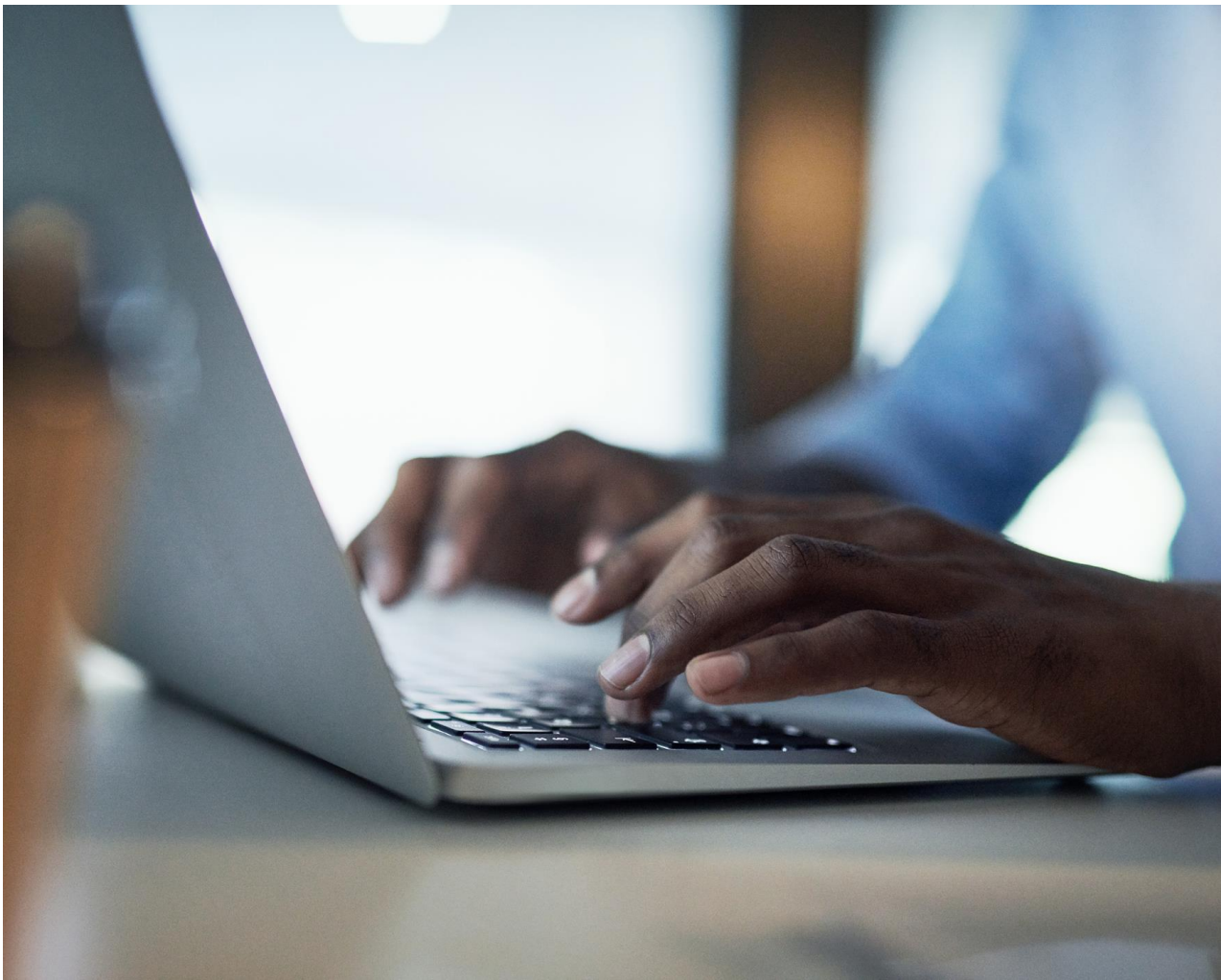


# Mesothelioma statistics for Great Britain, 2021



July 2021





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## Summary

The information in this document relates to Health and Safety Statistics published by the Health and Safety Executive in 2021.

Mesothelioma is a form of cancer that takes many years to develop following the inhalation of asbestos fibres but is usually rapidly fatal following symptom onset. Annual deaths in Britain increased steeply over the last 50 years, a consequence of mainly occupational asbestos exposures that occurred because of the widespread industrial use of asbestos during 1950-1980.

The latest information shows:

- There were 2,369 mesothelioma deaths in Great Britain in 2019; this is 7% lower than the annual average number of 2540 over the period 2012-2018.
- There were 1,945 male deaths in 2019: this is 9% lower than the annual average number of 2,130 for males over the period 2012-2018.
- Deaths among females remained at a similar level to the last few years with 424 in 2019.
- The 2019 figures for males are in-line with earlier predictions suggesting that annual mesothelioma deaths would gradually start to reduce by around year 2020.
- The 2019 figures for females are in-line with earlier predictions suggesting that annual counts during the 2020s would remain at the current level before starting to decline.
- More than half of annual deaths now occur in those aged over 75 years. Annual deaths in this age group continue to increase while deaths below age 70 are now decreasing.
- There were 2,025 new cases of mesothelioma assessed for Industrial Injuries Disablement Benefit (IIDB) in 2019 of which 240 were female. This compares with 2,230 new cases in 2018, of which 245 were female.
- Men who worked in the building industry when asbestos was used extensively in the past continue to be most at risk of mesothelioma.
- Although some deaths that occurred in 2019 took longer to be registered during the COVID-19 pandemic in 2020, the number of late registrations by March 2021 (the cut-off for inclusion in these statistics) was similar to the number expected based on patterns of late registrations in previous years.

