OCCUPATIONAL DISEASE INDICATORS

July 2014

safe work australia

Safe Work Australia

Occupational Disease Indicators

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Contents

Abbreviations

ACIM	Australian Cancer Incidence and Mortality books
DDB	New South Wales Dust Diseases Board
NDS	National Data Set for Compensation-based Statistics
NHMD	National Hospital Morbidity Database
NNDSS	National Notifiable Disease Surveillance System

Summary of findings

Between 2000–01 and 2010–11, decreasing trends were observed for five of the eight disease groups: Musculoskeletal disorders; Infectious and parasitic diseases; Respiratory diseases; Contact dermatitis; and Cardiovascular diseases. Three of the eight priority disease groups did not display a clear overall trend of increase or decrease: Mental disorders; Noise-induced hearing loss; and Occupational cancers. The summary results presented below are primarily based on workers' compensation data, which are supplemented by hospitalisation and disease notification data for selected diseases.

Result	Disease	Findings
↓	**Musculoskeletal disorders**	The rate of workers' compensation claims for musculoskeletal disorders caused by body stressing decreased by 31% between 2000–01 and 2010–11.
→	**Mental disorders**	The rate of workers' compensation claims for mental disorders decreased from its peak in 2002–03 until 2008–09 when it began increasing.
→	**Noise-induced hearing loss**	From 2002–03, the rate of workers' compensation claims for noise-induced hearing loss remained relatively stable before increasing from 2006–07 and declining after 2009–10.
↓	**Infectious and parasitic diseases**	There was a 53% decline in the rate of workers' compensation claims for infectious and parasitic diseases from a peak in 2003–04 to 2010–11. This decline was also observed in the notification rate for specified zoonoses.
↓	**Respiratory diseases**	Although the hospitalisation rate for respiratory diseases does not show a clear trend, the rate of workers' compensation claims declined by 49% between 2000–01 and 2010–11.
↓	**Contact dermatitis**	The rate of workers' compensation claims for contact dermatitis declined by 48% between 2000–01 and 2010–11.
↓	**Cardiovascular diseases**	The rate of workers' compensation claims for cardiovascular diseases declined by 51% from a peak of 49 claims per million employees in 2002–03 to a low of 24 in 2010–11.
→	**Occupational cancers**	The rate of workers' compensation claims for occupational cancers decreased from a peak of 66 claims per million employees in 2003–04 to a low of 48 in 2008–09 and has remained relatively stable thereafter.

Introduction

Occupational diseases

One of Safe Work Australia's functions is to collect, analyse and publish data and other information in order to inform the development and evaluation of work health and safety policies. As part of this function, Safe Work Australia seeks to establish and monitor credible baseline indicators of occupational diseases. Occupational diseases are diseases that are caused or aggravated by exposure to workplace hazards. Some occupational diseases have short latencies (i.e. diseases that manifest a short period of time after exposure) while others have long latencies (i.e. diseases that manifest a long period of time after exposure).

The *Australian Work Health and Safety Strategy 2012–22* (the Australian Strategy) was developed through consultation with governments, industry, unions and the public. It identified six work-related disorder categories as national priorities in the first five years of the Strategy. These were chosen based on the severity of consequences for workers, the number of workers estimated to be affected and the existence of known prevention options. The priority work-related disorder categories are:

- musculoskeletal disorders
- mental disorders
- cancers (including skin cancer)
- asthma
- contact dermatitis, and
- noise-induced hearing loss.

The biennial *Occupational Disease Indicators* reports support the objectives of the Australian Strategy by providing baseline indicators and trends in priority occupational diseases, which can assist in gauging progress towards targets identified in the strategy.

The Australian Strategy follows the previous *National Occupational Health and Safety Strategy 2002–12* under which significant occupational health and safety outcomes were achieved. They include a 42% reduction in the work-related injury fatality rate and a 28% reduction in the incidence of injury and musculoskeletal disorder claims.

