

**Prioritising effort in preventing
occupational cancers:
The British experience**

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Estimating the Burden of Occupational Cancer in Britain

Key Questions

- What proportion of cancer **now** in Britain is caused by occupational exposure to carcinogens?
 - How many cancer deaths and new cancers occurring each year are caused by workplace exposures
- What is the **predicted** future burden of occupational cancer if we keep the **status quo** and can we demonstrate the effects of different measures to **reduce** exposure?
- Estimation carried out for all substances and circumstances (e.g. work as a painter or welder) in the workplace defined by International Agency for Research on Cancer (IARC) as:
 - » **definite** (group 1) human carcinogen
 - » **probable** (group 2A) human carcinogen

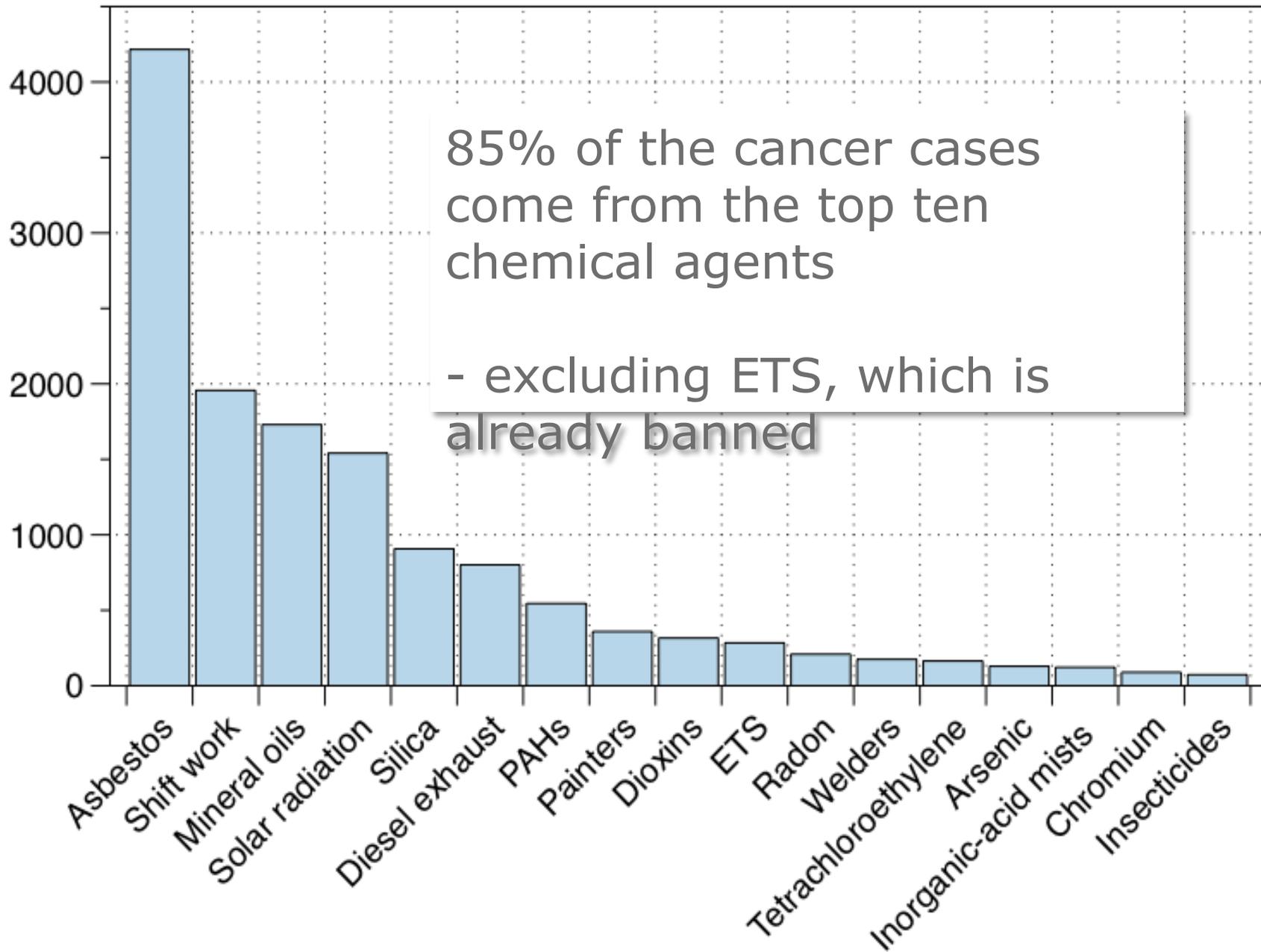
Measures of burden evaluated to inform decision making