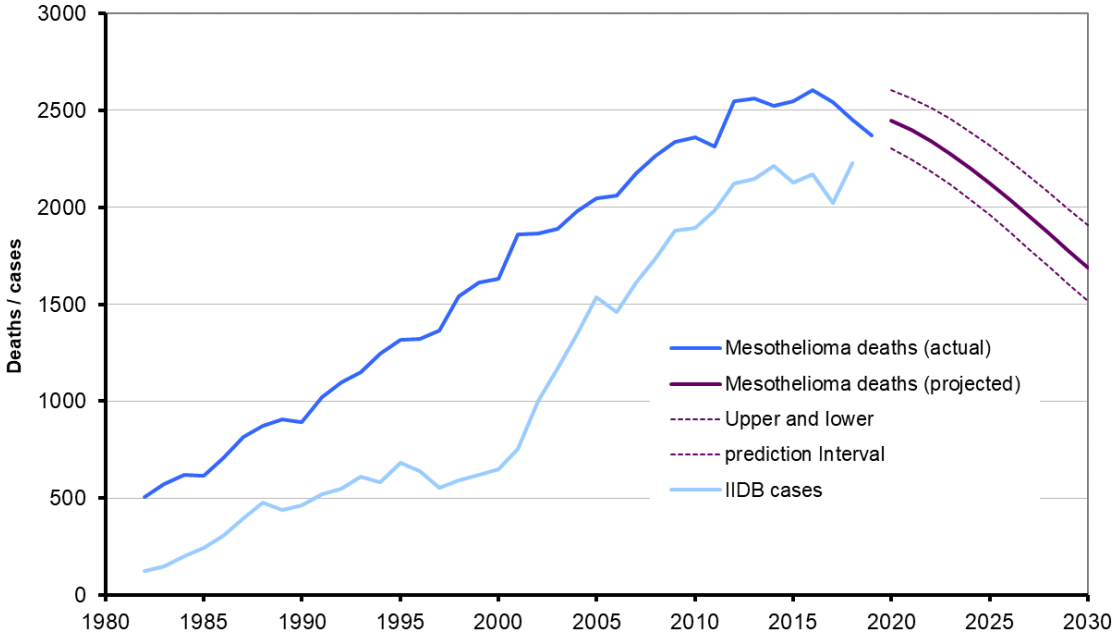


Figure 1 – Mesothelioma annual deaths, IIDB cases and projected future deaths to 2030 in GB

## Introduction

Malignant Mesothelioma is a form of cancer that principally affects the pleura (the external lining of the lung) and the peritoneum (the lining of the lower digestive tract). Many cases are diagnosed at an advanced stage as symptoms are typically non-specific and appear late in the development of the disease. It is almost always fatal, and often within twelve months of symptom onset.

Mesothelioma has a strong association with exposure to asbestos and current evidence suggests that around 85% of all male mesotheliomas are attributable to asbestos exposures that occurred in occupational settings. Most of the remainder of male deaths and a majority of female deaths are likely to have been caused by asbestos exposures but which were not due to the direct handling of asbestos materials. The long latency period (i.e. the time between initial exposure to asbestos and the manifestation of the disease) of typically at least 30 years means that most mesothelioma deaths occurring today are a result of past exposures that occurred because of the widespread industrial use of asbestos during 1950-1980.

## Overall scale of disease including trends

Figure 2 shows annual numbers of male and female deaths from mesothelioma in Great Britain from 1968 to 2019. The substantially higher numbers of deaths among men reflects the fact that past asbestos exposures tended to occur in male dominated occupations.

Annual mesothelioma deaths in Great Britain increased year-on-year over the last 50 years, with nearly 10 times as many deaths in the most recent decade, 2010-19, compared with 1970-79. There were 2,369 deaths in the latest year, 2019. This is 7% lower than the annual average number of 2540 over the period 2012-2018.

In 2019, there were 1,945 male deaths which is 9% lower than the annual average number of 2,130 for males over the period 2012-2018 and consistent with earlier predictions suggesting that annual mesothelioma deaths would gradually start to reduce by around year 2020. Deaths among females remained at a similar level to that seen over the last few years with 424 in 2019. This is consistent with earlier predictions suggesting that annual counts for females during the 2020s would remain at around the current level before starting to decline.

See Table MESO01 [www.hse.gov.uk/statistics/tables/meso01.xlsx](http://www.hse.gov.uk/statistics/tables/meso01.xlsx).