Data for the indicators published in this report come from five sources:

- National Data Set for Compensation-based Statistics (NDS)
- New South Wales Dust Diseases Board (DDB)
- National Notifiable Disease Surveillance System (NNDSS)
- National Hospital Morbidity Database (NHMD), and
- Australian Cancer Incidence and Mortality books (ACIM).

The indicators in this report primarily rely on workers' compensation data from the NDS, which are augmented where possible with data from other sources. However, since most of the additional data sources (NNDSS, NHMD and ACIM) do not identify work-relatedness, they are only presented for diseases that are acknowledged to have a high attribution to hazards found in the work environment. Further details on the data sources used in this report can be found in 'Explanatory notes' on page 19.

Limitations of workers' compensation statistics

Unlike injury where there is usually a clear relationship between an incident and the workplace, most occupational diseases are multi-factorial in nature, with workplace exposures constituting one important part of the risk matrix. Because some diseases have long latency periods (e.g. cancers and pneumoconioses) and others are difficult to link to occupational exposures (e.g. cardiovascular and respiratory diseases), workers' compensation data significantly under-represent the actual incidence of occupational diseases.

For diseases with long latency periods, incidence rates based on workers' compensation claims may not be the most appropriate indicator of emerging trends because reductions in exposure to disease-causing agents may not lead to any reduction in the incidence rate of the disease until many years later. The rates presented in this report reflect the current working population, not the working population at the time of the exposure.

Changes over time in the pattern of workers' compensation claims for occupational diseases could be the result of many factors other than those directly associated with the disease. For example, campaigns to increase awareness of occupational diseases may result in increased claims while changes to legislation or standards may result in fewer accepted claims due to the application of higher acceptance thresholds.

The data used in this report represents workers' compensation claims that were accepted by workers' compensation authorities, not the total number of workers' compensation claims lodged. Consistent with all previous *Occupational Disease Indicators* reports, preliminary data are not included as they are likely to understate the total number of accepted claims. This report presents data up to 2010–11, the most recently available non-preliminary data.

Due to these limitations, the statistics presented in this paper are indicators only and should not be taken as representing the true incidence of occupational diseases in Australia. The main purpose of these data is to highlight changes in incidence rates over time.

Looking at current exposures

The data presented in this report mostly reflect occupational exposures to hazards that occurred in the past, which may no longer exist or are now well recognised and minimised. The *National Hazard Exposure Worker Surveillance Survey* was administered to gather information to guide decision-makers in the development of prevention initiatives that may reduce occupational disease. Further information on the survey and the analysis of specific hazards can be found on the Safe Work Australia website.

Differences between this and other Safe Work Australia reports

This report is the fifth in a series of biennial reports, the first of which was published in 2006. The first two *Occupational Disease Indicators* reports presented NDS workers' compensation data that were scoped to include only serious claims (a temporary claim that involves one or more weeks away from work or a permanent disability or a fatality). From the third report onwards the scope was changed to include all accepted NDS workers' compensation claims. The change was made because many disease claims involve less than one week away from work and would be excluded if the scope was restricted to serious claims only. This change means the NDS workers' compensation data presented in the first two reports are likely to be lower and are not directly comparable to the NDS workers' compensation data presented in subsequent reports, including this report.

Unlike some Safe Work Australia reports this report does not make adjustments for the undercount that occurs with short-term compensation claims. This undercount occurs because the period within which a compensation claim can be made differs by jurisdiction. For example in Western Australia an employee is covered from the first day of their injury or disease whereas in Victoria the employer has to fund the first 10 days of their employees' injury or disease. These employer-funded short-term claims should be notified to the relevant workcover authority and be counted among workers' compensation claims, but this is not always the case and short-term claims are known to be undercounted.