- **Attributable Fraction:** What proportion of all cancers (or types of cancer e.g. lung cancer) occurring each year are due to exposure to occupational carcinogens?
- **Attributable Deaths:** How many annual deaths are due to occupational carcinogens?
- **Attributable Cancer Registrations (Newly occurring cancers):** How many new cancers occurring each year are due to occupational carcinogens?
- **Attributable Years of Life Lost (YLL):** How many years of life are lost through early death due to occupational carcinogens?
- **Attributable Years of Life lived with a Disability (YLD):** How many years of life will be lived with some sort of disability following survival of a cancer due to occupational carcinogens?
- **Disability-adjusted life-years (DALY) = YLL + YLD**

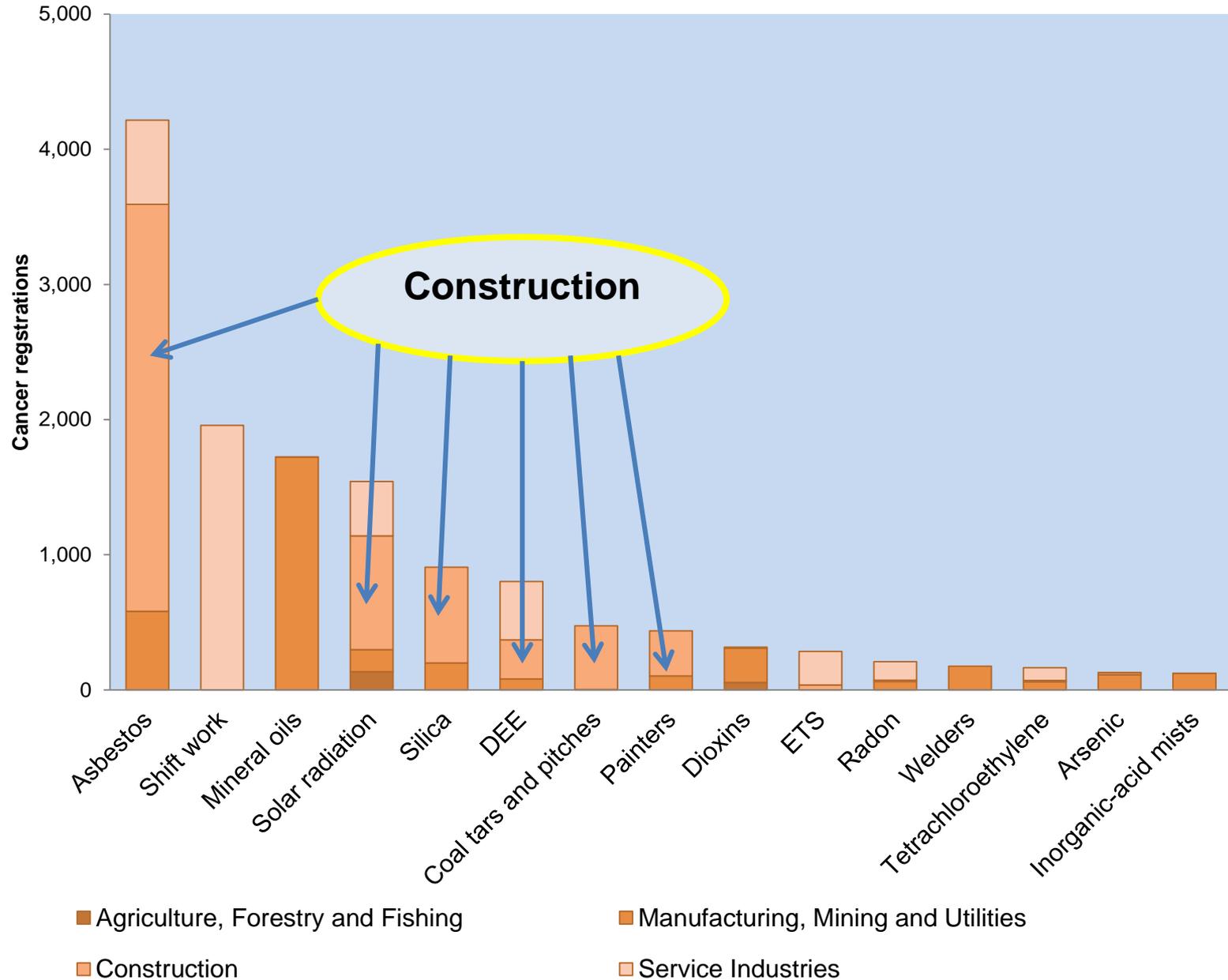
Proportion, deaths and new cancers attributable to occupational carcinogens

