

Occupational Asthma

Occupational Asthma in Great Britain

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Summary

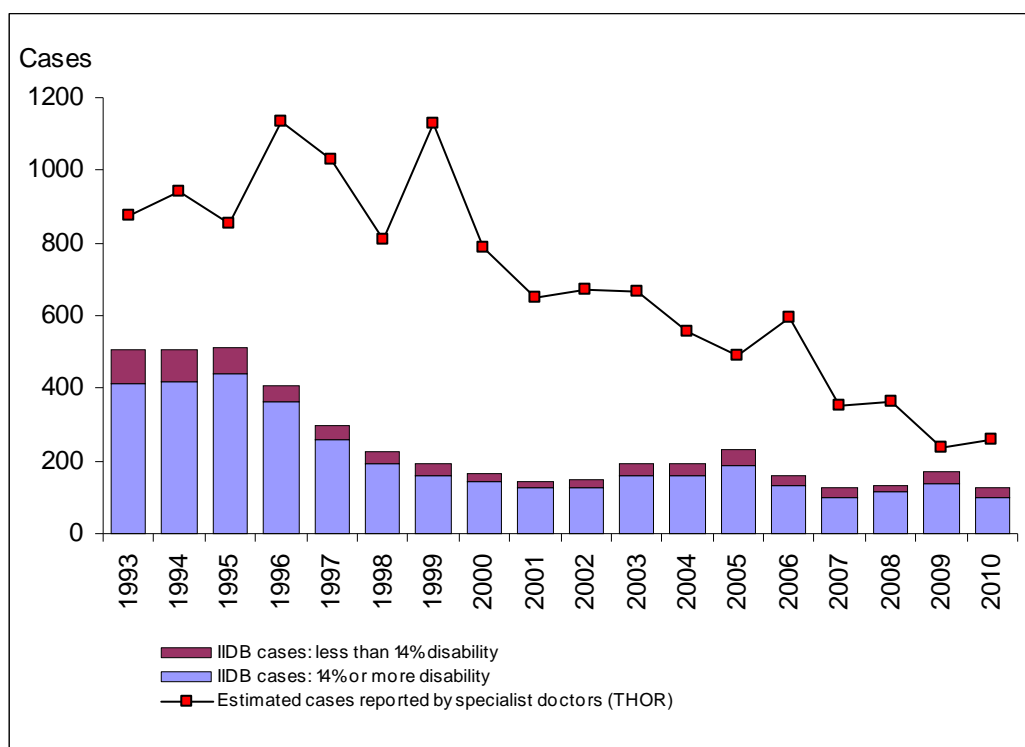
The information in this document relates to Health and Safety statistics for 2010/11. The document can be found at: www.hse.gov.uk/statistics/causdis/asthma/index.htm

During the last decade, our data sources suggest there has been an overall decrease in work-related asthma.

The latest information shows:

- Each year there were about 23 new cases of work-related respiratory disease per 100,000 workers during 2008-2010, according to reports by GPs (THOR-GP).
- This suggests about 7000 new cases per year – and a substantial number of these will be asthma cases caused or made worse by work.
- Reports of more serious cases of occupational asthma from specialist doctors suggests there has been a reduction in the number of new cases per year over the last decade (THOR-SWORD).
- About 30,000 people currently report they are suffering from breathing or lung problems caused or made worse by their work (LFS).
- The most common causes of occupational asthma are isocyanates, and flour/grain (THOR-GP).

Figure 1: Occupational asthma in Great Britain, 1993-2010



Introduction

Individuals with asthma have chronic inflammation in the bronchi (air passages). As a consequence the bronchial walls swell causing the bronchi to narrow, which can lead to breathlessness. Muscles around the air passages also become irritable so that they contract, causing sudden worsening of symptoms in response to various stimuli, including exposures encountered at work. The inflammation can also make mucus glands in the bronchi produce excessive sputum which further blocks up already narrowed air passages. If the inflammation is not controlled with treatment, as well as causing acute attacks, it can lead to permanent narrowing and scarring of the air passages¹.

There is no universally accepted definition of "occupational asthma". It can be defined as adult asthma caused by workplace exposures and not by factors outside the workplace. The wide definition of "work-related" asthma includes all cases where there is an association between symptoms and work, and includes "work aggravated asthma", meaning pre-existing or coincidental new onset adult asthma which is made worse by non-specific factors in the workplace.