1 Musculoskeletal disorders

The condition

Musculoskeletal disorders cover a broad group of clinical disorders that impact the musculoskeletal system and include a wide range of inflammatory and degenerative conditions affecting muscles, tendons, ligaments, joints, peripheral nerves and supporting blood vessels. The intensity of these disorders and the associated impact on those affected vary greatly.

Skeletal disorders include: fractures; fracture of vertebral column with or without mention of spinal cord lesion; dislocation; arthropathies (disorders of joints); dorsopathies (disorders of the spinal vertebrae and intervertebral discs); osteopathies (disorders of the bones); chondropathies (disorders of the cartilage); and acquired musculoskeletal deformities. Muscular disorders include: strains and sprains of joints and adjacent muscles; disorders of muscle, tendons and other soft tissues; and hernia.

For this indicator, workers' compensation claims for musculoskeletal disorders are limited to those caused by body stressing, which excludes cases where the disorder was most likely an injury (due to a single event such as a fall or by being hit by an object).

Known causes and impacts

Workers' compensation data shows that in 2010–11 58% of all compensated claims for musculoskeletal disorders were the result of body stressing. This category includes: disorders arising from muscular stress while lifting, carrying, putting down objects or other ways of handling objects; stress from physical movements without handling an object; and stress from making repetitive movements.

The occupations with the highest rates of workers' compensation claims for musculoskeletal disorders over the three-year period 2008–09 to 2010–11 include: Ambulance officers & paramedics; Garbage collectors; Electrical & telecommunications trades assistants; Domestic housekeepers; Engine & boiler operators; Wood products factory hands; Meat & fish process workers; Paper products machine operators; Glass production machine operators; and Clay, stone & concrete processing machine operators.

Prevention policy

All jurisdictions publish guidance information on how to identify and manage the risk of injury to workers who perform manual tasks. While a manual task can be any physical activity requiring a person to use part of their body to perform their work, guidance information generally focuses on identifying and managing hazardous manual tasks that have a greater likelihood of causing injury.

The Heads of Workplace Safety Authorities regularly implements national campaigns on work health and safety issues and published *Delivering the Goods Safely—National Manual Tasks in Road Freight Campaign* in 2011. The campaign aimed to reduce manual handling (body stressing) injuries in the Retail, Wholesale and Transport & storage industries by focussing on the target sub-sectors of Road freight forwarding and Road freight transport, and their interface with supply chains.

Further information

National Hazard Exposure Worker Surveillance: Exposure to Biomechanical Demands, Pain and Fatigue Symptoms and the Provision of Controls in Australian Workplaces, Safe Work Australia, 2011.

Manual Handling Risks Associated With the Care, Treatment and Transportation of Bariatric (Severely Obese) Patients and Clients in Australia, Australian Safety and Compensation Council, 2009.