Cancer site:	Proportion (%)	Deaths (2005)	New Cancers (2004)
Bladder	5.3	245	550
Breast	4.6	555	1,969
Larynx	2.6	20	56
Leukaemia	0.7	23	38
Lung	14.5	4,745	5,442
Mesothelioma	94.9	1,937	1,937
Non-Hodgkin's Lymphoma	1.7	57	140
Non-melanoma Skin Cancer	4.5	23	2,862
Oesophagus	2.5	184	188
Sinonasal	32.7	38	126
Soft Tissue Sarcoma	2.4	13	27
Stomach	1.9	108	157
Total	5.3	8,010	13,598
Total GB cancers 15+yrs		150,124	343,583

Cancer registrations



Major carcinogens and industry sectors



Key results on the current burden of occupational cancer in Britain

- **Overall burden**
 - » 5.3% (8.2% men, 2.3% women) of all cancers are due to occupational carcinogens
 - » Gives 8010 deaths and 13598 new cancers
- **Key cancer sites**
 - » Mesothelioma, Lung, Bladder, Breast, Non-melanoma skin, sinonasal
- **Key carcinogens (100+ new cancers)**
 - » Asbestos, shift/night work, mineral oils, solar radiation, silica, diesel engine exhaust, coal tars/pitches, occupation as a painter or welder, dioxins, environmental tobacco smoke, radon, tetrachloroethylene, arsenic and strong inorganic mists
- **Key industries**
 - » construction, metal working, personal and household services, mining, land transport, printing/publishing, retail/hotels/restaurants, public administration/defence, farming and several manufacturing sectors.

Rankings by different burden measures

AFs (%)	Deaths	Registrations	Typical mean YLL (years)
Mesothelioma (95)	Lung (4745)	Lung (5442)	Breast (17.3)
Sinonasal (33)	Mesothelioma (1937)	NMSC (2862)	NHL (16.9)
Lung (14.5)	Breast (555)	Breast (1969)	Sinonasal (16.4)
Bladder (5.3)	Bladder (245)	Mesothelioma (1937)	Mesothelioma (13.9)
Breast (4.6)	Oesophagus (184)	Bladder (550)	Oesophagus (13.7)
NMSC (4.5)	Stomach (108)	Oesophagus (188)	Lung (13.2)
Larynx (2.6)	NHL (57)	Stomach (157)	Stomach (12.3)
Oesophagus (2.5)	Sinonasal (38)	NHL (140)	Bladder (9.6)

AF: attributable fraction; NMSC: non-melanoma skin cancer; NHL: non-Hodgkin lymphoma; YLL: years of life lost

Impact of the results in the UK

- Papers/articles:
 - Academic: BJC supplement [Br J Cancer 2012;107\(S1\):S1-S108](#)
 - Professional/Management: [Safety Management Magazine 2012, September, 18-21](#)
- Talks:
 - Company focused e.g. Deb (skin care manufacture)
 - Industries: Construction
 - Exposure: Shift work- Police Federation, BBC

Impact of the results in the UK: the HSE

- The HSE shared the results with senior management, HSE Board
- Formulated a “long-latency disease” programme
- They consulted with stakeholders
- Organised workshops to identify practical interventions
- Put information/links on their website about the burden study and practical interventions
- Used in relevant guidance documents e.g. stone working

Occupational cancer

About occupational cancer

Frequently asked questions

Control of exposure

Occupational cancer burden research

HSE's activities

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Occupational cancer burden research

HSE commissioned Dr Lesley Rushton and colleagues, from Imperial College London and colleagues from the Health and Safety Laboratory, the Institute of Occupational Medicine and the Institute of Environment and Health, to produce an updated and detailed estimate of the burden of occupational cancer in Great Britain. The outputs from this work will help HSE to develop and prioritise practical measures to help reduce the occupational cancer burden in the future.

