

Occupational Lung Disease in Great Britain 2017

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Summary



Occupational Lung Disease

12,000

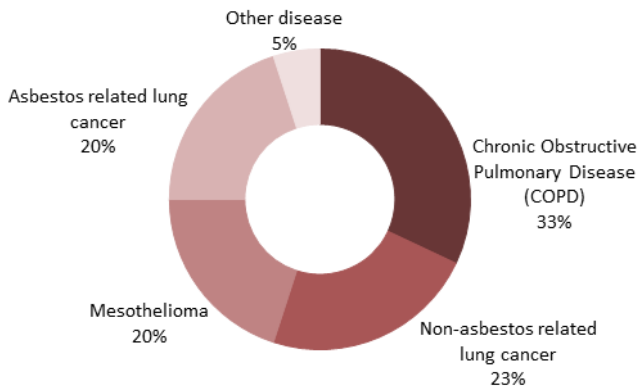
Lung disease deaths each year estimated to be linked to past exposures at work

18,000

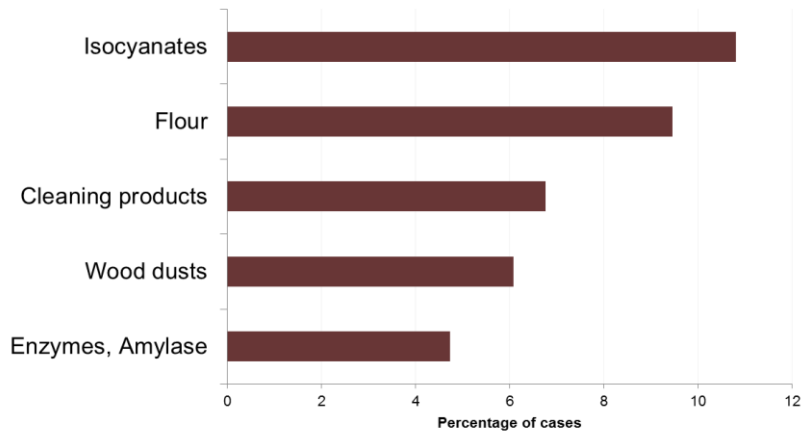
Estimated annual new cases of self-reported breathing or lung problems caused or made worse by work

- A range of lung diseases can be caused by exposures in the workplace including diseases which are very serious – such as cancer and chronic obstructive pulmonary disease (COPD) – which can often be fatal.

Lung disease contributing to estimated current annual deaths

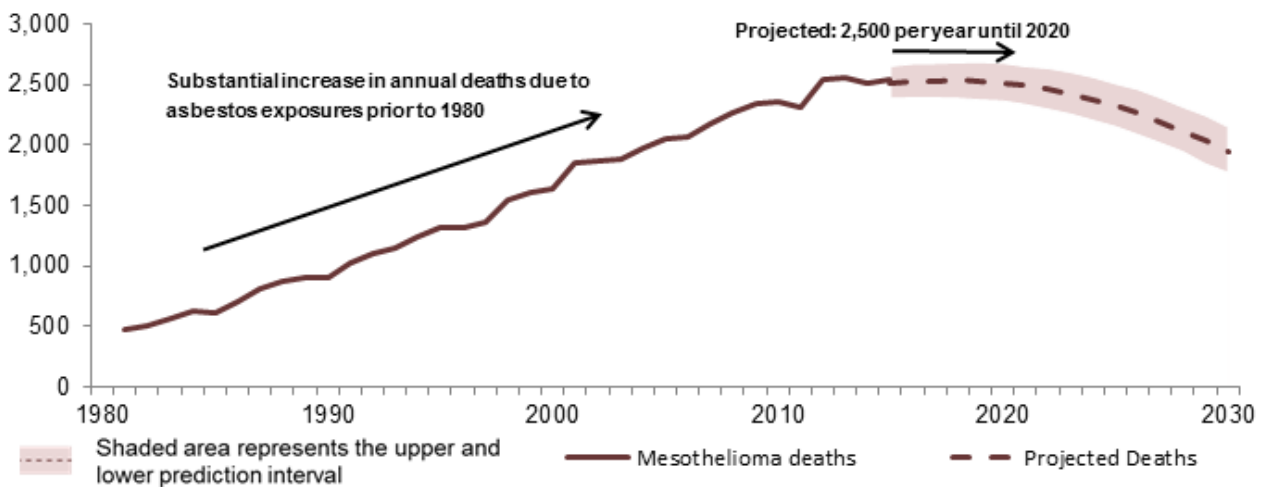


Occupational asthma: Causal agents most commonly reported by chest physicians during 2012-2016



