

# Occupational Lung Disease statistics in Great Britain, 2019

## Contents

<b>Summary</b>	<b>2</b>
<b>Introduction</b>	<b>4</b>
<b>Overall scale of occupational lung disease</b>	<b>6</b>
Mortality	6
Prevalence of self-reported “breathing or lung problems”	6
New cases occurring each year – disease incidence	7
<b>Trends</b>	<b>7</b>
Mortality	7
Self-reported work-related breathing or lung problems	7
Trends in incidence based on reporting to THOR (SWORD)	9
Causes of self-reported respiratory disease	9
<b>References</b>	<b>10</b>



# Summary



## Occupational Lung Disease

**12,000**

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

Death Certificates and Attributable Fraction Estimates

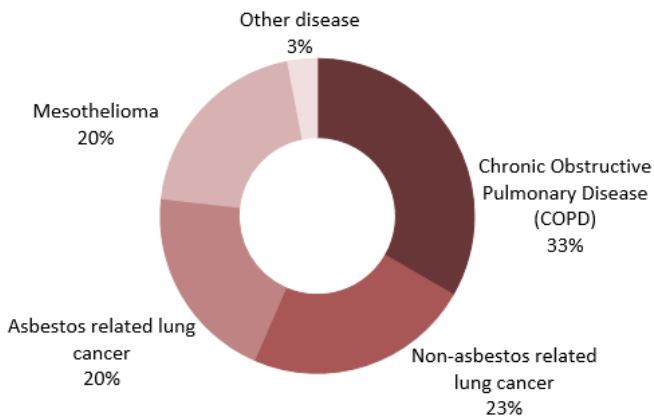
**18,000**

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

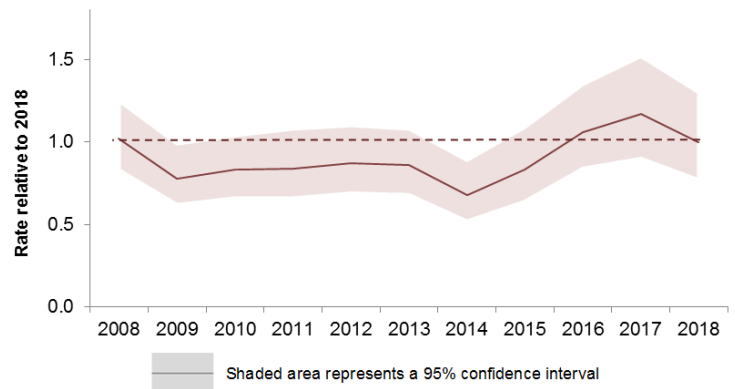
Labour Force Survey (LFS)