This work is in two parts as follows:

Phase 1 – Current Cancer Burden

In the first phase, the current burden due to past occupational exposures was estimated for twenty three most common cancer sites: bladder, bone and thyroid, brain, breast, cervix, kidney, larynx, leukaemia, liver, lung, all lymphohaematopoietic, melanoma, mesothelioma, multiple myeloma, nasopharynx, non-Hodgkin's lymphoma, non-melanoma skin cancer, oesophagus, ovary, pancreas, stomach, sinonasal, and soft tissue sarcoma.

An overview report and a methodology report have also been produced,

- ▶ [Overview report](#)
- ▶ [Methodology report](#)

Individual reports for each cancer site can be found below,

Resources



Working with
substances hazardous
to health

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Dust control on cut-off saws used for stone or concrete cutting

HSE information sheet

Construction Information Sheet No 54 (Revision 1)



Introduction

This information sheet describes dust control systems used with cut-off saws. Two well-established dust control techniques, wet dust suppression and local exhaust ventilation (LEV), are described.

Cut-off saws (variously known as disc cutters, skill saws, Stihl saws, con saws or 'whizzers') are widely used in the construction industry. These saws can be powered by combustion engines, electricity (110 volts) or, less commonly, by compressed air. They are normally fitted with 9- or 12-inch (205- or 230-mm) diameter blades, depending on the make and model. There are two blade types: diamond tip or resin-bonded abrasive wheel.

Cutting paving slabs, kerb stones or other concrete or stone products produces enormous amounts of dust. This dust will contain some very fine dust called respirable crystalline silica (RCS). Exposure to RCS dust can cause serious health problems which may eventually prove to be fatal.

Health effects

Stones, rocks, sands and clays can contain large amounts of crystalline silica and are used to make kerbs, flags, bricks, tiles and concrete. Cutting these materials produces airborne dust containing very fine RCS particles. These particles are small and it is not always possible to see the RCS dust in normal lighting.

Serious health effects, such as lung cancer or silicosis, can result from exposure to RCS. This is because fine RCS particles can penetrate deep into the lungs. Recent HSE-funded research¹ has suggested that over 650 construction deaths from silica-related lung cancer occurred in Great Britain in 2004. This estimate is based on exposures dating back to 1954. This equates to 12 construction workers a week and suggests silica is currently the second most important cause of occupational lung cancer after asbestos. Forthcoming work will look at predicting future estimates due to more recent exposure levels.

The TUC 'Health and Safety. Time for Change'

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Home > Workplace Issues > Health and Safety > Chemicals and Dust > Occupational Cancers - the figures

Occupational Cancers - the figures

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Briefing for activists - February 2012

How many cancers are caused by occupational exposure every year?

The most recent estimate published by the HSE, published in 2011, is that around 13,500 new cases of cancer are caused by work every year with over 8,000 deaths.

This however underestimates the true number of cases. Giving a figure for what causes any kind of cancer can be very difficult as you cannot say for certain what the cause of anyone's specific cancer is. If a construction worker develops skin cancer it could be because of their work, or it could be because of exposure to the sun when on holiday.

That is why any figures are estimates, based on the number of additional cases of cancer among people who are exposed at work to something that is known to cause cancer.

Also sometime the link between a specific cancer and a chemical or dust is only suspected and has not been proven yet.

Therefore, any estimate of the number of occupational cancers is likely to be an underestimation, possibly by a considerable amount.

The HSE figures are based on estimates of exposure to definite and probable carcinogens defined by the International Agency for Research on Cancer and do not include suspected carcinogens.