Asthma caused by specific work factors is of two broad types: "allergic occupational asthma" and "irritant-induced occupational asthma". The former accounts for the majority of cases and typically involves a latency period between first exposure to the specific cause (the "respiratory sensitiser") in the workplace and the onset of symptoms. The latter typically occurs within a period of hours following exposure to high levels of an irritant gas, fume or vapour in the workplace.

The causal mechanisms for occupational asthma vary from one substance to another. Because the range of industries which use substances with the potential to cause asthma is quite broad, and not all employees in these industries will necessarily be exposed, it is difficult to estimate with any confidence the total number of workers at risk. Estimation of the overall scale of the disease, trends in incidence, and identification of high risk occupations and activities, relies on a variety of sources of data each with different strengths and weaknesses.

Overall scale of occupational asthma

Prevalence

Estimates of the prevalence of occupational illnesses in Great Britain - meaning the total number of people ill at any given time - may be derived from the Self-reported Work-related Illness (SWI) module of questions included annually in the national Labour Force Survey (LFS). Latest results estimate that in 2010/11, 31 000 people who worked in the last 12 months had "breathing or lung problems" caused or made worse by work (with a 95% Confidence Interval: 22 000 to 41 000) [See table SWIT3W12 www.hse.gov.uk/statistics/lfs/swit3w12.xls]. This estimate is likely to include substantial numbers of individuals with respiratory diseases other than occupational asthma such as Chronic Obstructive Pulmonary Disease (COPD see www.hse.gov.uk/statistics/causdis/copd/index.htm). The 1995 survey collected more detailed information about diseases categories and about 70 percent of those reporting work related lower respiratory disease described symptoms consistent with asthma². The LFS surveys rely on self diagnosis and responses given therefore depend on lay people's perceptions of medical matters.

Incidence

A number of data sources provide information about the incidence of work-related and occupational asthma in Great Britain – i.e. the number of newly diagnosed cases each year. Information about cases of occupational asthma referred to consultant chest physicians or occupational physicians is available from The Health and Occupation Reporting (THOR) network SWORD and OPRA schemes, and information about newly assessed cases for Industrial Injuries and Disablement Benefit (IIDB) is available from the Department for Work and Pensions (DWP). These sources provide useful information about high risk occupations and particular causal agents for occupational asthma, but both underestimate the overall incidence of work-related asthma. More comprehensive estimates of work-related respiratory disease in general (i.e. not just asthma) are available based on reporting by general practitioners in the THOR-GP scheme and from the LFS. However, the smaller number of actually reported cases in both of these sources does not provide a good basis for detailed statistics for population sub-groups.

During 2008-2010 there were an estimated 23 new diagnoses of work-related respiratory disease per 100,000 workers per year based on reports within the THOR-GP scheme (Table THORGP01). This is equivalent to approximately 7000 new diagnoses of respiratory disease each year during this period. This is somewhat lower than – though of a similar order to – the estimated incidence of "breathing or lung problems" from the LFS: in 2010/11 sample numbers were too small to provide reliable estimates, but in 2009/10 there were an estimated 9 000 to 22,000 incident cases among those working in the 12 months, a rate of between 31 to 75 cases per 100,000 workers (see table SWIT6W12 www.hse.gov.uk/statistics/lfs/swit6w12.xls).

In 2010, there were 125 cases of occupational asthma assessed for disablement benefit under the IIDB scheme (see table IIDB01 www.hse.gov.uk/statistics/tables/iidb01.xls). This compares with 261 estimated cases based on reporting by respiratory and occupational physicians reporting to the SWORD and OPRA schemes within the THOR network (see table THORR01 www.hse.gov.uk/statistics/tables/thorr01.xls). A number of factors may account for the differences between these figures. Individuals may be unaware of the IIDB scheme, and it may tend to pick up fewer cases arising from substances or in occupational settings where the link with asthma is less well established or well known. Furthermore, the self-employed are not covered by the IIS and level of compensation available for even those who are severely disabled may not provide sufficient incentive for all eligible individuals to apply.

