Respiratory Disease

Occupational Cancer

Currently, occupational cancer accounts for around 8000 deaths and a further 14,000 cancer registrations annually. **A study looking at the burden of occupational cancer in Great Britain** **http://www.hse.gov.uk/cancer/research.htm** provides an updated estimate of the current burden of occupational cancer due to exposure to cancer causing agents that occurred in the past and explores the future cancer burden due to occupation. This work has helped HSE to develop priorities for future activity and these priority agents/occupations are:

- Asbestos
- Shift work
- Respirable crystalline silica
- Welding
- Painters
- Diesel Engine Exhaust Emissions
- Solar radiation
- Polycyclic Aromatic Hydrocarbons (PAHs, coal tars and pitches)
- Radon

Asbestos

Although the import, supply and use of all forms of asbestos has been banned for a long time, a high number of tradespeople are still at risk from exposure to asbestos. Any building built before the year 2000, both residential and industrial, may still contain asbestos-containing materials that could be disturbed by tradespeople carrying out work.

Exposure to asbestos is associated with the following diseases: mesothelioma, lung, larynx and stomach cancers, as well as asbestosis and pleural thickening, resulting in around 5000 deaths each year. Many of these deaths are due to past exposure to asbestos; however, asbestos is still a risk today.

The following initiatives have been developed to raise awareness of the dangers of asbestos amongst tradespeople:

- HSE's Beware Asbestos HSE's **Beware Asbestos** **http://www.hse.gov.uk/asbestos/tradesperson.htm** campaign launched in October 2014. The campaign aims to raise awareness and help tradespeople protect themselves from the dangers of asbestos. The campaign includes some useful **reference cards** **http://www.hse.gov.uk/asbestos/assets/docs/beware-asbestos-reference-cards.** and a FREE **Beware Asbestos Web app** **http://www.beware-asbestos.info** that can help tradespeople to identify if asbestos is likely to be in their workplace. It gives them practical advice on how to protect themselves from the dangers, and advises them on when and how to get experts involved.

- For further information on occupational diseases, and other initiatives please register on the **Occupational Disease community site.** **http://webcommunities.hse.gov.uk/connect.ti/OccupationalDisease/grouphome** Further information on exposure to asbestos in the workplace is available on HSE's asbestos web pages.

Shift work

Over the last 25 years, there has been a gradual increase in the number of people who undertake shift work in the UK, with around 5 – 20% of the working population now engaged in shift work that involves night work. This equates to 3-6 million workers. There is an emerging body of evidence that shift work, and night work in particular, is linked with the development of breast cancer but further work to confirm this causal link is still being undertaken.

Estimates from the **cancer burden study** **http://www.hse.gov.uk/cancer/research.htm** show that there are around 550 deaths each year from breast cancer in women who undertake shift work.
Initiatives that have been undertaken to raise awareness of the dangers of shift work include:

- Guidance developed by HSE for employers to help them manage shift work
- HSE funded research to study the relationship between shift work and chronic disease.

By registering, information on these and other initiatives are available on the **Occupational Disease community site.** **http://webcommunities.hse.gov.uk/connect.ti/OccupationalDisease/grouphome**

Additional information on managing shift work patterns is available on HSE's **human factors** **http://www.hse.gov.uk/humanfactors/index.htm** web pages.

Silica - Respirable Crystalline Silica (RCS)

Silica is a natural substance found in most rocks, sand and clay and in products such as bricks and concrete. In the workplace these materials create dust when they are cut, sanded down etc. Some of this dust may be fine enough to reach deep inside the lung, this is known as respirable crystalline silica (RCS) and can cause harm to health. Significant exposure to RCS can cause silicosis and lung cancer.

An estimate from the **cancer burden study** **http://www.hse.gov.uk/cancer/research.htm** of the number of deaths from lung cancer associated with exposure to RCS shows there are around 600 deaths per year with 450 of these occurring from exposures in the construction sector.
Initiatives that have been undertaken to raise awareness of the dangers of working with RCS include:

- Safety and Health Awareness Days - free events to provide practical advice for employers.
- Training tools for employees.
- Educational tools such as vocational learning packages
- Surveys to obtain levels of awareness and knowledge of the use of on-tool extraction methods.
- Leaflets to raise awareness of the dangers of dust

By registering, Information on these and other initiatives are available on the **Occupational Disease community site.** **http://webcommunities.hse.gov.uk/connect.ti/OccupationalDisease/grouphome**

Additional information on **reducing exposures to silica in the workplace** **http://www.hse.gov.uk/lung-disease/silicosis.htm** is available.