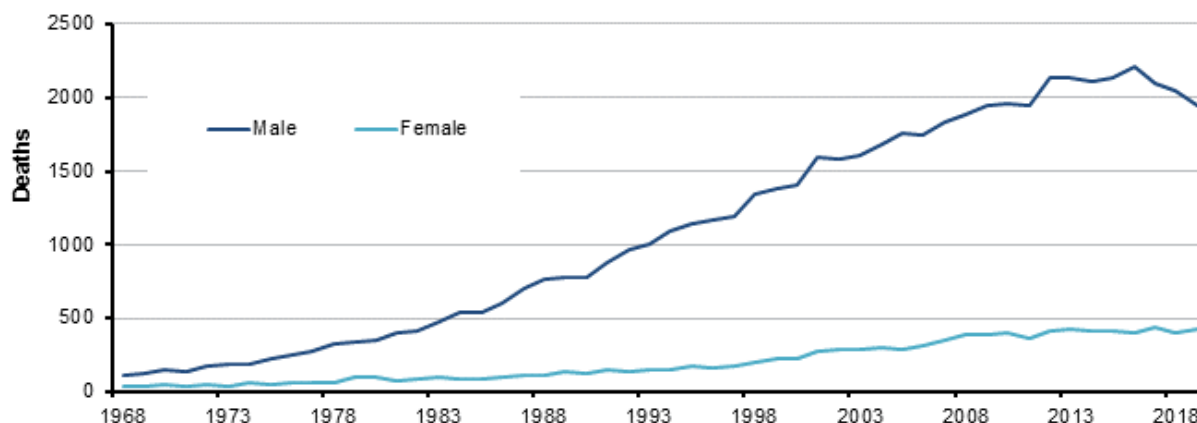


Figure 2 – Male and female mesothelioma deaths 1968-2019

*Figures for 2019 are provisional.*

Although some deaths that occurred in 2019 took longer to be registered during the COVID-19 pandemic in 2020, the number of late registrations by March 2021 (the cut-off for inclusion in these statistics) was similar to the number expected based on patterns of late registrations in previous years – see Annex 1.

## Mesothelioma mortality by age

Table MESO02 [www.hse.gov.uk/statistics/tables/meso02.xlsx](http://www.hse.gov.uk/statistics/tables/meso02.xlsx) shows the number of mesothelioma deaths in each year in 5-year age groups for males.

Table MESO03 [www.hse.gov.uk/statistics/tables/meso03.xlsx](http://www.hse.gov.uk/statistics/tables/meso03.xlsx) shows the equivalent information for females.

Table MESO04 [www.hse.gov.uk/statistics/tables/meso04.xlsx](http://www.hse.gov.uk/statistics/tables/meso04.xlsx) shows the number of mesothelioma deaths and death rates by age, sex and three-year time period from 1968-2019.

Age-specific death rates for males are shown in Figure 3(a). The pattern of these rates is a reflection of both disease latency and the timing of past asbestos exposure. Overall, rates are much higher in older age because the disease takes many years to develop following exposure. Current high death rates among males at ages 70 years and above also reflect the fact that this generation of men had the greatest potential for asbestos exposures in younger working life during the period of peak asbestos use in the 1950s, 1960s and 1970s. Mesothelioma death rates below age 65 have now been falling for some time. The most recent deaths in this younger age group are among the generation who started working life during the 1970s or later when asbestos exposures were starting to be much more tightly controlled.

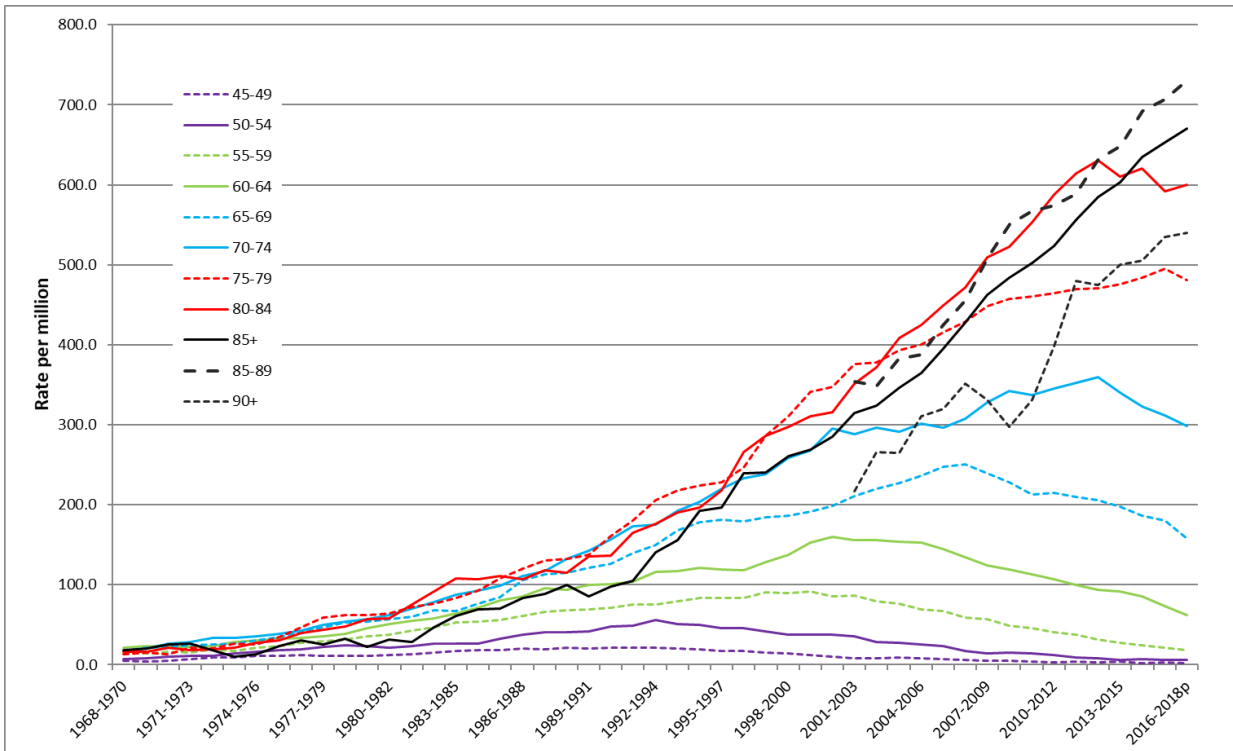


Figure 3(a) – Male mesothelioma death rates by age and time period 1968-2019

Figures for 2019 are provisional.