Estimates of proportions of cases of asthma attributed to workplace exposures estimated from epidemiological studies also suggest that the incidence of work-related asthma may be an order of magnitude higher than estimated from SWORD and OPRA. For example, a recent European population-based study estimated the incidence of occupational asthma (including irritant-induced occupational asthma) to be 25 to 30 cases per 100,000 people per year³ and other studies have estimated that occupational factors account for approximately 9-15% of asthma cases in adults of working age⁴. Applying these latter proportions to the estimated incidence of adult asthma from a recent review (about 5 cases per 1000 person-years)⁵ would imply rates of occupational asthma in Great Britain of the order of 45 to 75 per 100,000 workers per year. However, there is some uncertainty about whether estimates based on studies in other countries are directly applicable to the Great Britain population.

Age, sex and region

Tables THORR02 (www.hse.gov.uk/statistics/tables/thorr02.xls) and THORR03 (www.hse.gov.uk/statistics/tables/thorr03.xls) show the distribution of the cases of occupational respiratory disease reported to SWORD and OPRA during 2008-2010 by age and by country, respectively. The most common age groups for new cases of occupational asthma were 35-44 and 45-54 years - accounting for 27% and 30% of the total respectively. Table THORR03 (www.hse.gov.uk/statistics/tables/thorr03.xls) shows that during 2008-2010, 88 per cent of reported occupational asthma cases were in England, with 10 per cent in Scotland and 3 per cent in Wales.

Other information from reports by GPs

The total number of diagnoses of work-related ill health recorded by participating general practitioners in the UK surveillance scheme (THOR GP www.hse.gov.uk/statistics/sources.htm#thor) in 2010 was 3181, of which 51 (1.6%) were respiratory conditions. This compares with a total of: 1560 diagnoses in 2006 (the first year of the scheme), of which 54 cases (3.5%) were respiratory conditions; 1460 diagnoses in 2007, of which 41 (2.8%) were respiratory conditions; and 1318 diagnoses in 2008, of which 17 (1.3%) were respiratory conditions; and 1364 diagnoses in 2009, of which 27 (2.0%) were respiratory conditions. Respiratory diagnoses were less likely to be issued with a sickness notification and tended to be associated with shorter periods of sickness absence than average for all diagnoses (see Table

THORGP01 www.hse.gov.uk/statistics/tables/thorgp01.xls,

THORGP02 www.hse.gov.uk/statistics/tables/thorgp02.xls,

THORGP03 www.hse.gov.uk/statistics/tables/thorgp03.xls,

THORGP04 www.hse.gov.uk/statistics/tables/thorgp04.xls,

THORGP05 www.hse.gov.uk/statistics/tables/thorgp05.xls,

THORGP06 www.hse.gov.uk/statistics/tables/thorgp06.xls,

THORGP07 www.hse.gov.uk/statistics/tables/thorgp07.xls .)

Working days lost

In 2010/11 555 000 working days were lost due to breathing or lung problems (95% CI: 0.0 - 1.2 million), according to the LFS. This corresponds to an average number of days lost per case of 17.7 (95% CI: 0.0 - 37.6) compared with 19.2 for all self-reported work-related illness (95% CI: 17.1 - 21.3).

Trends in incidence

Statistics based on reports of occupational asthma within the THOR scheme are affected by various factors including the number and type of participating specialist and occupational physicians, their reporting habits, and by seasonal effects associated with the time of year they report. This makes assessment of trends based on total annual estimated cases problematic since these factors - as well as the true incidence - can vary over time. However, statistical modelling by the University of Manchester showed statistically significant downward trends in the incidence of occupational asthma over the period 1999-2010 after taking account of some of these effects. The analyses do not take account of a possible tendency for reporters to include fewer cases than they should once they have been reporting for some time (so called "reporting fatigue"). If the data were affected by reporting fatigue this would tend to reduce any observed downward trends. Annual estimated cases of occupational asthma based on the THOR scheme are shown in Figure 1 above.