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

### Lung disease contributing to estimated current annual deaths

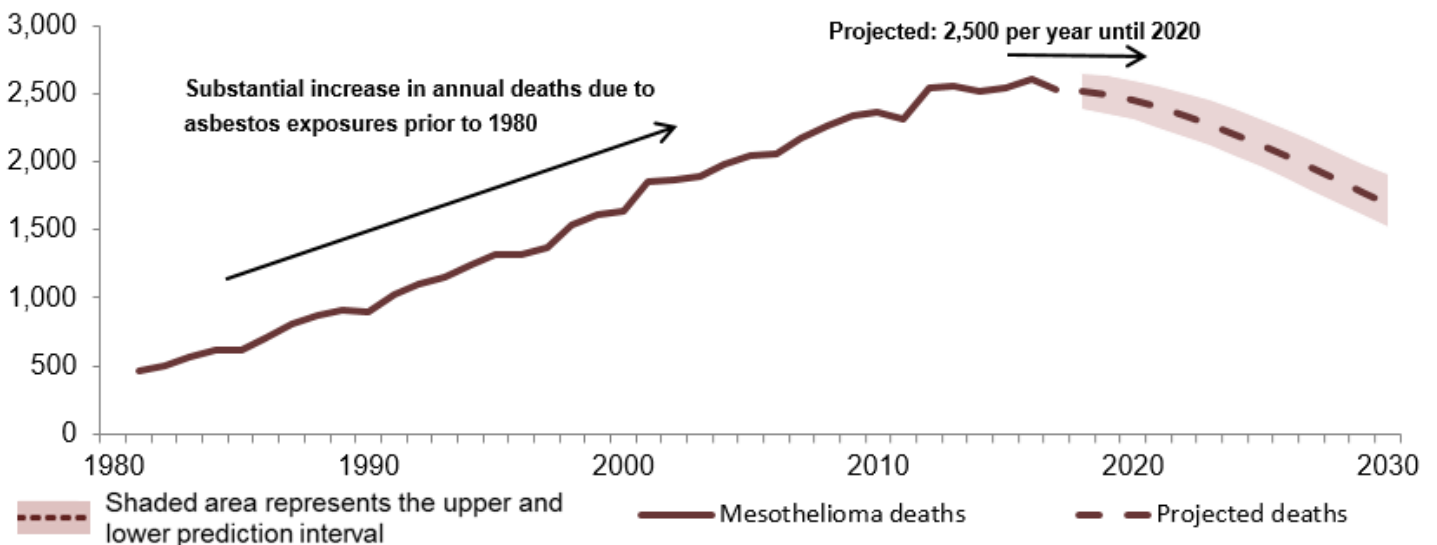


### Estimated rate of annual new cases of occupational asthma reported by chest physicians relative to 2018



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; 43,000 new and long-standing cases among those who worked in the previous year, and 144,000 among those who have ever worked.

### More information about Occupational Lung Disease:

[More detailed information on asbestos-related disease](#)

[Work-related asthma in Great Britain 2019](#)

[Work-related Chronic Obstructive Pulmonary Disease \(COPD\) in Great Britain 2019](#)

[Silicosis and coal worker’s pneumoconiosis 2019](#)

[More detailed information on other occupational lung disease](#)

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

# Introduction

This document gives an overview of the latest statistical evidence about Occupational Lung Disease in Great Britain. More detailed statistical commentaries relating to specific diseases are also available.

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

- Respiratory cancers, including lung cancer and mesothelioma
- Chronic Obstructive Pulmonary Disease (COPD)
- Silicosis, asbestosis and other forms of pneumoconiosis
- Occupational asthma
- Diffuse pleural thickening and pleural plaques
- Allergic alveolitis and byssinosis

Many of these are serious diseases which can often lead to death or substantial disability.

Most are “long latency” diseases, meaning they start to develop many years after the workplace exposures that caused them or contributed. The main exceptions are occupational asthma and allergic alveolitis which can develop more quickly.

Current and recently occurring cases of long-latency diseases are mainly a reflection of past workplace conditions. However, many of the causative agents can still be present in workplaces and thus constitute a potential on-going hazard.

## Data sources

Statistics for occupational lung disease can be derived from a number of data sources. No particular source is best for estimating the overall disease burden and time trends in occupational lung disease. A range of data sources can be used to provide evidence about this depending on the particularly disease type.

The main data sources are as follows:

National mortality data (death certificates)	Annual deaths from specific diseases known to be strongly associated with certain exposures – for example, mesothelioma (due to asbestos) and pneumoconiosis (due to dusts like silica and coal)
Cases reporting by chest physicians in SWORD scheme within The Health and Occupation Reporting (THOR) network	Shorter latency diseases such as asthma and allergic alveolitis or where cases can be readily attributed to work on a case-by-case basis
Cases assessed for Industrial Injuries Disablement Benefit (IIDB)	Diseases arising from circumstances where the link to work is sufficiently strong (balance of probabilities argument, or clinical features of cases) for state-based no-fault compensation to be awarded
Self-reporting of “breathing or lung problems” in the Labour Force Survey (LFS)	Survey-based measure of the overall scale and trends for the broadest definition of occupational lung disease using self-reports
Attributable Fraction (AF) estimation using epidemiological data	Diseases for which attributing individual cases to workplace exposures is difficult because they are often caused by both occupational and non-occupational factors – for example, many cancers and COPD

Further information about all 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](http://www.hse.gov.uk/statistics/sources.htm) .



