Work-related respiratory disease in Great Britain 2013

An overview of the current burden of disease in Great Britain

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Summary


A range of respiratory diseases can be caused by exposures in the workplace including diseases which are very serious – such as cancer and Chronic Obstructive Lung Disease (COPD) – which may often be fatal.

The latest information shows:

- There are currently approximately 12,000 deaths each year due to occupational respiratory diseases, about two-thirds of which were due to asbestos-related diseases or COPD.
- These are long latency diseases (they take a long time to develop following exposure to the agent that caused them) so current deaths reflect the effect of past working conditions.
- About 35,000 people who worked in the last year, and 130,000 who had ever worked currently have breathing or lung problems they thought were caused or made worse by work.
- There are currently an estimated 13,000 new cases of breathing or lung problems caused or made worse by work each year among those in, or recently in, work.

For more detail about specific occupational respiratory disease use the following links:

Occupational Asthma: www.hse.gov.uk/statistics/causdis/asthma/
Chronic Obstructive Pulmonary Disease: www.hse.gov.uk/statistics/causdis/copd/
Pneumoconiosis and Silicosis: www.hse.gov.uk/statistics/causdis/pneumoconiosis/
Other respiratory disease: www.hse.gov.uk/statistics/causdis/other-respiratory/
Introduction

**Occupational respiratory diseases**

A range of respiratory diseases can be caused by exposures in the workplace. The main categories of these diseases are as follows:

*Respiratory cancers* include lung cancer, which may be caused by a range of exposures – such as asbestos, silica, diesel engine exhaust emissions, and mineral oils – and mesothelioma, a cancer of the lining of the lungs which is caused by asbestos.

*Chronic Obstructive Pulmonary Disease (COPD)* is a serious long-term lung disease in which the flow of air into the lungs is gradually reduced by inflammation of the air passages and damage to the lung tissue. Chronic bronchitis and emphysema are common types of COPD. A wide range of vapours, dusts, gases and fumes potentially contribute to causing the disease or making it worse.

*Occupational asthma* can be defined as adult asthma that is specifically caused by agents that are present in the workplace, however, a wider definition of work-related asthma includes all cases where there is an association between symptoms and work, including cases that are exacerbated by work.

*Pneumoconiosis* is a long-term and irreversible disease characterised by scarring and inflammation of the lung tissue. The main types of pneumoconiosis are defined in terms of their causative agents: coal worker’s pneumoconiosis due to coal dust exposure, asbestosis due to exposure to asbestos fibres, and silicosis due to silica dust exposure.

*Other non-cancerous respiratory diseases* include diffuse pleural thickening and pleural plaques (non-malignant diseases of the lung lining caused by asbestos), allergic alveolitis (inflammation of the air sacs within the lungs due to an allergic reaction to organic material), allergic rhinitis (inflammation within the nose, mouth or throat that can be caused by an allergic reaction to a range of agents), and byssinosis (an asthma like disease in which the air passages become constricted in reaction to exposure cotton dust).

**Disease latency**

Most of the above diseases – with the main exception of occupational asthma and other allergic respiratory disease – are so called long latency diseases, meaning that symptoms usually start to become apparent many years after the time of first exposure to the agents that caused them. Latency periods for occupational asthma and other allergic respiratory disease may vary considerably and can be relatively short in some cases. This has implications for how the scale of these diseases can be measured using different data sources. For example, survey measures that focus on those in, or recently in, employment – such as the SWI survey – will tend to miss cases of long latency disease that don’t occur within this time frame.

Currently occurring cases of long latency diseases like occupational COPD and cancer will tend to reflect the effects of past working conditions, although, many of the causative agents can still be present in many workplaces and thus constitute a potential ongoing hazard.
Overall scale of work-related respiratory disease

Mortality

Many of the conditions above are serious diseases that often lead to early mortality. Annual deaths from those conditions for which the proportion due to occupation is very high (mesothelioma), or which can be regarded as occupational by definition (pneumoconiosis, byssinosis, and certain types of allergic alveolitis), can be obtained from national mortality data. For conditions that can be caused by a variety of occupational and non-occupational exposures (lung cancer and COPD) the number of annual deaths due to occupation must be estimated based on epidemiological information.