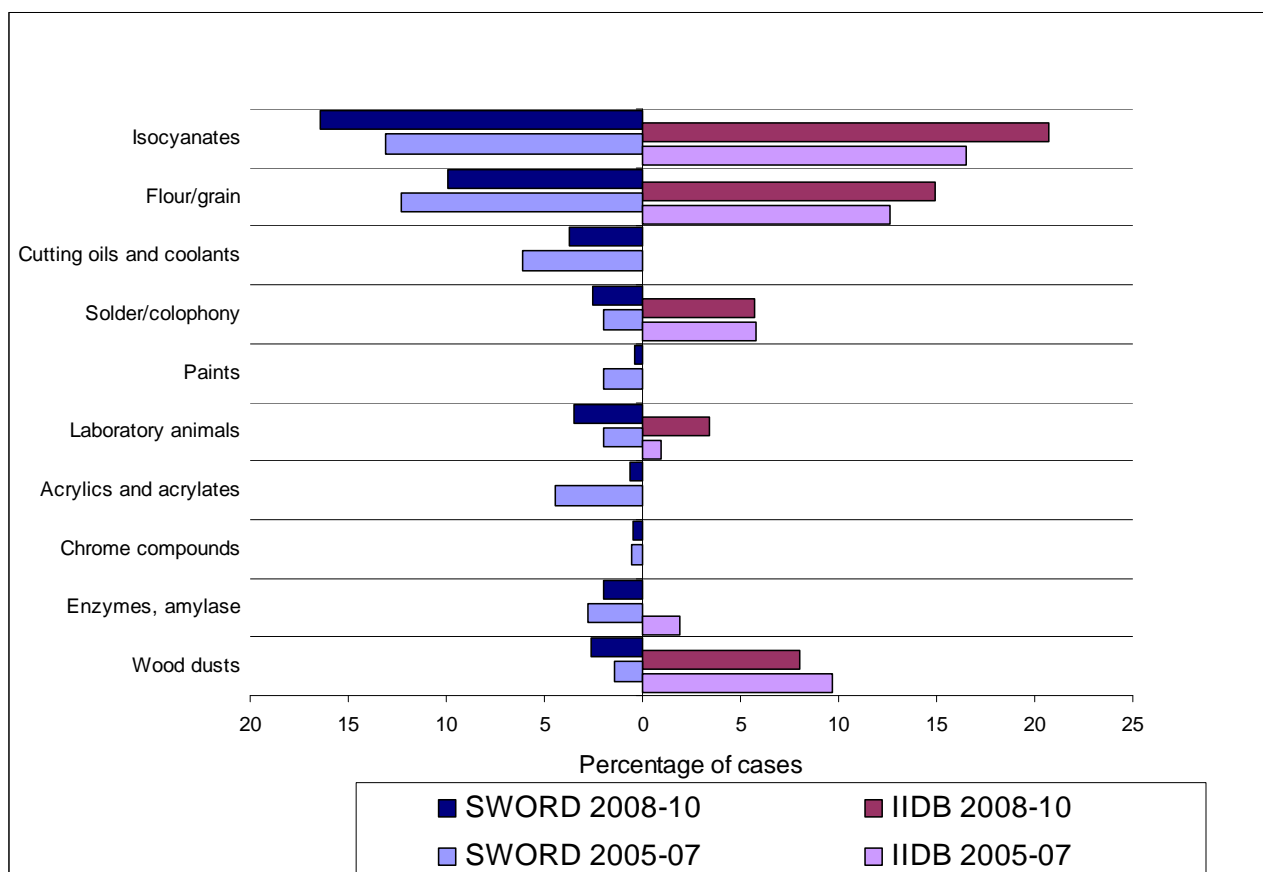
The current list of agents for which benefit is payable within the IIDB scheme has remained constant for the period shown in Figure 1 with one minor exception - the addition of latex to the list of agents in March 2005. However this has had little impact on the overall numbers, with fewer than 10 assessed cases each year (Table IIDB08 www.hse.gov.uk/statistics/tables/iidb08.xls). During the first part of the period shown in Figure 1, the annual number of assessed cases fell quite strongly - particularly during 1997 and 1998. This may be due to changes in DWP data collection procedures, which took effect in the course of 1997 and which continue to affect levels of reporting of assessed cases. After a gradual rise in annual cases since 2001, the number fell by 30% in 2006 and fell again by 22% in 2007, but rose by 12% and 21% in 2008 and 2009 respectively, falling back in 2010 to 2007 levels. The number of cases in the open category (which includes cases due to any other sensitising agent where claimants have been able to demonstrate that this was the likely cause) has remained fairly constant over the last 10 years at 30-40 cases per year (but was slightly lower in 2010 and higher in 2005).

The LFS shows that the incidence rate of self-reported "breathing or lung" problems fell between 2001/02 and 2004/05 but has remained broadly level since then. (The sample numbers are too small to provide reliable estimates in 2010/11.)