# Overall scale of occupational lung disease

## Mortality

Occupational lung diseases are often serious and can lead to early mortality. The table provides a summary of the latest information about the current scale of annual mortality due such diseases.

- 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 can be estimated based on Attributable Fractions derived from epidemiological research.

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

<b>Disease</b>	<b>Current annual deaths</b>	<b>Percentage of total</b>	<b>Basis for estimate</b>
Mesothelioma	2,500	(20%)	Current annual scale from death certificates
Asbestos-related lung cancer	Approx. 2,500	(20%)	Estimated from epidemiological information <a href="https://www.hse.gov.uk/statistics/causdis/asbestos-related-disease.pdf">https://www.hse.gov.uk/statistics/causdis/asbestos-related-disease.pdf</a>
Lung cancer due to other agents	Approx. 2,800	(23%)	Estimated from epidemiological information Burden of occupational cancer in Britain <sup>1</sup>
COPD	Approx. 4,000	(33%)	Estimated from epidemiological information <a href="https://www.hse.gov.uk/statistics/causdis/copd.pdf">https://www.hse.gov.uk/statistics/causdis/copd.pdf</a>
Other (pneumoconiosis and allergic alveolitis)	370	(3%)	Current annual scale from death certificates*
<b>Total</b>	<b>Approx. 12,000</b>		

\*Deaths where these diseases were identified as the underlying cause of death

## 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 a three-year average from the LFS in 2016/17, 2017/18 and 2018/19:

- An estimated 43,000 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: 35,000 to 50,000). [see lfsilltyp Table-1 [www.hse.gov.uk/statistics/lfs/lfsilltyp.xlsx](http://www.hse.gov.uk/statistics/lfs/lfsilltyp.xlsx)]
- An estimated 144,000 people who have ever worked currently have “breathing or lung problems” they regard as caused or made worse by work (95% Confidence Interval: 126,000 to 161,000).

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 ill health and work. Individuals with occupational COPD or cancer may not always recognise their disease as 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 that 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 above.

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 – 23,000) where individuals regarded their condition as being caused or made worse by work based on data from the LFS in 2016/17, 2017/18 and 2018/19 [lfsilltyp Table-2 [www.hse.gov.uk/statistics/lfs/lfsilltyp.xlsx](http://www.hse.gov.uk/statistics/lfs/lfsilltyp.xlsx)]
- In 2018, there were 1,065 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 sixty per cent of cases reported to SWORD in 2018 were mesothelioma or non-malignant pleural diseases associated with asbestos exposure, 67 (6%) were non-malignant long latency diseases such as pneumoconiosis and COPD (reported under the category “Bronchitis/emphysema” in SWORD) caused by other agents, and 138 (13%) 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 2018 there were 4,255 new cases of occupational lung diseases assessed for Industrial Injuries Disablement Benefit (IIDB), of which 3,920 (92%) were diseases associated with past asbestos exposure, 285 (7%) were non-malignant long latency diseases, and 45 (1%) were cases of shorter latency disease (occupational asthma and allergic alveolitis) [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 for a number of reasons. These include the fact that 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.

