

# Work-related respiratory disease in Great Britain 2016

An overview of the burden of respiratory disease in Great Britain

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## Summary

The document can be found at: [www.hse.gov.uk/statistics/causdis/respiratory-diseases/](http://www.hse.gov.uk/statistics/causdis/respiratory-diseases/)

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 pulmonary 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) therefore current deaths reflect the effect of past working conditions.
- About 36,000 people who worked in the last year, and 141,000 who had ever worked currently have breathing or lung problems they thought were caused or made worse by work (LFS).
- There are currently an estimated 14,000 new cases of breathing or lung problems caused or made worse by work each year (LFS).

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

Work-related and occupational asthma: [www.hse.gov.uk/statistics/causdis/asthma/](http://www.hse.gov.uk/statistics/causdis/asthma/)

Chronic Obstructive Pulmonary Disease: [www.hse.gov.uk/statistics/causdis/copd/](http://www.hse.gov.uk/statistics/causdis/copd/)

Silicosis and coal workers pneumoconiosis: [www.hse.gov.uk/statistics/causdis/pneumoconiosis/](http://www.hse.gov.uk/statistics/causdis/pneumoconiosis/)

Other respiratory disease: [www.hse.gov.uk/statistics/causdis/other-respiratory/](http://www.hse.gov.uk/statistics/causdis/other-respiratory/)

# Introduction

## Work-related 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 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 ongoing hazard.

# Overall scale of work-related respiratory disease

## Mortality

Work-related respiratory diseases are often serious and 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	Annual deaths, 2014	Basis for estimate
Mesothelioma	2515	Count based on death certificates
Asbestos-related lung cancer	More than 2000	Estimated from epidemiological information
Laryngeal cancer due to asbestos	Approx. 3*	Estimated from epidemiological information (Burden of occupational cancer in Britain <sup>1</sup> )
Lung cancer due to other agents	Approx. 2800*	Estimated from epidemiological information (Burden of occupational cancer in Britain <sup>1</sup> )
COPD	Approx. 4000	Estimated from epidemiological information
Pneumoconiosis: Coal workers pneumoconiosis Asbestosis Silicosis	 141 431 10	Count based on death certificates
Farmer's lung and other allergic alveolitis	7	Count based on death certificates
Byssinosis	1	Count based on death certificates
Total	Approx. 12,000	

## Prevalence of self-reported respiratory disease

Based on data from the Labour Force Survey (LFS) in 2013/14, 2014/15 and 2015/16 [see lfsilltyp Table-2 [www.hse.gov.uk/statistics/lfs/lfsilltyp.xlsx](http://www.hse.gov.uk/statistics/lfs/lfsilltyp.xlsx)]:

- An estimated 36,000 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: 30,000 to 43,000).
- An estimated 141,000 people who have ever worked currently have “breathing or lung problems” they regard as caused or made worse by work (95% Confidence Interval: 123,000 to 159,000).

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. 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.

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).

## New cases occurring each year – disease incidence

The LFS and the THOR-GP reporting scheme provide information about the incidence of the general category of work-related respiratory disease. However, many cases of diseases which are difficult to attribute to occupation such as COPD or cancer may not be identified by these sources.

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 14,000 new cases of “breathing and lung problems” each year (95% confidence interval: 10,000 – 17,000) where individuals regarded their condition as being caused or made worse by work based on data from the LFS in 2013/14, 2014/15 and 2015/16 [lfsilltyp Table-2 [www.hse.gov.uk/statistics/lfs/lfsilltyp.xlsx](http://www.hse.gov.uk/statistics/lfs/lfsilltyp.xlsx)]
- In 2015, there were 1447 (1552 in 2014) 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](http://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.
- Over half of cases reported to SWORD in 2015 were mesothelioma or non-malignant pleural diseases associated with asbestos exposure, 227 (16%) were non-malignant long latency diseases (pneumoconiosis and COPD), and 127 (9%) were cases of shorter latency disease (occupational asthma and allergic alveolitis) [Table THORR01 [www.hse.gov.uk/statistics/tables/thorr01.xlsx](http://www.hse.gov.uk/statistics/tables/thorr01.xlsx)].
- In 2015 there were 4440 new cases of occupational lung diseases assessed for Industrial Injuries Disablement Benefit (IIDB), of which 4040 (91%) were diseases associated with past asbestos exposure, 340 (8%) were non-malignant long latency diseases, and 70 (2%) were cases of occupational asthma [Table IIDB01 [www.hse.gov.uk/statistics/tables/iidb01.xlsx](http://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 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. 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](http://www.hse.gov.uk/statistics/tables/meso01.xlsx) and ASIS01 [www.hse.gov.uk/statistics/tables/asis01.xlsx](http://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 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 the overall prevalence and incidence of work-related breathing and lung problems have both been relatively constant over the last 10 years. For those working in the last 12 months, there were an estimated 44,000 (95% confidence interval: 31,000 – 56,000) prevalent cases in 2015/16 compared with 56,000 (95% confidence interval: 46,000 – 67,000) in 2001/02. The 3 year average for 2013/14, 2014/15 and 2015/16 is 36,000 (95% confidence interval: 30,000 – 43,000). [lfsilltyp Table-1 [www.hse.gov.uk/statistics/lfs/lfsilltyp.xlsx](http://www.hse.gov.uk/statistics/lfs/lfsilltyp.xlsx)].

Amongst those who ever worked, the prevalence rate has been relatively constant over the last 10 years, with an estimated 145,000 (95% confidence interval: 115,000 – 175,000) prevalent cases in 2015/16. The 3 year average for 2013/14, 2014/15 and 2015/16 is 141,000 (95% confidence interval: 123,000 – 159,000).

## 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 report<sup>2</sup>.

# 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, Hussey L, Agius R. (2016) 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/thortrends16.pdf](http://www.hse.gov.uk/statistics/pdf/thortrends16.pdf)

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National Statistics status means that official statistics meet the highest standards of trustworthiness, quality and public value.

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An account of how the figures are used for statistical purposes can be found at [www.hse.gov.uk/statistics/sources.htm](http://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](http://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/](http://www.hse.gov.uk/statistics/about/revisions/)

Additional data tables can be found at [www.hse.gov.uk/statistics/tables/](http://www.hse.gov.uk/statistics/tables/).

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**Last updated:** November 2016

**Next update:** October 2017

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First published 11/16.