Age-specific death rates for females are shown in Figure 3(b). Although the age-specific rates for females are generally an order of magnitude lower than for males, similar patterns are evident, though with greater year-on-year fluctuations due to the smaller numbers of deaths.



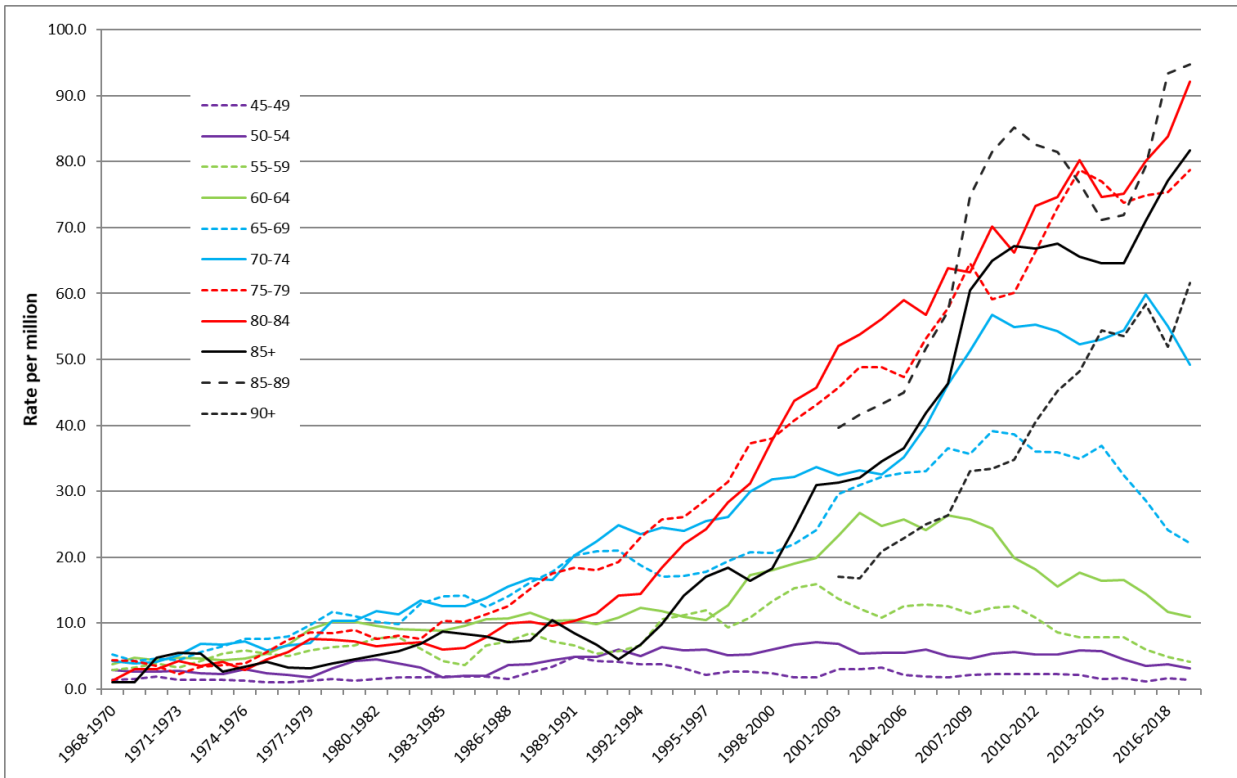


Figure 3(b) – Female mesothelioma death rates by age and time period 1968-2019(p)

Figures for 2019 are provisional.

## Industrial Injuries Disablement Benefit (IIDB) cases

Mesothelioma is a prescribed disease within the Industrial Injuries Disablement Benefit (IIDB) scheme which provides no-fault state compensation to employed earners for occupational diseases.

Annual new cases of mesothelioma assessed for IIDB have increased over the last few decades with over 2000 cases per year currently compared with less than 500 per year during the 1980s (Figure 1). There were 2,025 cases in 2019 of which 240 were female, compared with 2,230 in 2018, of which 245 were female.

Annual IIDB cases are lower than annual deaths since not everyone with mesothelioma is eligible and those that are may not claim – for example, due to a lack of awareness of the scheme. Annual IIDB cases increased somewhat more rapidly than deaths during the period 2000-2015 and this may be due to efforts by the Department of Pensions to increase the awareness of the scheme and to fast-track the assessment of cases of disease such as mesothelioma which have a poor prognosis.

## Mortality by region

Table MESO05 [www.hse.gov.uk/statistics/tables/meso05.xlsx](http://www.hse.gov.uk/statistics/tables/meso05.xlsx) shows age standardised mesothelioma death rates per million by 3-year time period, government office region and sex.

In Great Britain mesothelioma death rates for both males and females follow an upward trend over time with a levelling-off over recent years. Male and female rates reached 63.8 and 12.9 deaths per million respectively in 2017-2019 compared with 25.5 and 3.4 per million in 1984-1986.