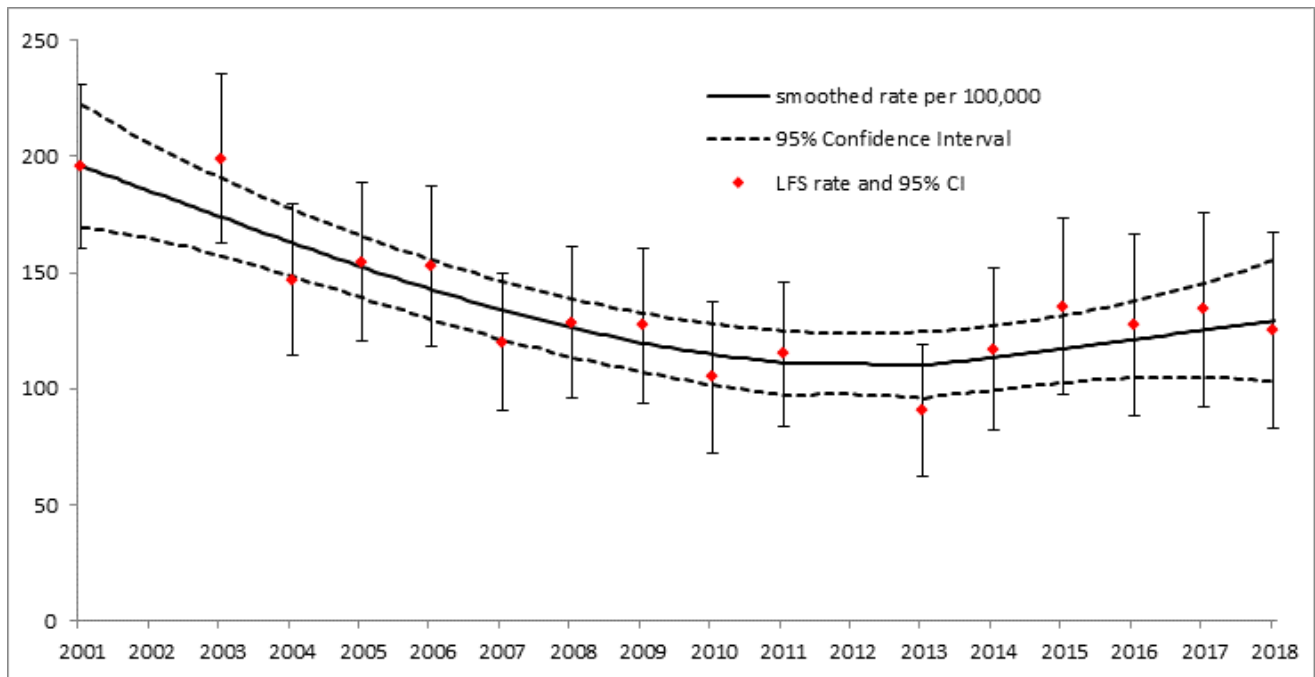
Recent trends in mortality tend to reflect the effects of changes in exposure in the past due to disease latency. For example, the persisting burden of annual deaths from the asbestos-related cancer mesothelioma and asbestosis is a legacy of heavy exposures to asbestos in the 1960s and 1970s (Table MESO01 [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 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

Figure 1 below shows the annual prevalence rates for self-reported work-related breathing or lung problems since 2001/02 for those working in the last 12 months. 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. This rate averaged over the last three surveys is equivalent to 43,000 prevalent cases (95% Confidence Interval: 35,000 to 50,000).