Welding

Welders are spread across many manufacturing and fabrication industries and present in both large and small businesses. The **cancer burden study** **http://www.hse.gov.uk/cancer/research.htm** data shows that there are approximately 152 deaths per year from lung cancer and we estimate numbers of workers exposed to welding fume is more than 75,000.

Welding fume is variable in its composition. Depending on the type of welding being performed, the resulting fume is a complex mixture of gases and salts, including metals such as chromium and nickel and other compounds. Some of the constituents of the fume have **Workplace Exposure Limits** **http://www.hse.gov.uk/coshh/basics/exposurelimits.htm** (legal limits that have been set on the amount of a particular substance that can be present in workplace air).
A partnership group composed of trade associations, professional organisations, suppliers, Association of Welding Distributors, Unite, AWFTE and the Welding Institute was set up to design interventions and these include:

- Safety and Health Awareness Days - free events to provide practical advice for welders
- A vocational learning package for trainee welders and those wanting to re-fresh their skills.
- An independent website for the industry to raise awareness of the health effects from exposures to welding fume and suitable control methods.

By registering, more information on welding interventions is available on the **Occupational Diseases Community site.** **http://webcommunities.hse.gov.uk/connect.ti/OccupationalDisease/grouphome**

Further information on exposure to welding fume on the workplace is available on HSE's **welding** **http://www.hse.gov.uk/welding/index.htm** pages.

Painters

Painters are exposed to a wide range of substances including solvents, additives and pigments as well as materials containing asbestos and silica through their work in and on buildings. There are potentially large numbers of workers exposed, many in small businesses including those involved in vehicle spray painting and paint manufacture. Data from the **cancer burden study** **http://www.hse.gov.uk/cancer/research.htm** shows that the number of deaths amongst painters from lung and bladder cancer is around 334 each year.
There is insufficient information available to identify which particular agents cause the reported cancers. Painters are exposed to a wide range of substances including solvents, additives and pigments as well as materials containing asbestos and silica through their work in and on buildings. Paint technology has changed over the last 20 years with a move to water based paints, micro-encapsulation of pigments and use of new thinners. Also, restrictions have also been introduced on putting hazardous materials on the market relating to dyes and pigments via the Marketing and Use Directive and more recently **REACH regulation.** **http://www.hse.gov.uk/reach/index.htm**
Initiatives providing advice and information on health issues for painters include:

- Raising awareness at the Painters and Decorators show.
- Articles in trade magazines.
- Research on the exposure of painters to hazardous substances and changes in application technology within the construction industry.

Further information is available by registering on the Occupational Diseases Community site. **http://webcommunities.hse.gov.uk/connect.ti/OccupationalDisease/grouphome**

Further information on health risks for painters is available on HSE's **construction** **http://www.hse.gov.uk/construction/healthrisks/index.htmpages.**

Diesel Engine Exhaust Emissions (DEEEs)

DEEEs are a complex mixture of particulates, gases and vapours, which occur when diesel -fuelled engines operate. In June 2012 the International Agency for Research in Cancer **(IARC)** classified **DEEEs** as carcinogenic to humans.
Information based on the **Cancer burden study** **http://www.hse.gov.uk/cancer/research.htm** shows the number of estimated deaths as 625 and it is estimated that more than 10,000 workers were exposed with environmental exposure contributing to the overall exposure burden. No **Workplace Exposure Limit** **http://www.hse.gov.uk/coshh/basics/exposurelimits.htm** (**WEL** - legal limits that have been set on the amounts of a particular substance that can be present in workplace air) has been set for **DEEEs** as a whole as there are insufficient data to establish a clear, reliable threshold for all potential health effects). None of the constituents are considered suitable as a marker for **DEEE** exposure, although some do have specific WELs. Available evidence suggests that polycyclic aromatic hydrocarbons **(PAHs)** may be the causal link.
The major source of workplace exposure to **DEEEs** is from emissions from heavy vehicles that use diesel fuel. Emissions are also generated from stationary power sources, which may be used regularly in tunnelling, mining or on construction sites.]