For males, upward trends in death rates for all regions were evident over the long-term until around year 2010. Rates have fallen slightly in more recent years in most regions. Male rates in Wales are now similar to those in Scotland, with higher rates in England as a whole.

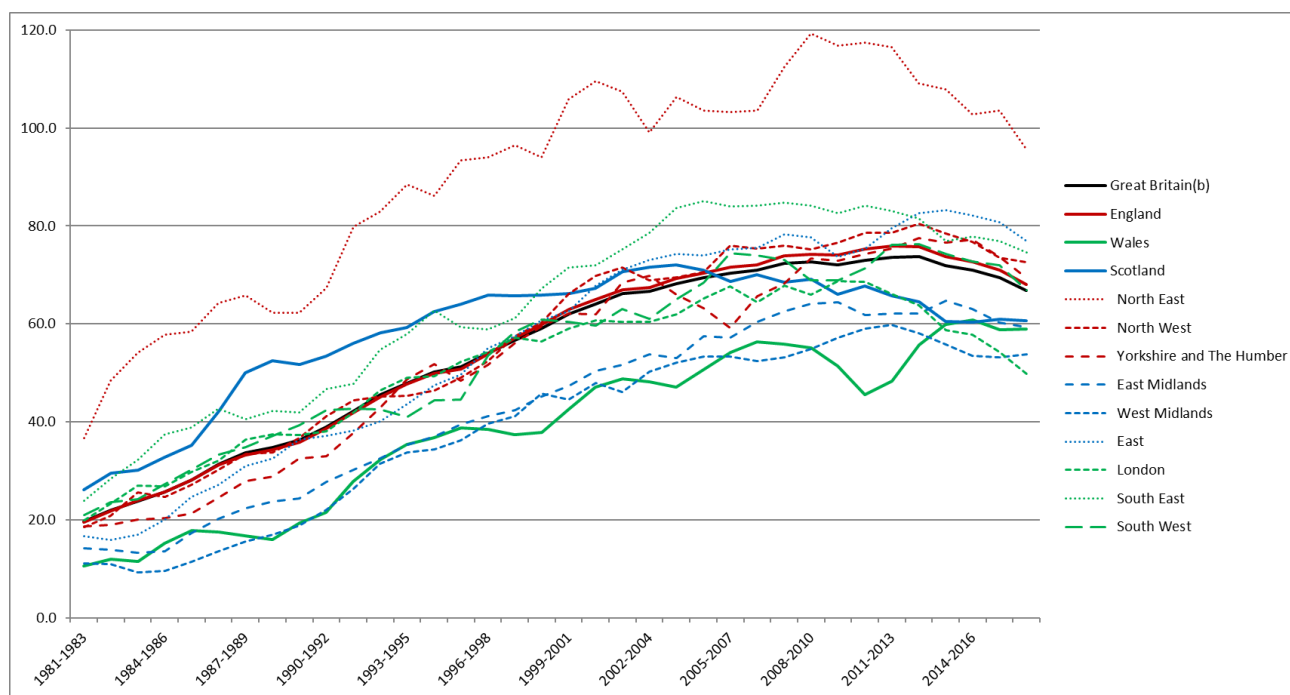


Figure 4 – Male mesothelioma death rates by region 1968-2019

Figures for 2019 are provisional.

Rates are standardised according to the age-structure of the Great Britain population in 2017-2019 in order to allow comparison over time and by region.

Although the numbers of cases are much smaller for females – and so the pattern in the rates over time is more erratic – an upward trend is fairly clear in all regions, see Table MESO05 [www.hse.gov.uk/statistics/tables/meso05.xlsx](http://www.hse.gov.uk/statistics/tables/meso05.xlsx).

More detailed analyses of mesothelioma deaths in Great Britain by geographical area can be found under the heading Fact sheets on mesothelioma below.

## **Mortality by occupation**

Mesothelioma death statistics for males and females and comparisons of mortality rates for different occupational groups in 2011-2019 and 2001-2010 are available in a separate document: Mesothelioma Occupation Statistics – male and female deaths aged 16-74 in Great Britain (see below).

This analysis shows that certain occupations are recorded much more frequently than expected on death certificates of men now dying from mesothelioma. These include jobs particularly associated with the construction industry such as carpenters, plumbers and electricians. Other occupations (notably metal plate workers) which were often associated with the shipbuilding industry are still recorded more frequently than expected even though it is now many years since these exposures took place.

An epidemiological study of mesothelioma in Great Britain [1] confirmed the high burden of disease among former building workers. That study suggested that about 46% of the mesotheliomas among men born in the 1940s would be attributed to such exposures, with 17% attributed to carpentry work alone. A key factor in causing the higher risks now seen in these former workers appears to be the extensive use of insulation board containing brown asbestos (amosite) within buildings for fire protection purposes.

Occupational analyses of female mesothelioma deaths are more difficult to interpret because of the lower proportion caused directly by occupational exposures. Occupations are recorded on death certificates as a matter of course (for deaths below age 75), and so inevitably there are various occupations that are recorded in appreciable numbers on female mesothelioma death certificates. However, most of these occupations are recorded with a frequency not statistically significantly different to that expected if there was no difference in risk between occupational groups. This suggests if exposure to asbestos did occur at work, it wasn't particularly more likely in any of these occupational settings.