The following table provides a summary of the latest information:

Table 1: Current annual mortality from respiratory diseases in Great Britain

<table>
<thead>
<tr>
<th>Disease</th>
<th>Annual deaths, 2011</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mesothelioma</td>
<td>2291</td>
<td>Count based on death certificates</td>
</tr>
<tr>
<td>Asbestos-related lung cancer</td>
<td>Approx. 2000</td>
<td>Estimated from epidemiological information</td>
</tr>
<tr>
<td>Laryngeal cancer due to asbestos</td>
<td>Approx. 3*</td>
<td>Burden of occupational cancer in Britain</td>
</tr>
<tr>
<td>Lung cancer due to other agents</td>
<td>Approx. 2800*</td>
<td>Burden of occupational cancer in Britain</td>
</tr>
<tr>
<td>COPD</td>
<td>Approx. 4000</td>
<td>Estimated from epidemiological information</td>
</tr>
<tr>
<td>Pneumoconiosis:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal workers pneumoconiosis</td>
<td>136</td>
<td>Count based on death certificates</td>
</tr>
<tr>
<td>Asbestosis</td>
<td>429</td>
<td></td>
</tr>
<tr>
<td>Silicosis</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Farmer's lung and other allergic alveolitis</td>
<td>9</td>
<td>Count based on death certificates</td>
</tr>
<tr>
<td>Byssinosis</td>
<td>1</td>
<td>Count based on death certificates</td>
</tr>
<tr>
<td>Total</td>
<td>Approx. 12 000</td>
<td></td>
</tr>
</tbody>
</table>
Prevalence of self-reported respiratory disease

The annual prevalence of work-related respiratory diseases as recorded under the general heading of “breathing and lung problems” can be estimated from the Self-reported Work-related Illness (SWI) module of questions included annually in the national Labour Force Survey (LFS). Here, annual prevalence refers to the number who said they were ill at some point during the previous 12 months. This is broadly equivalent to the number currently suffering from such conditions as estimated in each survey year.

The most recent estimate of the average annual prevalence based on the LFS in 2009/10, 2010/11 and 2011/12 suggests that 35 000 people who worked in the last 12 months currently had breathing or lung problems caused or made worse by work (95% Confidence Interval: 29 000 to 40 000) [See table SWIT3W12_3YR www.hse.gov.uk/statistics/lfs/swit3w12_3yr.xls]. The average age of those surveyed who had worked in the last 12 months was 44 years, with 96% between the ages of 20 and 64 years. The estimate may therefore tend to encompass cases of a shorter latency disease such as occupational asthma – or cases who have had the disease for a relatively short period.

The annual average prevalence of breathing and lung problems caused or made worse by work among those who had ever been in work – but not necessarily in the last 12 months – was substantially higher at 129 000 (95% confidence interval: 117 000 – 142 000). The average age of those who had ever worked was 52 years with over 20% aged 65 years or over. This figure therefore potentially also encompasses longer latency diseases like COPD which will tend to become apparent later in working life or during retirement.

However, a limitation of the LFS is that it will tend to identify only those cases of disease where the individuals can make the link between their own health and work. Many cases of occupational COPD or cancer may not be identified as being due to workplace exposures since the role of occupation may be overlooked in light of other common causes such as smoking.

Causes of self-reported respiratory disease

The LFS in 2009/10, 2010/11 and 2011/12 asked those who reported having breathing or lung problems caused or made worse by work to identify, in general terms, what it was about work that was contributing to their ill health.

Of the estimated 129 000 individuals currently with these conditions among those who had ever worked the following factors were identified as causing or making their ill-health worse:

- “Airborne materials from spray painting or manufacturing foam products” (in 13% of cases),
- “Dusts from flour, grain/cereal, animal feed or straw” (7% of cases)
- “Airborne materials while welding, soldering, or cutting/grinding metals” (10% of cases),
- “Dusts from stone, cement, brick or concrete” (nearly 20% of cases)
- “General work environment (uncomfortable – hot/cold/damp/wet/dry/etc)” (20% of cases).
New cases occurring each year – disease incidence

A variety of data sources provide estimates of the annual incidence of work related respiratory diseases. Some of these – the LFS and the THOR-GP reporting scheme – provide information about the general category of work-related respiratory disease and give an indication of the overall scale of respiratory disease. However, many cases of diseases which are difficult to attribute to occupation such as COPD or cancer may not be identified. Other sources – SWORD and IIDB – provide more detailed information about specific conditions, but these usually substantially underestimate the incidence. Where diseases are usually rapidly fatal, such as mesothelioma and asbestos-related lung cancer, annual incidence approximates closely to annual mortality, as set out in Table 1.