Source: THOR (SWORD) scheme, University of Manchester

Mesothelioma in Great Britain: annual actual and predicted deaths



- Occupational lung diseases typically have a long latency (they take a long time to develop following exposure to the agent that caused them). Therefore, current deaths reflect the effect of past working conditions.
- Estimates of self-reported “breathing or lung problems” according to the Labour Force Survey currently show: around 18,000 new cases each year; 41,000 new and long standing cases among those who worked in the previous year, and 147,000 among those who have ever worked

[More detailed information on Asbestos-Related Disease](#)

[More detailed information on Work-Related Asthma](#)

[More detailed information on Chronic Obstructive Pulmonary Disease \(COPD\)](#)

[More detailed information on Silicosis and Coal Workers' Pneumoconiosis](#)

[More detailed information on Other Occupational Lung Disease](#)

Introduction

The aim of this document is to provide an overview of the latest statistical evidence about Occupational Lung Disease in Great Britain. It includes information about current annual deaths – which are mainly attributable to past working conditions – as well as the prevalence of self-reported breathing or lung problems, and the incidence of annual new cases of lung disease based on a range of data sources.

A number of more detailed statistical commentaries relating to specific diseases can be accessed from the links on the summary page.

Types of occupational lung disease

A range of lung diseases can be caused by exposures in the workplace:

- 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), and **byssinosis** (an asthma like disease in which the air passages become constricted in reaction to exposure to cotton dust).

Most of these diseases – with the main exception of occupational asthma and other allergic respiratory disease – are long latency diseases in which symptoms typically 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.

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 on-going hazard.

Statistics for occupational lung disease can be derived from a number of data sources, including:

- National mortality data;
- Identification and reporting of cases by chest physicians in SWORD scheme within The Health and Occupation Reporting (THOR) network;
- Cases assessed for Industrial Injuries Disablement Benefit (IIDB);
- Self-reporting of “breathing or lung problems” in the Labour Force Survey (LFS);
- Estimates of Attributable Fractions (AFs) of cases due to occupational factors from epidemiological data.

Further information about all of these data sources is available, including their strengths and weaknesses in relation to estimating the extent of different disease outcomes at www.hse.gov.uk/statistics/sources.htm .

Overall scale of occupational lung disease

Mortality

Occupational lung disease is often serious and can lead to early mortality.

For some diseases such as mesothelioma, pneumoconiosis, byssinosis, and certain types of allergic alveolitis, counts of annual deaths can be obtained from routinely available national mortality records. For conditions that can be caused by a variety of occupational and non-occupational exposures, such as lung cancer and COPD, annual deaths attributed to occupation exposures can be estimated based on epidemiological information.

The following table provides a summary of the latest information about the current scale of annual mortality due to work-related respiratory disease.

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

Disease	Current annual deaths	Percentage of total	Basis for estimate
Mesothelioma	2,542	(20%)	Count from death certificates
Asbestos-related lung cancer	Approx. 2,500	(20%)	Estimated from epidemiological information
Lung cancer due to other agents	Approx. 2,800	(23%)	Estimated from epidemiological information (Burden of occupational cancer in Britain ¹)
COPD	Approx. 4,000	(32%)	Estimated from epidemiological information
Other:			
Pneumoconiosis:			
Coal workers pneumoconiosis	130		Counts from death certificates
Asbestosis	467		
Silicosis	11		
Farmer's lung and other allergic alveolitis	8		
Byssinosis	2		
<i>Total other</i>	618	(5%)	
Total	Approx. 12,000		

Prevalence of self-reported “breathing or lung problems”

Although some occupational lung diseases – particularly cancers like mesothelioma and lung cancer – are often rapidly fatal following the onset of symptoms, other diseases such as COPD and asthma may persist and progress over a period of many years. An important source of information that will tend to include cases of these chronic conditions is based on self-reported cases within the Labour Force Survey (LFS).