The epidemiological study supports this view. It suggested that only a minority (around a third) of mesotheliomas in women were a result of either occupational or domestic exposures (such as the well documented risk associated with living with an asbestos-exposed worker). This, together with the overall increase in mesothelioma deaths among women, suggests there was an increase in the 'background' risk among those who did not directly handle asbestos at work but who lived through the period of peak asbestos use in construction when the opportunities for unwitting exposure may have been widespread. This background risk – which has since reduced [2] – is likely to at least partly account for

deaths with occupations not typically associated with asbestos exposure recorded on the death certificate. The background risk will also apply to men of the same generation.

Further details about mesothelioma and occupation are available at:

[www.hse.gov.uk/research/rrhtm/rr696.htm](http://www.hse.gov.uk/research/rrhtm/rr696.htm)

## **Estimation of the future burden of mesothelioma deaths**

The latest available projections are based on deaths up to and including year 2017 and predicted that total annual numbers of mesothelioma deaths would remain at about 2,500 up to around the year 2020 – see table MESO06

[www.hse.gov.uk/statistics/tables/meso06.xlsx](http://www.hse.gov.uk/statistics/tables/meso06.xlsx).

The projections for the total number of annual deaths are derived from separate analyses of deaths among men and women. While the overall numbers are dominated by the expected pattern in males, these separate predictions suggest that annual deaths among females will not start to decline as soon as in males. However, the female projections are more uncertain due to the smaller number of deaths.

The actual count of deaths among males in 2019 is in-line with the prediction that a decline would start to become evident at this point and continue during the 2020s. Annual female deaths are expected to continue at the current level during the 2020s before starting to decline beyond that; the actual figures for 2019 are again consistent with this prediction.

The statistical projection model describes the expected future mortality as a smooth curve whereas actual numbers of deaths each year-on-year fluctuate due to random variation. This means that although the numbers of male deaths have reduced for the second year in a row, increases in the deaths in future years may still occur.

The statistical model used for these projections provides a reasonable basis for making relatively short-term predictions of mesothelioma mortality in Britain, in particular, when the declines in annual deaths were expected to start to be seen [3]. However, longer-term predictions comprise additional uncertainty that is not captured within the published uncertainty intervals for the future annual deaths. The long-term projections beyond 2030 are dependent on assumptions about certain model parameters for which there is no strong empirical basis – and in particular, the extent of population asbestos exposure beyond the 1980s.

The methodological basis for the projections are described in detail at:

[www.hse.gov.uk/research/rrhtm/rr728.htm](http://www.hse.gov.uk/research/rrhtm/rr728.htm)

An earlier project to investigate alternative models was published in 2011 and is available at:

[www.hse.gov.uk/research/rrhtm/rr876.htm](http://www.hse.gov.uk/research/rrhtm/rr876.htm)

## Other statistics on mesothelioma

- Mesothelioma Mortality in Great Britain by Geographical area, 1981–2019  
[www.hse.gov.uk/statistics/causdis/mesothelioma/mesoarea.pdf](http://www.hse.gov.uk/statistics/causdis/mesothelioma/mesoarea.pdf) results are also available as interactive maps available at: <https://arcg.is/1qO0G40>.
- Mesothelioma Occupation Statistics – male and female deaths aged 16-74 in Great Britain 2011-2019 and 2001-2010  
[www.hse.gov.uk/statistics/causdis/mesothelioma/mesothelioma-mortality-by-occupation.pdf](http://www.hse.gov.uk/statistics/causdis/mesothelioma/mesothelioma-mortality-by-occupation.pdf)
- Excel tables – male and female – 2011-2019 and 2001-2010  
[www.hse.gov.uk/statistics/tables/mesooccupation.xlsx](http://www.hse.gov.uk/statistics/tables/mesooccupation.xlsx).
- Mesothelioma occupation statistics for males and females aged 16-74 in Great Britain, 1980-2000 [www.hse.gov.uk/statistics/pdf/occ8000.pdf](http://www.hse.gov.uk/statistics/pdf/occ8000.pdf)

## References

1. Rake C, Gilham C, Hatch J, et al. Occupational, domestic and environmental mesothelioma risks in the British population: a case control study. *British Journal of Cancer* 2009;100(7):1175-83.
2. Gilham C, Rake C, Hodgson J at al. Past and current asbestos exposure and future mesothelioma risks in Britain: The Inhaled Particles Study (TIPS). *International Journal of Epidemiology* 2018;47(6):1745-1756.
3. Hodgson J, McElvenny D, Darnton A. The expected burden of mesothelioma mortality in Great Britain from 2002 to 2050. *Br J Cancer* 2005;92(3):587-93.

## **Annex 1 – Impact of COVID-19**

### **Assessment of the impact of COVID-19 on deaths occurring in 2019 registered in 2020 and 2021**

These statistics include all deaths that mention mesothelioma anywhere on the death certificate (not just as the underlying cause) that occurred in 2019 but which could have been registered any time up until the end of March 2021.