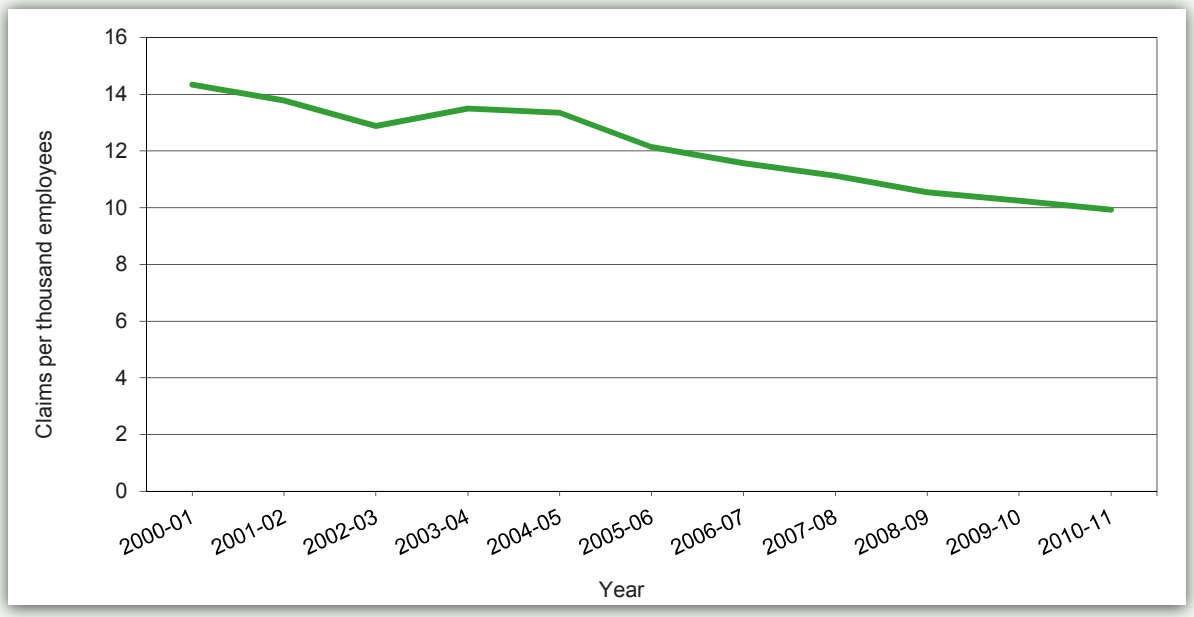
National Code of Practice for the Prevention of Musculoskeletal Disorders From Performing Manual Tasks At Work, Australian Safety and Compensation Council, 2007.

National Standard for Manual Tasks, Australian Safety and Compensation Council, 2007.

Research on the Prevention of Work-Related Musculoskeletal Disorders, Stage 1: Literature Review, Australian Safety and Compensation Council, 2006.

Work-Related Musculoskeletal Disease in Australia, Australian Safety and Compensation Council, 2006.

Rate of workers' compensation claims for musculoskeletal disorders: Claims per thousand employees, 2000–01 to 2010–11



Source: National Data Set for Compensation-based Statistics (NDS).

There was a downward trend in the rate of workers' compensation claims for musculoskeletal disorders caused by body stressing between 2000–01 and 2010–11. The rate fell by 31% from 14.3 claims per thousand employees in 2000–01 to 9.9 in 2010–11.

2 Mental disorders

The condition

In this report mental disorders refers to mental disorders caused by work-related mental stress. Mental stress itself is not a clinically diagnosable health condition, but a state of the individual that increases the risk of developing one or more of a wide range of physical and mental disorders.

Included under mental disorders are conditions such as anxiety, depression, nervous breakdown, phobias, and obsessive and compulsive symptoms.

Known causes and impacts

Mental disorders that result from work-related mental stress can be caused by events such as exposure to a traumatic situation, exposure to violence, harassment, bullying or work pressure. There may be many factors that affect whether or not an individual feels mental stress. Some of these factors are external (e.g. those relating to aspects of their work) while others are internal and relate to the way people think and behave.

The occupations with the highest rates of workers' compensation claims for mental disorders over the three-year period 2008–09 to 2010–11 include: Train drivers & assistants; Police officers; Ambulance officers & paramedics; Prison officers; Welfare associate professionals; Welfare & community workers; Fire fighters; Social workers; Secondary school teachers; and Special education teachers. Many of these occupation groups are characterised by high levels of personal responsibility for the welfare of others or being witness to extreme or traumatic situations.

Prevention policy

All Australian work health and safety authorities provide workers and employers with information promoting awareness of work-related mental disorders. The information includes advice on the possible causes of work-related mental disorders, prevention measures to reduce their incidence and guidelines for the management of those suffering from mental disorders. Queensland and Western Australia have published codes of practice on harassment and bullying. Many authorities also actively support organisations already specialising in helping people with mental disorders.

