

Work-related Chronic Obstructive Pulmonary Disease in Great Britain 2016

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Great Britain

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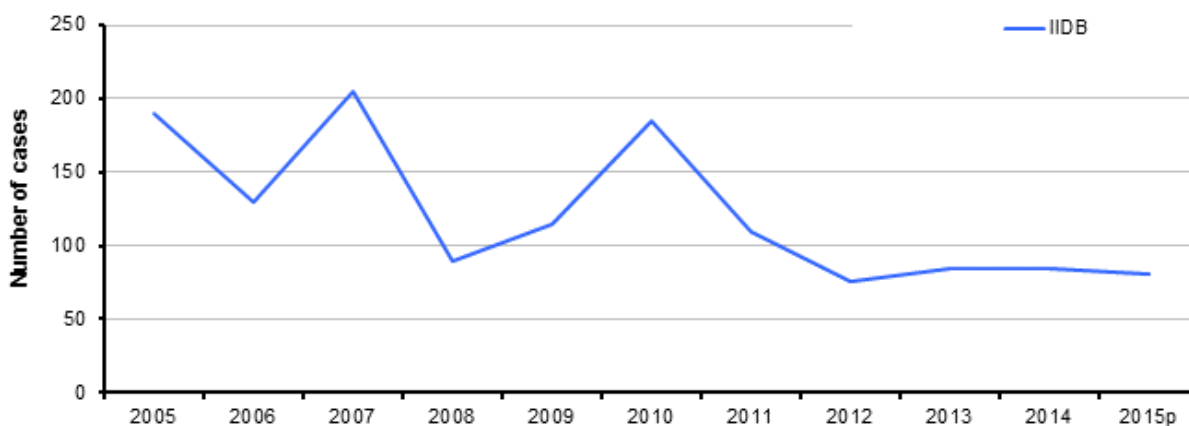
Summary

The document can be found at: www.hse.gov.uk/statistics/causdis/copd/

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.

- COPD is common in later life: it is likely that over a million individuals currently have the disease in GB and there are over 25,000 deaths each year.
- The most important cause of COPD is smoking, but past exposures to fumes, chemicals and dusts at work will have also contributed to causing many currently occurring cases.
- Research suggests that about 15% of COPD can be attributed to workplace exposures (Blanc and Toren 2007), which would be equivalent to about 4,000 COPD deaths currently each year in GB.
- Workplace exposures likely to contribute to COPD include various dusts (including, coal, grain, and silica) as well as certain fumes and chemicals (including welding fume, isocyanates, and polycyclic aromatic hydrocarbons).
- One recognised occupational group with a higher risk of COPD is coal miners. Figure 1 shows the annual number of new cases of COPD assessed for IIDB among former miners.

Figure 1: Annual new cases of COPD among former coal miners assessed for IIDB in Great Britain, 2005-2015



Background

Chronic Obstructive Pulmonary Disease (COPD) is a term used to describe a progressive and irreversible decline in lung function which results in reduced airflow in the lungs. It includes two main diseases:

- Chronic Bronchitis. Bronchitis is where inflammation narrows the bronchi (the tubes carrying air to and from the lungs) and causes chronic bronchial secretions; and
- Emphysema - a permanent destructive enlargement of the airspaces within the lung without any accompanying fibrosis of the lung tissue.

Asthma may also be included within the term COPD if there is some degree of chronic airway obstruction.

COPD is a long-latency disease – meaning that cases tend to develop a number of years after first exposure to the particular causative agents – and in many cases symptoms become manifest during mid-life or later. The most important causative factor is smoking – but others include occupational exposures to fumes, chemicals and dusts, as well as genetic susceptibility and environmental pollution¹.

COPD accounts for a substantial number of deaths in Great Britain: it has consistently given rise to between 25,000 and 30,000 deaths each year over the last 25 years. The number of people suffering from the disease at any given time (prevalence) is difficult to estimate because of different definitions of the disease and under-diagnosis. One estimate suggested that there are currently 900,000 diagnosed cases in England and Wales and that, allowing for under-diagnosis, the true prevalence could be 1.5 million². More recently, the Health Survey for England in 2010 estimated that around 6% of adults have probable airflow limitation consistent with COPD, equivalent to around 3 million cases in Great Britain currently³.