IOSH No Time to Lose Campaign



WORKING TOGETHER TO BEAT OCCUPATIONAL CANCER



About

News and events

Free resources

Get involved

Ask the experts

A wake up call for work cancer

Cancer caused by work claims
666,000 lives a year worldwide

IOSH's No Time to Lose campaign aims to get the causes of occupational cancer better understood and **help businesses take action**.

[Find out more](#)

Time to act

"If we don't do something now, we're going to have thousands of occupational cancers every year - but if we take action we can beat it."

Dr Lesley Rushton, Imperial College London

[Watch our campaign film](#)





WORK-CAUSED CANCER IN THE UK: IN A YEAR

8,000

**DEATHS FROM
WORK-CAUSED
CANCER**



THE EQUIVALENT OF 17 SUPER JUMBOS CRASHING AND KILLING ALL ON BOARD

14,000 NEW CASES
OF WORK-CAUSED CANCER DIAGNOSED

800
LUNG CANCER
DEATHS FROM
EXPOSURE TO
SILICA DUST

AROUND **4,000 LUNG**
CANCER DEATHS FROM
ASBESTOS EXPOSURE

1.8 million people still at
risk of getting cancer
caused by asbestos



**EMERGING LINKS BETWEEN SHIFTWORK AND
2,000 CASES OF BREAST CANCER**

*more than 500 breast cancer deaths a year
could be associated with shiftwork*

**MORE THAN 600 LUNG OR
BLADDER CANCER DEATHS
FROM DIESEL FUMES**

**40% MORE LIKELY TO GET LUNG CANCER FROM
DIESEL FUMES THAN PASSIVE SMOKING**

**MORE THAN 1,500 PEOPLE GET SKIN
CANCER AS A RESULT OF UNCONTROLLED
SUN EXPOSURE AT WORK**



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www.notimetolose.org.uk

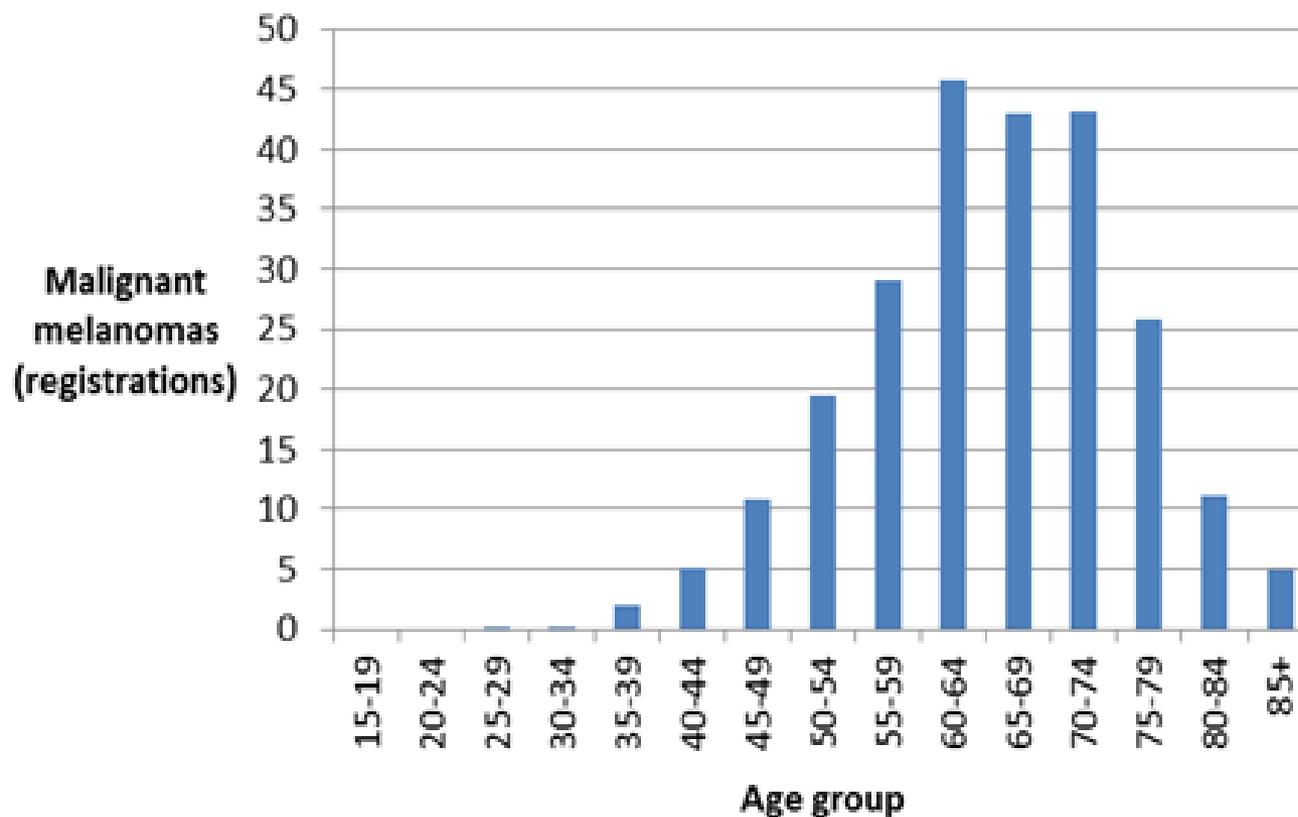
Burden of melanoma and non-melanoma skin cancer (NMSC) from solar radiation