In 2011 the Victorian parliament passed the Crimes Amendment (Bullying) Bill 2011 (Brodie's law) in response to the suicide of Brodie Panlock in 2006 after being the victim of relentless workplace bullying by workmates. The passing of Brodie's law means that anyone found guilty of workplace bullying in Victoria can be imprisoned for up to 10 years. Brodie's parents are campaigning for the law to be introduced throughout Australia.

In May 2012 the Commonwealth Government announced a parliamentary inquiry into workplace bullying. Safe Work Australia provided a formal submission outlining the work it is doing in the area. Recommendations from the inquiry were outlined in a report titled *Workplace Bullying: We Just Want It to Stop*, which was published by the House of Representatives Standing Committee on Education and Employment in October 2012.

The report made 23 recommendations and the 18th recommended "that Safe Work Australia issues an annual national statement which updates any emerging trends of its collated data from each of the state and territory regulators, and the Commonwealth, with respect to psychosocial health and safety generally and workplace bullying specifically".

In response to this recommendation Safe Work Australia committed to the publication of an annual statement on psychosocial health and bullying in Australian workplaces. The first annual statement was published in May 2014 and is available on the Safe Work Australia website. Safe Work Australia also committed to working with all jurisdictions to achieve consistent coding of work-related mental stress claims so that sub-categories of mental stress claims can be analysed at a national level. This consultation has begun and is currently ongoing.

Further information

Psychosocial Health and Safety and Bullying in Australian Workplaces, Safe Work Australia, 2014.

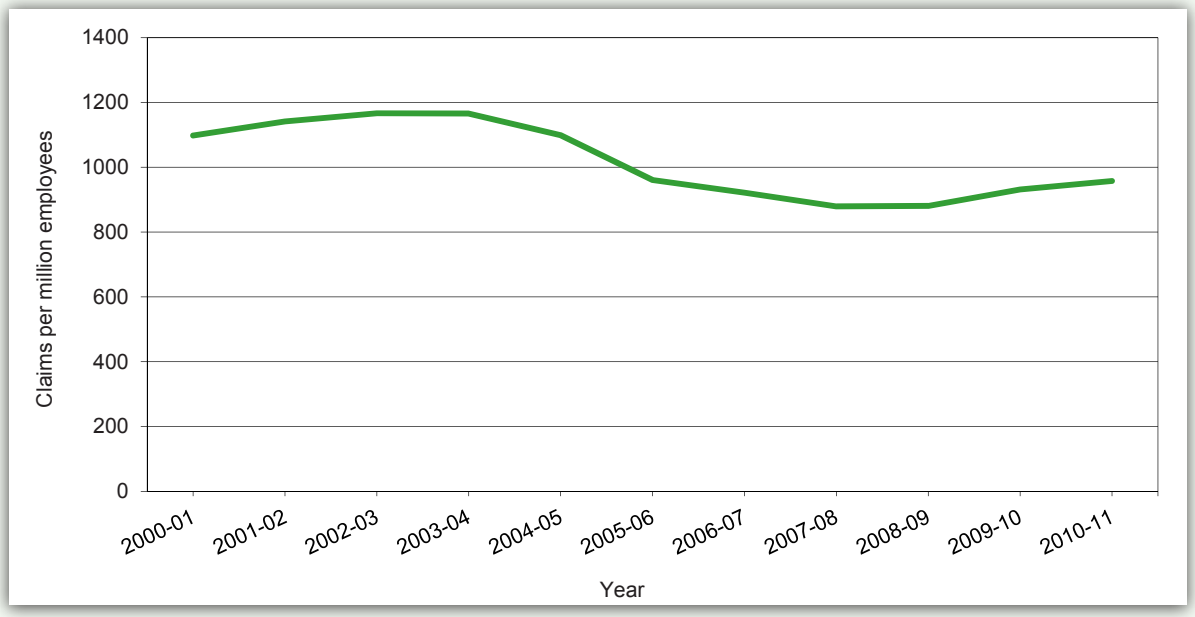
The Incidence of Accepted Workers' Compensation Claims for Mental Stress in Australia, Safe Work Australia, 2013.