The latest statistics show:

- Based on pooled data from the last three Labour Force Surveys, there were on average an estimated 13 000 new cases of breathing and lung problems each year during 2009/10 – 2011/12 that were caused or made worse by work (95% confidence interval: 9000 – 16 000) [Table SWIT6W12_3YR www.hse.gov.uk/statistics/lfs/swit6w12_3yr.xls].
- Based on reports by general practitioners within the THOR-GP scheme during 2010-2012, the estimated number of annual new diagnoses in the general category of occupational respiratory disease was substantially lower at approximately 8500 (29 new diagnoses 100 000 workers per year) [Table THOR-GP01 www.hse.gov.uk/statistics/tables/thorgp01.xls].
- In 2012 there were 1770 new cases of cases of occupational respiratory disease recorded by consultant chest physicians within the SWORD scheme [Table THORR01 www.hse.gov.uk/statistics/tables/thorr01.xls]. This represents a substantial underestimate of the annual incidence: for example, many cases of mesothelioma and asbestos related lung cancer are not identified, and for other diseases, the scheme will tend to identify only the more severe cases that were referred to chest physicians.
- Over half of cases reported to SWORD in 2012 were mesothelioma or non-malignant pleural diseases associated with asbestos exposure, 173 (10%) were non-malignant long latency diseases (pneumoconiosis and COPD), and 235 (14%) were cases of shorter latency disease (occupational asthma and allergic alveolitis) [Table THORR01 www.hse.gov.uk/statistics/tables/thorr01.xls].
- In 2012 there were 4305 new cases of occupational lung diseases assessed for Industrial Injuries Disablement Benefit (IIDB), of which 3815 (87%) were diseases associated with past asbestos exposure, 380 (9%) were non-malignant long latency diseases, and 90 (2%) were cases of occupational asthma [Table IIDB01 www.hse.gov.uk/statistics/tables/iidb01.xls].

More detailed information from the SWORD and IIDB schemes are available in the statistical summaries for specific diseases.

Working days lost

In 2011/12, 667 000 working days were lost due to work-related breathing or lung problems (95% confidence interval: 251 000 – 1 083 000), according to the LFS. This corresponds to an average number of days lost per case of 19.3 (95% confidence interval: 8.4 – 30.1) compared with 21.1 for all self-reported work-related illness (95% confidence interval: 18.9 - 23.4).

Based on reports made during 2010-2012 to the THOR-GP scheme, respiratory diseases accounted for around 2% of total the total number of days of sickness absence certified due to all occupational illnesses. For respiratory diseases, a sickness certificate was issued in 30% of cases (Table THORGP01 www.hse.gov.uk/statistics/tables/thorgp01.xls).
Trends

**Mortality**

Overall trends in annual mortality due to occupational respiratory diseases are difficult to assess because different patterns are evident for different diseases, and because the basis for estimating the scale of mortality for some diseases using epidemiological information does not allow the assessment of year on year changes. It is also important to note that recent changes in mortality from occupational respiratory disease will reflect the effects of changes in exposure in the past, since these are typically long latency diseases.

For example, annual deaths from the asbestos-related cancer mesothelioma and asbestosis continue to increase, a legacy of heavy exposures to asbestos in the 1960s and 1970s (Table MESO01 [www.hse.gov.uk/statistics/tables/meso01.xls](http://www.hse.gov.uk/statistics/tables/meso01.xls) and ASIS01 [www.hse.gov.uk/statistics/tables/asis01.xls](http://www.hse.gov.uk/statistics/tables/asis01.xls)). In contrast, deaths from coal worker’s pneumoconiosis are now falling gradually. Trends in mortality from occupational COPD cannot be assessed with any precision on the basis of current evidence about the causes of this disease.

**Self-reported work-related breathing and lung problems**

The LFS suggests that there has been a reduction in the overall prevalence of work-related breathing and lung problems over the last 10 years. The estimated prevalence in 2011/12 (35 000; 95% confidence interval: 25 000 – 44 000) was statistically significantly lower than that for 2001/02 (56 000; 95% confidence interval: 46 000 – 67 000) and 2003/04 (58 000; 95% confidence interval: 48 000 – 69 000) [Table SWIT3W12 [www.hse.gov.uk/statistics/lfs/swit3w12.xls](http://www.hse.gov.uk/statistics/lfs/swit3w12.xls)]. These changes imply that the number leaving the pool of current cases – for example, due to mortality – has been greater than the number of new cases entering.

**Trends in incidence based on reporting to SWORD**

An assessment of trends in the incidence of specific occupational respiratory diseases based statistical modelling of reports to the SWORD scheme is available in a separate report. These analyses suggest there has been a significant reduction in the incidence of occupational asthma as recorded by respiratory disease specialists over the last 10 years, but with little evidence of any change since 2007.
References


National Statistics

National Statistics are produced to high professional standards set out in the National Statistics Code of Practice. They undergo regular quality assurance reviews to ensure that they meet customer needs. They are produced free from any political interference.

An account of how the figures are used for statistical purposes can be found at www.hse.gov.uk/statistics/sources.htm.

For information regarding the quality guidelines used for statistics within HSE see www.hse.gov.uk/statistics/about/quality-guidelines.htm

A revisions policy and log can be seen at www.hse.gov.uk/statistics/about/revisions/

Additional data tables can be found at www.hse.gov.uk/statistics/tables/.

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