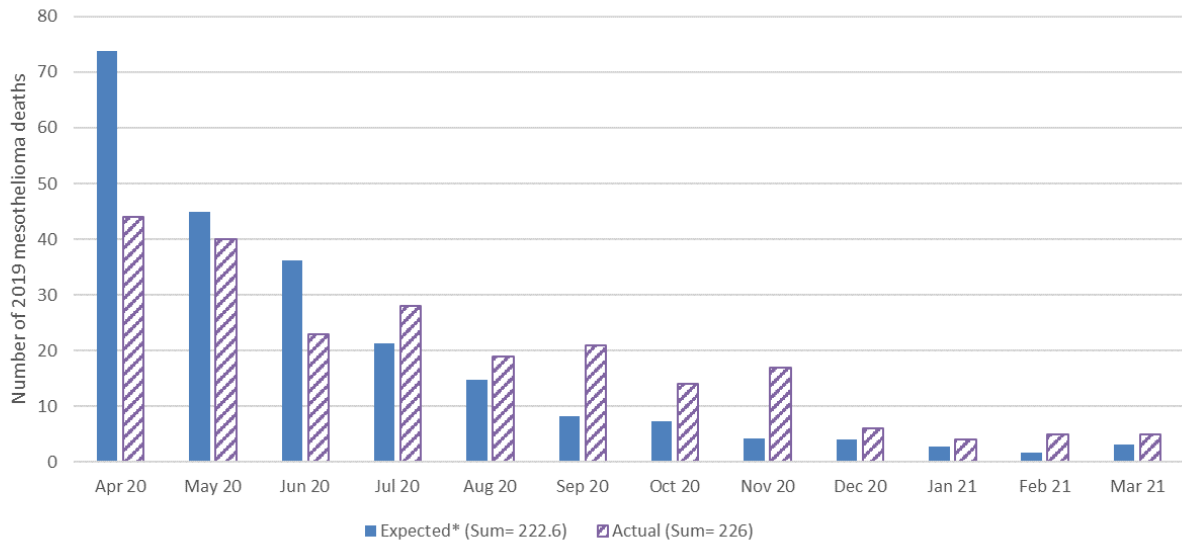
Based on data for deaths occurring during the five-year period 2014-18, around 76% of mesothelioma deaths were registered by the end of December of the year in which the death occurred, with 24% registered the following year, and 0.3% registered in the first three months of the year after that (up to the end of March, 15 months after the end of the year in which the death occurred). Very few deaths are usually registered after this point, which is the cut-off for inclusion in the statistics when they are first released.

An analysis of late registrations for mesothelioma deaths occurring in 2019 shows that fewer than expected were registered during April to June 2020, the period coinciding with the first wave of the COVID-19 pandemic – see Figure A1.1 below. This may have been caused by pressures on the death certification system. However, in subsequent months more deaths were registered than expected so that by March 2021 the cumulative number of late registrations was similar to the number expected based on 2014-18 figures.

The provisional figure for mesothelioma deaths in 2019 will be updated to take account of any deaths registered beyond March 2021 at the time of subsequent statistical releases. Although a disproportionate increase in the number of late registrations beyond March 2021 cannot be ruled out, this analysis suggests this is not likely to have a large impact on the provisional figure for 2019 published here.



Mesothelioma statistics for Great Britain, 2021



\*Expected distribution based on deaths registered in each of the months 16-27 (where month 1 is counted as January of the year in which the death occurred) as a proportion of the total deaths registered in months 1-15; average based on deaths occurring in 2014-18 applied to deaths in 2019.

Figure A1.1: Comparison of expected and actual distribution of late mesothelioma registrations, April 2020-March 2021

## **Annex 2 – Cancer registrations**

### **Mesothelioma deaths and cancer registrations in England, Wales and Scotland**

Figures A2.1 and A2.2 compare mesothelioma mortality with cancer registrations for mesothelioma for the period from 2001 to 2018 for England and Wales, and 2001 to 2019 for Scotland.

During the period 2001 to 2018, there were 36,052 male and 7,326 female registrations in GB where the cancer site was recorded as mesothelioma (C45), compared with 34,367 deaths among males and 6,532 among females (excluding a small number of those resident outside Great Britain).

Annual cancer registrations are typically slightly higher than the number of mesothelioma deaths occurring in each year. A number of factors potentially account for the differences between the two series, including: variation in the time between date of cancer registration and death with some individuals with mesothelioma surviving for substantially longer than is typically the case, misdiagnosis of mesothelioma, and mesothelioma not being mentioned on some deaths certificates where it should have been. However, the close association between the two series suggests that these effects are relatively small, and that mesothelioma continues to be rapidly fatal in most cases.

