

# occupational cancer: malignant melanoma

Research summary



## Our research and development programme

IOSH, the Chartered body for safety and health professionals, is committed to evidence-based practice in workplace safety and health. We maintain a Research and Development Fund to support research, lead debate and inspire innovation as part of our work as a thought leader in safety and health.

In this document, you'll find a summary of the independent research we commissioned from Imperial College London on cases of malignant melanoma caused by occupational exposure to solar radiation in Great Britain.



**Imperial College**  
London

[www.iosh.co.uk/getfunding](http://www.iosh.co.uk/getfunding)

# Occupational cancer: malignant melanoma

## The burden of occupational cancer in Great Britain: cutaneous malignant melanoma and occupational exposure to solar radiation

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This research project is the first to quantify in detail how many malignant melanoma skin cancer cases in Britain are linked to occupational exposure to solar radiation. The results highlight the significance of solar radiation exposure in several industry sectors, with construction featuring most prominently. These new data, together with the results for non-melanoma skin cancer, emphasise the urgent need to develop appropriate strategies to reduce this burden. Measures include minimising exposure to ultraviolet radiation when it is at its higher levels, wearing appropriate protective clothing, and using suitable skin protection creams.

### The results

The research suggests that 2 per cent of all cases of cutaneous malignant melanoma in Britain can be attributed to occupational exposure to solar radiation, giving in a single typical year\* 48 deaths and 241 new cases of malignant melanoma. The construction industry accounts for a large number of these cases, with 44 per cent of the deaths and 42 per cent of the registrations. Other sectors of concern include agriculture, public administration and defence, and land transport.

These results confirm the concern about occupational solar radiation exposure arising from the researchers' previous estimate for non-melanoma skin cancer in Britain.\*\* This estimated that in a typical recent year, there were 12 attributable deaths and 1,541 new registrations. Construction and public administration and defence were also highlighted for non-melanoma skin cancer. These figures are likely to be conservative – there is known under-reporting of non-melanoma skin cancer. It is not likely that malignant melanoma is under-reported because of the way it is clinically treated.

Men are more likely than women to be affected. Out of the 48 deaths from malignant melanoma caused by work-related exposure, 39 were men. Men account for 184 of the 241 new cancer registrations.

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\*Estimates for cutaneous malignant melanoma were derived using incidence data for 2011 and mortality data for 2012.

\*\*Ocular melanoma (associated with an increased risk in welders due to occupational exposure to artificial sources of ultraviolet radiation) has also been covered in earlier research.

### Burden of cancer research

This new research extends an earlier, large scale research project to produce an estimate of the current burden of cancer in Britain resulting from occupational exposure to a wide range of carcinogenic agents or exposure circumstances. The summary findings of the project are published in a Health and Safety Executive report of 2012, 'The burden of occupational cancer in Great Britain'.

The primary measure of the burden of cancer used in the original project, and used again in this new report on malignant melanoma, was the attributable fraction – the proportion of cases that would not have occurred in the absence of exposure; this was then used to estimate the

attributable numbers. This involved obtaining data on the risk of the disease due to each specific exposure, taking into account confounding factors (for example, smoking in the case of lung cancer or altitude in relation to skin cancer) and overlapping exposures, and the proportion of the target population exposed over the period in which the relevant exposure occurred. Estimation was carried out for carcinogenic agents or exposure circumstances classified by the International Agency for Research on Cancer as definite (Group 1) or probable (Group 2A) human carcinogens.

For more information, including results for over 20 different types of cancer, go to [www.hse.gov.uk/cancer](http://www.hse.gov.uk/cancer)

### Solar radiation and occupational exposure

Solar radiation has been classified by the International Agency for Research on Cancer as a definite human carcinogen for cutaneous malignant melanoma.

The risk for cutaneous malignant melanoma caused by occupational exposure to solar radiation is difficult to estimate because everyone at some time in their life is exposed to sunlight at a greater or lesser degree, depending on where they live and their leisure activities.

Some studies suggest that intermittent, relatively high exposure is likely to be important in occupational studies.

Occupational exposure to solar radiation is usually measured via exposure categorisation (recreational or occupational) or job categorisation (indoor or outdoor). Outdoor work and farming has been associated with increased risk for cutaneous malignant melanoma, particularly in areas of relatively low sunlight, such as Britain.

## Skin cancer – malignant melanoma and non-melanoma skin cancer

### Malignant melanoma

A skin cancer that begins in cells called melanocytes. Melanocytes can grow together to form benign (not cancerous) moles. A melanoma starts as a collection of cancerous melanocytes. A change in size, shape or colour of a mole can be a sign of melanoma.

### Non-melanoma skin cancer

The two most common types of non-melanoma skin cancer are: basal cell carcinoma, which starts in the cells lining the bottom of the epidermis and accounts for about 75 per cent of skin cancers; and squamous cell carcinoma, which starts in the cells lining the top of the epidermis and accounts for about 20 per cent of skin cancers.

Our summary gives you the major findings of the independent project report by Imperial College London. If you want to read about the study in more depth, you can download the full report from [www.iosh.co.uk/skincancer](http://www.iosh.co.uk/skincancer).

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This study was commissioned as part of IOSH's No Time to Lose campaign, which is working to raise awareness of occupational cancers, and help businesses take action. Find out more and get free resources at [www.notimetolose.org.uk](http://www.notimetolose.org.uk).

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We set standards, and support, develop and connect our members with resources, guidance, events and training. We're the voice of the profession, and campaign on issues that affect millions of working people.

IOSH was founded in 1945 and is a registered charity with international NGO status.

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