Interventions on DEEEs in the workplace include:

- Guidance for employers and employees on the Control of Diesel Engine Exhaust Emissions in the Workplace
- Research that will provide current exposure information on **DEEEs** within the British construction industry.

Further information on DEEE interventions is available by registering on the **Occupational Diseases Community site.** **http://webcommunities.hse.gov.uk/connect.ti/OccupationalDisease/grouphome**

HSE guidance **http://www.hse.gov.uk/pubns/books/hsg187.htm** on controlling DEEE exposures.

Solar radiation

Preventing sun exposure is primarily a public health issue with other organisations actively delivering messages. For example, cancer-based charities run campaigns on sun protection issues aimed at the general population that create a broad general awareness.

Where sun exposure occurs in an occupational setting there is an association with the development of non-melanoma skin cancer **(NMSC)**. Available information from the **cancer burden study** **http://www.hse.gov.uk/cancer/research.htm** estimates that there are very low numbers of deaths (around 12). In society high numbers of people develop NMSC, however this cancer is more amenable to treatment.
Intervention activities include:

- Cancer Research **UK's Sun Smart campaign** **http://www.cancerresearchuk.org/about-cancer/causes-of-cancer/sun-uv-and-cancer** providing information on protection and risk factors.
- **The National Institute for Clinical Excellence** **https://www.nice.org.uk/guidance/PH32** resource for the NHS and local authorities on the design and implementation of public health information on preventing skin cancer.

By registering, further information on skin cancer interventions is available on the **Occupational Diseases Community site.** **http://webcommunities.hse.gov.uk/connect.ti/OccupationalDisease/grouphome**

HSE guidance and information on skin cancer is available on our **skin disease** **http://www.hse.gov.uk/skin/employ/cancer.htm** web pages.

Polycyclic Aromatic Hydrocarbons (PAH, Coal tars and pitches)

PAHs are a group of chemicals that are found in every industry, especially where substances are burned. Many PAHs are known carcinogens and are ubiquitous in the environment, occurring naturally in some hydrocarbon mixtures deriving from minerals, such as coal or petroleum. They are also generated in processes involving the combustion of any organic matter, including fuels. Coal-tar pitch volatiles, which contain PAHs, are produced during coking, tar distillation, aluminium smelting and downstream uses of tar and pitch.

Exposure to PAHs is associated with non-melanoma skin cancer **(NMSC)**. Available information from the **cancer burden study** **http://www.hse.gov.uk/cancer/research.htm** shows very low numbers of cancer deaths (11) and approximately 545 cancer registrations per year.
A research study in 2006 in Great Britain showed that there were no significant exposures to PAHs other than at sites undertaking timer impregnation. A further study to evaluate historical and current exposures to hazardous substances and their controls in the British construction industry is underway to update the available evidence. This evaluation covers many substances one of which is coal tars.

Further information is available by registering on the **Occupational Diseases Community site.** **http://webcommunities.hse.gov.uk/connect.ti/OccupationalDisease/grouphome**

Radon

Exposure to radon relates to geographical location rather than to a particular occupation or industry. It is seen as a public health issue for areas where radon is found and may seep into peoples' homes, but nevertheless, it remains an important consideration for employers who businesses are in radon-affected areas.

Radon exposure is associated with lung cancer and the **cancer burden study** **http://www.hse.gov.uk/cancer/research.htm** estimates that the number of cancer deaths due to radon exposure in the workplace as 184 per year.
There is a significant public health focus to the information provided on reducing radon exposures, however, initiatives to support employers include:

- Advice during HSE's general inspections of businesses
- Specific guidance for employers on radon in the workplace
- Working with other government departments on UK Radon Action Plan for the revised EU Directive on Basic Safety Standards for Radiation Protection.

By registering, information on these and other initiatives on radon is available on the **Occupational Disease Community site**. **http://webcommunities.hse.gov.uk/connect.ti/OccupationalDisease/grouphome**

Specific guidance for employers on reducing radon exposure in the workplace is available on the **radiation** **http://www.hse.gov.uk/radiation/index.htm** web pages.