Based on data from the LFS in 2014/15, 2015/16 and 2016/17:

- An estimated 41,000 people who worked in the last 12 months currently have “breathing or lung problems” they regard as caused or made worse by work (95% Confidence Interval: 34,000 to 48,000). [see lfsilltyp Table-1 www.hse.gov.uk/statistics/lfs/lfsilltyp.xlsx]
- An estimated 147,000 people who have ever worked currently have “breathing or lung problems” they regard as caused or made worse by work (95% Confidence Interval: 130,000 to 164,000).

Here, annual prevalence refers to the number who said they were ill at some point during the previous 12 months. For respiratory diseases this is broadly equivalent to the number currently suffering from such conditions as estimated in each survey year.

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. Individuals with occupational COPD or cancer may not always recognised their disease being due to workplace exposures since the role of occupation may be overlooked in light of other common causes such as smoking.

New cases occurring each year – disease incidence

The LFS also provides information about the incidence of the general category of “breathing or lung problems”. However, many cases of diseases which are difficult to attribute to occupation – such as COPD – or that are relatively rare in the general population as a whole – such as cancer – may not be identified by this survey.

Data based on reporting of individual cases of disease within the THOR and IIDB schemes can provide more detailed information about specific conditions, but tend to 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:

- There are currently an estimated 18,000 new cases of “breathing and lung problems” each year (95% confidence interval: 13,000 – 22,000) where individuals regarded their condition as being caused or made worse by work based on data from the LFS in 2014/15, 2015/16 and 2016/17 [[lfsilltyp Table-2](http://www.hse.gov.uk/statistics/lfs/lfsilltyp.xlsx) www.hse.gov.uk/statistics/lfs/lfsilltyp.xlsx]
- In 2016, there were 1295 (1460 in 2015) new cases of occupational respiratory disease recorded by consultant chest physicians within the SWORD scheme [Table THORR01 www.hse.gov.uk/statistics/tables/thorr01.xlsx]. This represents a substantial underestimate of the annual incidence: for example, many cases of mesothelioma and asbestos related lung cancer are not referred to chest physicians, and for other diseases, the scheme will tend to identify only the more severe cases that were referred to chest physicians.
- Sixty percent of cases reported to SWORD in 2016 were mesothelioma or non-malignant pleural diseases associated with asbestos exposure, 215 (17%) were non-malignant long latency diseases (pneumoconiosis and COPD), and 133 (10%) were cases of shorter latency disease (occupational asthma and allergic alveolitis) [Table THORR01 www.hse.gov.uk/statistics/tables/thorr01.xlsx].
- In 2016 there were 4240 new cases of occupational lung diseases assessed for Industrial Injuries Disablement Benefit (IIDB), of which 3830 (91%) were diseases associated with past asbestos exposure, 315 (8%) were non-malignant long latency diseases, and 85 (2%) were cases of occupational asthma [Table IIDB01 www.hse.gov.uk/statistics/tables/iidb01.xlsx].

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

Trends

Mortality

Overall trends in annual mortality due to occupational respiratory diseases are difficult to assess for a number of reasons, including because different patterns are evident for different diseases, and because the estimates of the scale of mortality for some diseases using epidemiological information are not sufficiently precise to allow the assessment of year-on-year changes. Recent changes in mortality tend to reflect the effects of changes in exposure in the past due to disease latency.

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.xlsx and ASIS01 www.hse.gov.uk/statistics/tables/asis01.xlsx).

