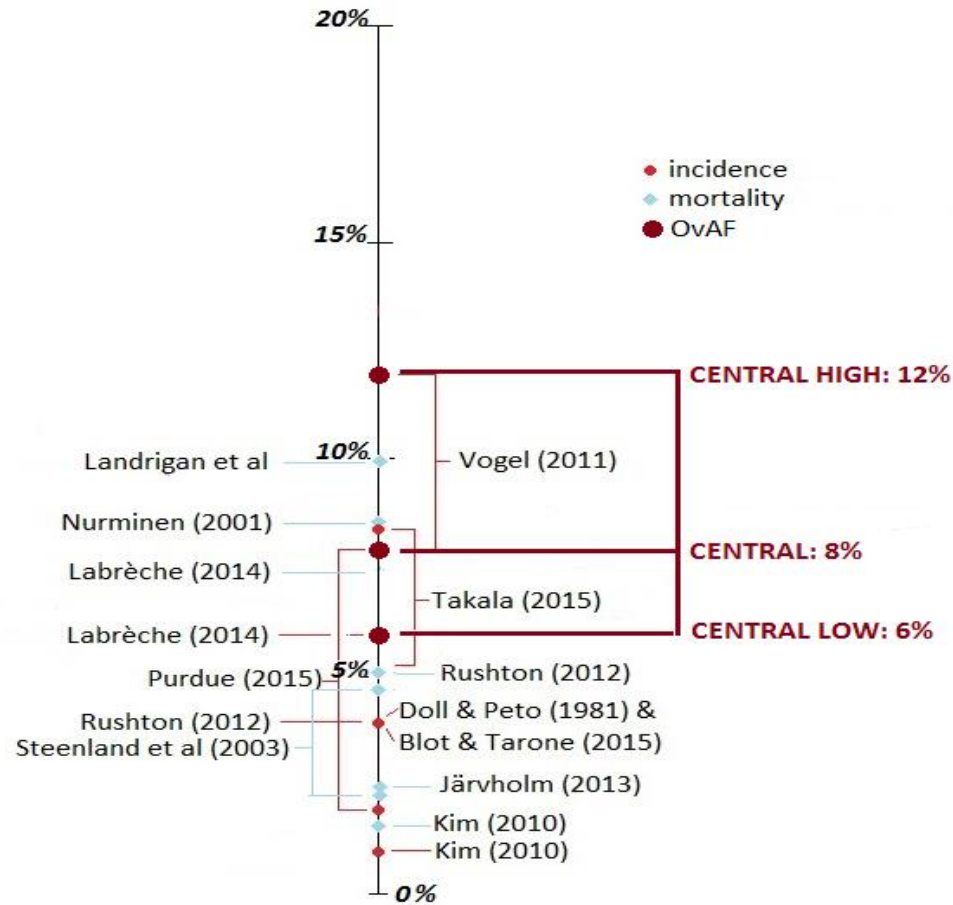
Attributable fractions (AFs) (1/2)

- AF: the proportion of cancer cases that would not have occurred in the absence of occupational exposure

Incidence AF for the 25 carcinogenic agents (reference year: 2015)			
Scenario	Central-low	Central-core	Central-high
AF – Both genders	6%	8%	12%
AF – Women	3%	5%	7%

- AFs would be higher if more than 25 carcinogens had been considered
- AFs for women higher than most studies

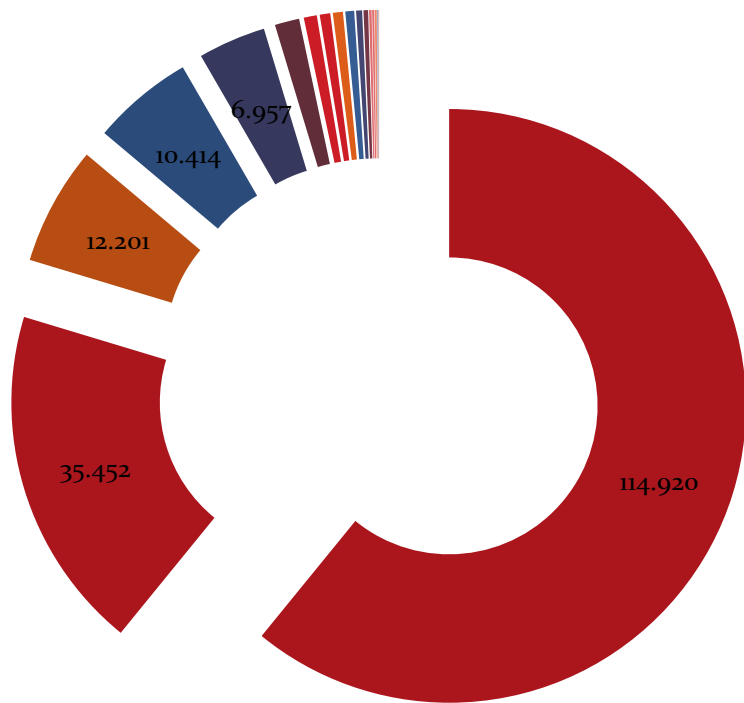
Attributable fractions (AFs) (2/2)



Cancer registrations (1/2)

- Using EUCAN data, 190,000 cancer registrations each year can be attributed to past occupational exposure to the 25 agents
- Central low: 125,000
- Central high: 275,000

Cancer registrations (2/2)



- Lung
- Breast
- Bladder
- Mesothelium
- Pharynx incl. NFC
- Leukaemia
- Larynx
- Stomach
- Pancreas
- Colon & rectum
- Kidney
- Malignant melanoma
- Brain
- NHL
- Oesophagus
- Ovary
- Liver & bile duct

Central-core scenario – Incidence ANs based on EUCAN

Economic burden of cancer

- **Direct costs:** e.g. healthcare, transport, etc.
- **Indirect costs:** e.g. productivity losses due to absence from work or premature death, etc.
- **Intangible/human costs:** non-financial human losses, e.g. reduced quality of life, pain & suffering, etc.
- **Who bears the costs?** Society, patients, employers, etc.

What has this study quantified?

- The cost of annual cancer registrations (vs. annual cost of occupational cancer)
- Direct/indirect costs: healthcare, lost working days (morbidity only), informal care
- Intangible costs captured within the Value of Statistical Life (VSL), Value of Statistical Cancer Morbidity (VCM)
- VSL: €4 million, VCM: €410,000

Economic burden of the 25 agents

- Total cost of annual occupational cancer registrations between **€270 and €610 billion**
- 1.8%-4.1% of EU GDP
- Driven by intangible human costs
- Excl. VCM and VSL: between €4 and €10 billion

Distribution of the costs

Distribution of costs across different stakeholders (Central-core/ EUCAN)

Type of cost	Group bearing the cost	Share of total costs
Healthcare	Government/taxpayers (/employers?)	1.3%
Lost working days	Worker/ family (/employers?)	0.1%
Informal care	Worker/ family	0.3%
VSL	Worker/ family	90%
VCM	Worker/ family	8%

Cost to employers

- Cost to employers:
 - Production disturbance
 - Sick leave payments
 - Liability insurance
 - Indirectly through taxation
- Applying UK HSE (2016) estimates to the EU: €4.1 billion
- Long latency means most will have changed jobs or retired

Thank you!