Workplace Bullying: We Just Want It to Stop, House of Representatives Standing Committee on Education and Employment, 2012.

Preventing Work-Related Stress: Examples of Risk Control Measures, Worksafe Victoria, 2009.

Work-Related Mental Disorders in Australia, Australian Safety and Compensation Council, 2006.

Rate of workers' compensation claims for mental disorders: Claims per million employees, 2000–01 to 2010–11



Source: National Data Set for Compensation-based Statistics (NDS).

The rate of workers' compensation claims for mental disorders declined to a low of 879 claims per million employees in 2007–08 and increased to 958 in 2010–11.

3 Noise-induced hearing loss

The condition

Occupational noise-induced hearing loss is a hearing impairment arising from exposure to excessive noise at work. The degree of hearing loss is generally cumulative, increasing with both the length of time exposed and the level of noise. While occupational noise-induced hearing loss is almost entirely preventable, the damage is irreversible once acquired. Because hearing loss occurs naturally with ageing, the effects of occupational noise exposure among older workers can be difficult to distinguish from age-induced hearing loss.

For this indicator, workers' compensation claims for hearing loss are limited to those caused by long-term exposure to sounds and excludes hearing loss related to trauma.

Known causes and impacts

Noise-induced hearing loss is caused by excessive sound damaging the hair cells in the cochlea of the inner ear. Since most noise exposures are symmetric, the hearing loss usually occurs in both ears. Symptoms may include gradual loss of hearing, hearing sensitivity and tinnitus (ringing or other noises in the ears or head). Exposure standards for noise are defined in the model *Work Health and Safety Regulations*, which defines exposure standards to guard against gradual hearing loss and immediate hearing loss.

Among those who experience noise-induced hearing loss, 20% or more also suffer from tinnitus. Loss of hearing and the resulting communication difficulties can lead to impairment of relationships, social isolation and reduced quality of life.

The occupations with the highest rates of workers' compensation claims for noise-induced hearing loss over the three-year period 2008–09 to 2010–11 include: Engine & boiler operators; Sheetmetal tradespersons; Railway labourers; Train drivers & assistants; Crane, hoist & lift operators; Miners; Structural steel & welding tradespersons; Sewing machinists; Carpentry & joinery tradespersons; and Concreters.

Prevention policy

The model *Work Health and Safety Regulations* were adopted by the Australian Capital Territory, the Commonwealth, New South Wales, the Northern Territory and Queensland on 1 January 2012, and South Australia and Tasmania on 1 January 2013. Regulation 58 states that workers must use personal protective equipment to protect from hearing loss caused by noise that exceeds exposure standards. In addition, audiometric testing (measurement of the hearing threshold levels of each ear) must be undertaken at particular intervals.

In 2011, Safe Work Australia published *Managing Noise and Preventing Hearing Loss at Work,* a model code of practice that applies to all types of work and all workplaces covered by the *Work Health and Safety Act*. The code of practice was developed to provide practical guidance on how noise affects hearing, how to identify and assess exposure to noise, and how to control health and safety risks arising from hazardous noise. The model code of practice must be approved in a jurisdiction for it to have legal effect. Jurisdictional approval of the model code of practice can be determined by consulting the relevant jurisdiction regulator.