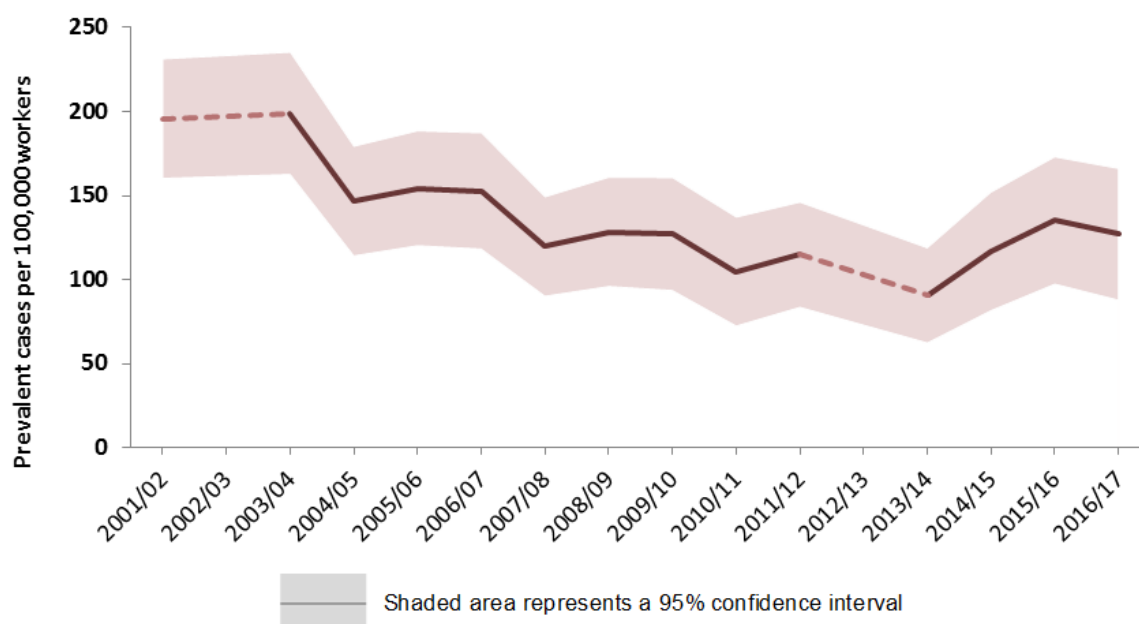
In contrast, deaths from coal worker’s pneumoconiosis are now falling gradually. Trends in mortality from occupational COPD overall cannot be assessed with any precision on the basis of current evidence about the causes of this disease.

Self-reported work-related breathing or lung problems

The LFS suggests that the overall prevalence of self-reported work-related breathing or lung problems for those working in the last 12 months has been relatively constant over the last 10 years.

Figure 1 below shows the annual prevalence rates for self-reported work-related breathing or lung problems since 2001/02. The rate reduced from around 200 cases per 100,000 workers in the early 2000s but has remained broadly constant over the last 10 years, with an estimated 130 cases per 100,000 based on the latest three Labour Force Surveys, equivalent to 41,000 prevalent cases (95% Confidence Interval: 34,000 to 48,000).

Figure 1: Self-reported work-related breathing or lung problems for those working in the last 12 months



Amongst those who ever worked, the prevalence rate has also been relatively constant over the last 10 years, with an estimated 147,000 prevalent cases (95% Confidence Interval: 130,000 to 164,000) based on the latest three Labour Force Surveys.

Assessment of trends in the incidence of self-reported work-related breathing or lung problems are hampered by uncertainty arising from small numbers of sample cases in the Labour Force Survey. Nevertheless, there is some evidence of an increase in the annual incidence during the latest three years: the estimate of 18,000 new cases per year (95% Confidence Interval: 13,000 to 22,000) was statistically significantly higher than the estimate of 10,000 new cases per year (95% Confidence Interval: 7,000 to 14,000) in the previous three year period.

Trends in incidence based on reporting to THOR (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 report².

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.

Based on those currently with breathing and lung problems and 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).

References

1. Rushton L, et al. (2012) Occupation and cancer in Britain. *British Journal of Cancer* 107;(Supplement 1):S1-S108.
2. Carder M, McNamee R, Gittins M, Agius R. (2017) Time trends in the incidence of work-related ill health in the UK, 1996-2015: estimation from THOR surveillance data. www.hse.gov.uk/statistics/pdf/thortrends17.pdf

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It is Health and Safety Executive's responsibility to maintain compliance with the standards expected by National Statistics. If we become concerned about whether these statistics are still meeting the appropriate standards, we will discuss any concerns with the Authority promptly. National Statistics status can be removed at any point when the highest standards are not maintained, and reinstated when standards are restored.

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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