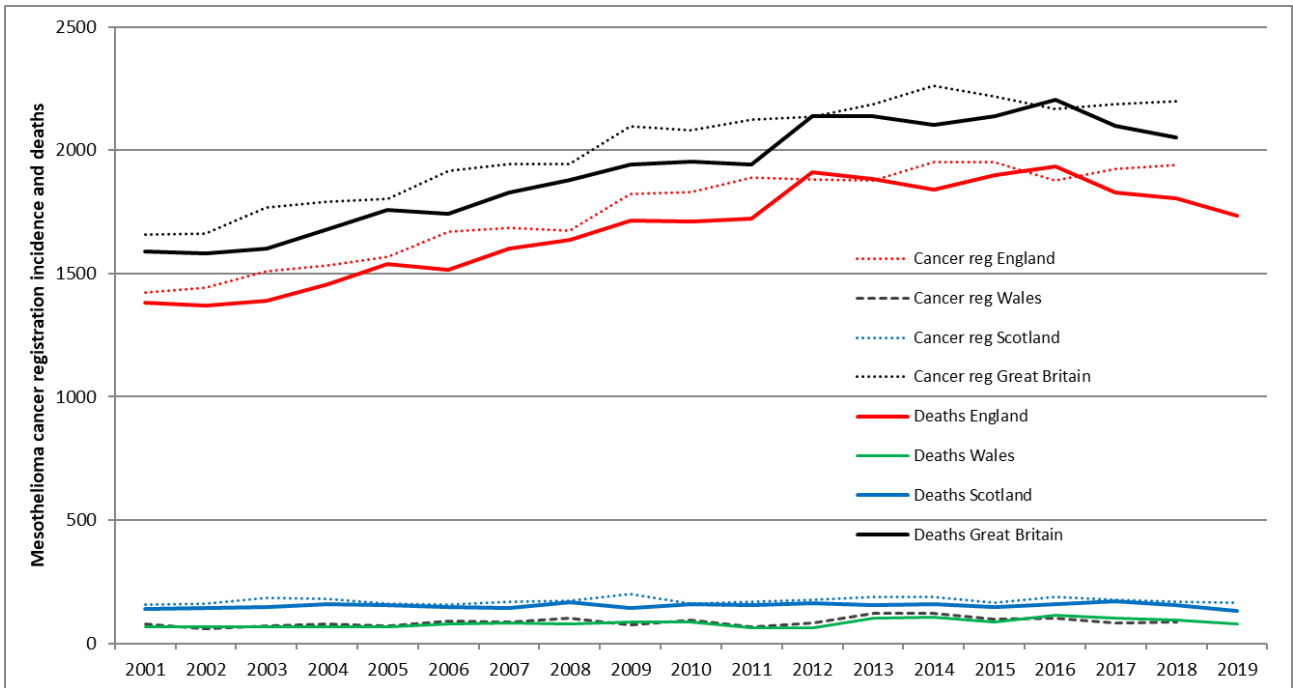


Figure A2.1 – Male mesothelioma cancer registrations and deaths for the time period 2001-2019

Sources: Public Health England, Public Health Wales, and Public Health Scotland (cancer registrations) and HSE Mesothelioma Register (deaths).

Note: cancer registration statistics for 2018 in Wales are not yet available; the GB cancer registrations total for 2018 includes England and Scotland only.

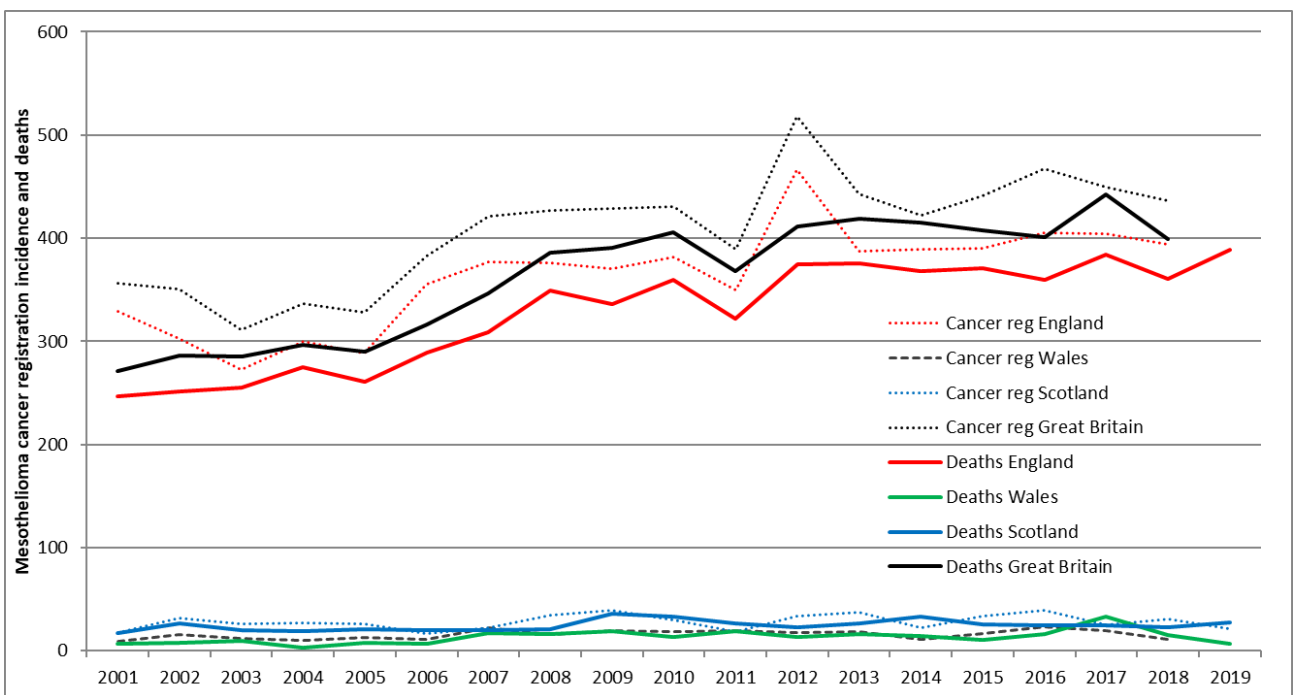


Figure A2.2 – Female mesothelioma cancer registrations and deaths for the time period 2001-2019

Sources: Public Health England, Public Health Wales, and Public Health Scotland (cancer registrations) and HSE Mesothelioma Register (deaths).

Note: cancer registration statistics for 2019 in England and Wales are not yet available.

## 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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Details of OSR reviews undertaken on these statistics, quality improvements, and other information noting revisions, interpretation, user consultation and use of these statistics is available from [www.hse.gov.uk/statistics/about.htm](http://www.hse.gov.uk/statistics/about.htm)

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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