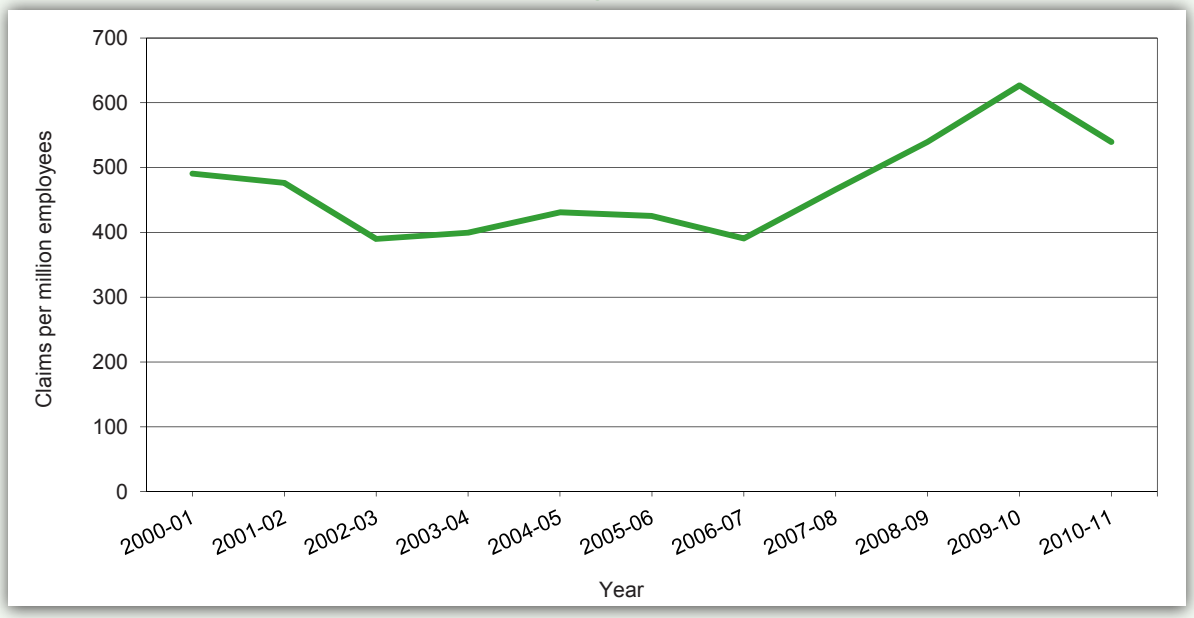
Further information

Managing Noise and Preventing Hearing Loss At Work: Code of Practice, Safe Work Australia 2011.

National Hazard Exposure Worker Surveillance: Noise Exposure and the Provision of Noise Control Measures in Australian Workplaces, Safe Work Australia, 2010.

Occupational Noise-Induced Hearing Loss in Australia, Safe Work Australia, 2010.

Rate of workers' compensation claims for noise-induced hearing loss: Claims per million employees, 2000–01 to 2010–11



Source: National Data Set for Compensation-based Statistics (NDS).

There was an increase in the rate of workers' compensation claims for noise-induced hearing loss from 391 claims per million employees in 2006–07 to 627 in 2009–10. However, the rate fell to 540 claims per million employees in 2010–11.

4 Infectious and parasitic diseases

The condition

Infectious and parasitic diseases include: zoonoses (diseases that are transmitted from animals to humans or from humans to animals) such as Q-fever, leptospirosis, brucellosis, Hendra virus and lyssavirus; intestinal diseases such as cholera, typhoid, salmonella, dysentery and gastroenteritis; parasitic diseases such as malaria; and other diseases such as human immunodeficiency virus (HIV), rubella, cowpox, mumps, foot and mouth disease, Ross River disease, mycoses (fungal infections), and hepatitis A, B and C.

Known causes and impacts

Because of the large variety of infectious and parasitic diseases, even a brief description is beyond the scope of this report. However, the main occupational causes of the commonly compensated zoonoses are listed below:

- Q-fever is caused by infection with *Coxiella burnetii*. The main occupational sources of infection are sheep, cattle and goats. Infection usually arises through contact with the placental tissue or fluid, or urine of infected animals.
- Leptospirosis is caused by a range of bacteria called *Leptospira*. The main occupational source of infection is the urine of infected animals and water or soil contaminated by infected urine.
- Brucellosis is caused by *Brucella* bacteria. Since the eradication of *Brucella abortus* in cattle, the main occupational sources of infection are feral pigs or laboratories.
- Anthrax is caused by *Bacillus anthracis* bacteria. Although rare in Australia, the bacteria can be transmitted to humans from livestock by exposure to dead infected pigs, eating tissue from infected animals or exposure to anthrax spores from fur, hide or wool.