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



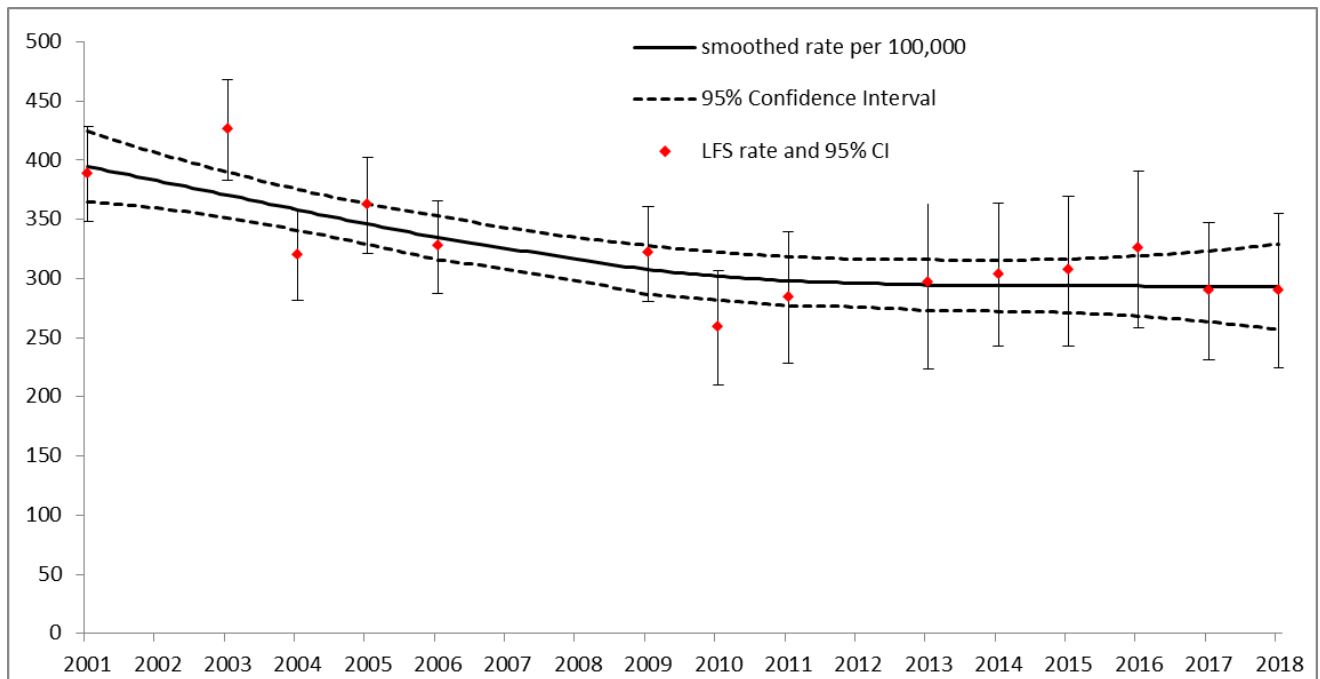
Note that years are financial years - e.g. 2018/19 is represented by 2018 on the horizontal axis

Estimates are not available for years 2002 and 2012

Figure 2 below shows the annual prevalence rates for self-reported work-related breathing or lung problems since 2001/02 among those who have ever worked. The rate reduced from around 400 cases per 100,000 workers in the early 2000s but has remained broadly constant over the last 10 years, with an estimated 300 cases per 100,000 based on the latest three Labour Force Surveys. This rate averaged over the last three surveys is equivalent to 144,000 prevalent cases (95% Confidence Interval: 126,000 to 161,000).



**Figure 2: Self-reported work-related breathing or lung problems for those who ever worked**



Note that years are financial years - e.g. 2018/19 is represented by 2018 on the horizontal axis

Estimates are not available for years 2002, 2007, 2008 and 2012

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.

### 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>.

### 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. Money A, Carder M, Barradas A, Gittins M, Seed M, van Tongeren M (2019) Time trends in the incidence of work-related ill-health in the UK, 1996-2018: estimation from THOR surveillance data. [www.hse.gov.uk/statistics/pdf/thortrends19.pdf](http://www.hse.gov.uk/statistics/pdf/thortrends19.pdf) (Accessed 30 October 2019)

## National Statistics

National Statistics status means that statistics meet the highest standards of trustworthiness, quality and public value. They are produced in compliance with the Code of Practice for Statistics, and awarded National Statistics status following assessment and compliance checks by the Office for Statistics Regulation (OSR). The last compliance check of these statistics was in 2013.

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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)

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

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