Causal agents for occupational asthma¹

Figure 2 shows the most commonly cited agents for cases of occupational asthma in the SWORD and IIDB schemes during the two most recent three year periods. Both SWORD and the IIDB scheme figures continue to implicate isocyanates and flour/grain as the agents responsible for the highest proportion of new cases of occupational asthma. Cutting oils and coolants also account for a substantial proportion of SWORD cases. Wood dusts continue to account for a substantial proportion of IIDB cases in contrast to SWORD, where these account for a much smaller proportion. Tables THORR06 (www.hse.gov.uk/statistics/tables/thorr06.xls) and IIDB09 (www.hse.gov.uk/statistics/tables/iidb09.xls) show a full breakdown of the THOR and IIDB cases by agent.

Figure 2: Most common agents for occupational asthma, 2005-2007 and 2008-2010



¹ Because the coverage of British industry by occupational physicians varies by type of industry and occupation the chest physician (SWORD www.hse.gov.uk/statistics/sources.htm#thor) data alone should be used for making comparative statements about different agents, industries and occupations. Given that there is not thought to be a great deal of overlap in cases reported in the two schemes, data from both chest physicians (SWORD) and occupational physicians (OPRA www.hse.gov.uk/statistics/sources.htm#thor) can be combined to give the best available total estimate for any particular subgroup.

Occupation and industry¹

Industrial and occupational analyses of SWORD/OPRA cases give an insight into the types of workplaces and activities that are currently causing occupational asthma in the British workforce. THORR04 (www.hse.gov.uk/statistics/tables/thorr04.xls) and THORR05 (www.hse.gov.uk/statistics/tables/thorr05.xls) show the average number of SWORD and OPRA cases reported per year during the period 2007-2009, by occupation and industry respectively, together with estimated rates per 100 000 workers. These latter rates are calculated by using a denominator based on the number of workers identified in the Labour Force Survey in the relevant occupational or industrial sector. Thus the denominator is representative of the whole sector whereas the number of cases reported is limited by underreporting (see above). As a consequence the rates identified should be seen as minimal estimates. Numbers and rates for each major occupational group and industrial section are shown, and where the number of actual cases over a three year period is greater than or equal to 10, case numbers and rates are shown for the unit group for occupations, and divisions for industry.

Caution must be applied when interpreting the rates at the occupational unit group and industry division level of detail, as there may be occupations and industries that are relatively small; therefore the actual rates of disease incidence may be high, but they are not included in SWORD/OPRA tables because the number of cases is below the inclusion threshold.

SWORD data in THORR04 shows that the overall occupational disease incidence is 1 case per 100 000 per year. Two major groups' rates are greater than this figure: 'Process, Plant and Machine Operatives' (3 cases per 100 000 per year) and 'Skilled Trade Occupations' (2 cases per 100 000 per year). For unit groups, 'vehicle paint sprayers' (66 cases per 100 000 per year), and 'bakers and flour confectioners' (61 cases per 100 000 per year) have the highest rates of occupational asthma as seen by chest physicians. Changes in rates for individual occupations over time are difficult to interpret. Particular outbreaks of occupational asthma will also have a large impact on figures at this level. However, these two occupations have consistently had among the highest rates of occupational asthma in recent years.

SWORD data in THORR05 shows that the overall industrial disease incidence is 1 case per 100 000 per year (now using SIC2007). Two section rates are greater than this figure; 'Manufacturing' (4 cases per 100 000 per year) and 'Electricity, Gas, Steam and Air Conditioning Supply' (3 cases per 100 000 per year). The industry division with the highest rate of occupational asthma as seen by chest physicians was 'Manufacture of basic metals' (16 cases per 100 000 workers per year) followed by the 'Manufacture of motor vehicles, trailers and semi-trailers' (13 cases per 100 000 workers per year). Particular outbreaks of occupational asthma will also have a large impact on figures at this level.

¹ Because the coverage of British industry by occupational physicians varies by type of industry and occupation the chest physician (SWORD) data alone should be used for making comparative statements about different agents, industries and occupations. Given that there is not thought to be a great deal of overlap in cases reported in the two schemes, data from both chest physicians (SWORD www.hse.gov.uk/statistics/sources.htm#thor) and occupational physicians (OPRA) can be combined to give the best available total estimate for any particular subgroup.

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