COPD attributed to occupational exposures

Smoking is a particularly important factor for COPD, but occupational exposures to dusts gases and fumes, environmental air pollution and certain other factors also play a role. Such factors will typically work together to cause cases of disease. This means that individual cases cannot be separated into those due to one cause, say, smoking, and those due to another, say, occupational exposures: in most cases where occupational exposures were a cause, smoking will also have been a cause. However, the number of work-related COPD cases can be estimated from epidemiological research. This does not mean that workplace exposures were the sole cause of these cases; rather, the estimate represents the number of cases that would not have occurred had the workplace exposures not occurred.

The estimated proportion of COPD attributed to workplace exposures based on a recent review of epidemiological studies in various countries was 15%. This is similar to estimates from an earlier review.^{4,5} None of the studies in these reviews were based in Great Britain, however, the estimate is likely to be broadly applicable to the British population suggesting that there could be around 4000 annual COPD deaths attributable to workplace exposures in the past. Applying the figure to estimates of people currently with COPD can be considered to be at best indicative of the prevalence of occupational COPD in GB.

Various agents and occupational groups have been implicated as being associated with an increased risk of COPD. Coal dust exposure through mining activities is an established cause of the disease, and cases of chronic bronchitis and emphysema (CBE) in coal workers with a specified level of lung function impairment and at least 20 years underground exposure have been eligible for compensation under the Department for Work and Pensions Industrial Injuries and Disablement Benefit (IIDB) scheme since 1993. This scheme also compensates those with emphysema arising from exposure to cadmium.

Epidemiological studies have identified associations between a number of other occupational exposures, including cotton dust, grain dusts and endotoxin, flour dust, welding fumes, other minerals - such as silica and man-made vitreous fibres, other chemicals - such as isocyanates, cadmium, vanadium, and polycyclic aromatic hydrocarbons (PAHs) - and wood dust¹. The strength of the evidence for whether these associations indicate causal relationships between exposure and COPD is stronger for some agents than others.

A recent analysis of variation in the prevalence of COPD by current occupational group based on the UK Biobank study – a large population based study of the UK population – identified a number of occupations for which the prevalence of COPD was significantly higher by at least 50% compared with all other occupations, including: seafarers (and other boat operatives), coal mine operatives, industrial cleaners, roofers, packers/bottlers/canners/fillers, and horticultural trades⁶. Additional analyses of this population are currently being carried out to further investigate the main sources of occupational COPD risk in Great Britain.

Compensation claims and other data sources

Assessments for Industrial Injuries Disablement Benefit (IIDB) and reports by respiratory and occupational physicians (THOR-SWORD) substantially understate the annual number of new cases of work-related COPD.

Several thousand cases of chronic bronchitis and emphysema among coal miners were assessed in the initial period following its specification as a prescribed disease in 1993 within the IIDB scheme, and changes to the prescription criteria as well as heightened publicity associated with successful civil litigation against the former British Coal Board subsequently led to a large increase in annual assessed cases the late 1990s.

Over the period 2005-2015 the annual number of cases has been much lower, as shown in Figure 1. There were 80 cases in 2015 compared with 85 in 2014 and an annual average of around 120 over the period 2005-2015. There have been approximately 5 new cases of emphysema due to cadmium poisoning in the period 2003-2014 within the IIDB scheme (Table IIDB05 www.hse.gov.uk/statistics/tables/iidb05.xlsx).

Cases of chronic bronchitis and emphysema in relation to any occupational exposure may also be recorded by occupational and chest physicians under the SWORD surveillance scheme within The Health and Occupation Reporting (THOR) network. The numbers of new cases reported each year have typically been substantially lower than the numbers of IIDB claims. In 2015 there were 17 reports by chest physicians in the SWORD scheme compared with 17 in 2014 and a ten year average of 32 (Table THORR01 www.hse.gov.uk/statistics/tables/thorr01.xlsx). This suggests that, even for more serious cases of chronic bronchitis and emphysema – that is, those more likely to be seen by specialist chest physicians – few are being attributed to occupational causes.

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