	Attributable Proportion (%)		Attributable Deaths		Attributable Registrations	
	Melanoma	NMSC	Melanoma	NMSC	Melanoma	NMSC
Men	3.2%	3.6%	39	10	184	1312
Women	0.9%	0.7%	7	2	56	229
Total	2.0%	2.4%	46	12	239	1541

Major industry sectors for Melanoma and NMSC

Industry	Attributable Deaths		Attributable Registrations	
	Melanoma	NMSC	Melanoma	NMSC
Agriculture and hunting	11	1	55	116
Construction	21	7	101	841
Land transport	4	0	21	6
Public administration and defence	5	2	26	240

Malignant melanomas due to occupational exposure to solar radiation, men + women, 2011





SKIN CANCER: FAST FACTS

WORKING TOGETHER TO BEAT OCCUPATIONAL CANCER



skin cancer cases are on the increase in the UK – and they're rising faster than in the rest of Europe



sun exposure is the main cause of skin cancer – it's linked to **65 per cent** of malignant melanoma and **99 per cent** of non-melanoma skin cancer

SKIN CANCER KILLS **60** WORKERS A YEAR IN BRITAIN

70 PER CENT OF WORKERS IN LARGE UK CONSTRUCTION COMPANIES HAVEN'T HAD ANY SORT OF TRAINING ON THE RISKS OF WORKING IN **THE SUN**



indoor workers get **10-20 PER CENT** of outdoor workers' yearly exposure

in Britain, there are at least **1,500 new cases of non-melanoma skin cancer** and **240 new cases of malignant melanoma** linked to solar radiation exposure at work a year



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www.notimetolose.org.uk



SUN SAFETY AWARENESS AND ACTION: FAST FACTS

WORKING TOGETHER TO BEAT OCCUPATIONAL CANCER



if you've had one non-melanoma skin cancer, you're **nine times more likely to get another one**



getting painful sunburn just once every two years can **triple the risk of melanoma**

90% OF ALL SKIN CANCER DEATHS COULD BE PREVENTED IF PEOPLE CONTROLLED THEIR EXPOSURE TO UV



5 WORKERS A DAY GET SKIN CANCER IN BRITAIN



UP TO 80% of dangerous UV rays can get through a cloudy sky

two-thirds of UK construction workers outside for nearly seven hours a day **don't know they are at risk of getting skin cancer**



Follow the campaign at twitter.com/_NTTL
www.notimetolose.org.uk

Other responses

- BOHS produce the “Breathe Freely” campaign
- Influenced industry policy and strategies
- Identified research gaps leading to commissioning of new research
- Wide international impact leading to comparable studies including GBD

Some key messages

- Estimating burden of occupational disease is:
- Useful for occupation related policy prioritisation
 - Regulators
 - Industry sectors/individual companies
 - Health and safety groups
 - Unions/worker representatives
 - Commercial health care sector suppliers e.g. skin care
 - Data and methodological challenges in extending to different locations and occupational situations
 - Worthwhile because can raise awareness generally of occupational ill health beyond accidents

Thank you