The occupations with the highest rates of workers' compensation claims for infectious and parasitic diseases over the three-year period 2008–09 to 2010–11 include: Ambulance officers & paramedics; Meat & fish process workers; Enrolled nurses; Nurse managers; Personal care & nursing assistants; Police officers; Farm hands; Registered nurses; Children's care workers; and Special care workers.

Prevention policy

Vaccination, hand-washing, education, training and the use of personal protective equipment where appropriate are the main control strategies for the prevention of occupation-related infectious and parasitic diseases. Several recent Australian studies have documented that many at-risk worker groups are not fully vaccinated against infectious diseases for which they are at increased risk. This suggests an ongoing need for information and training for both workers and employers on the availability and importance of vaccination for at-risk groups.

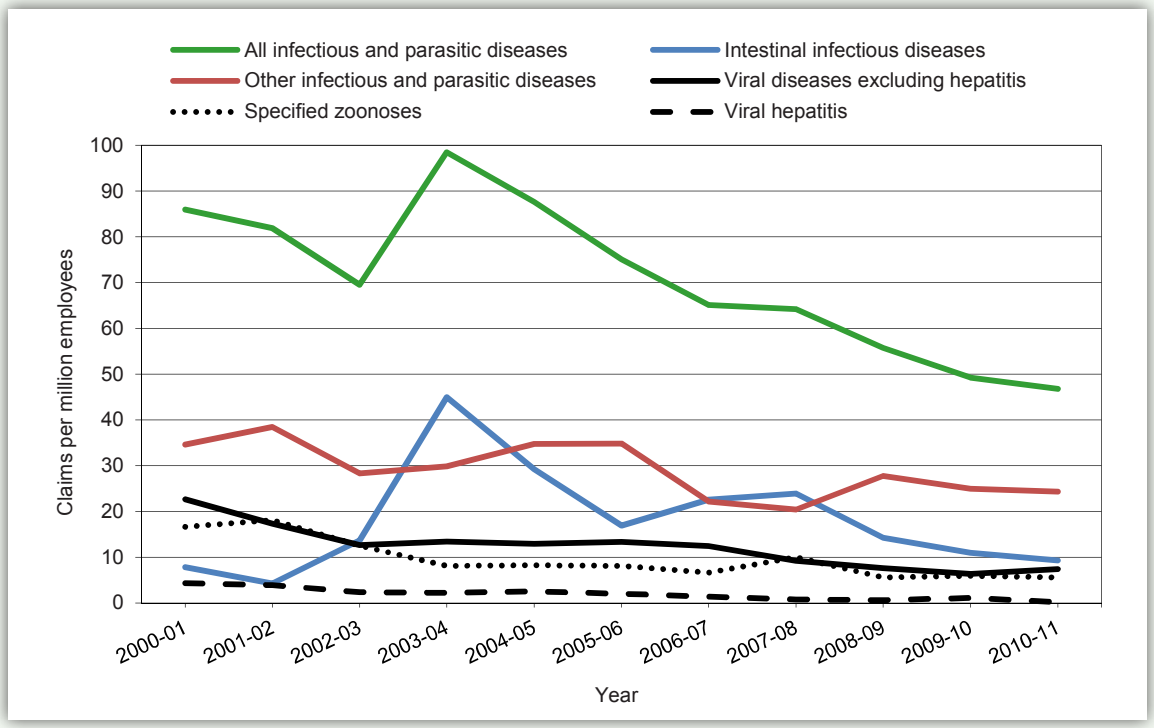
Further information

National Hazard Exposure Worker Surveillance: Exposure to Biological Hazards and the Provision of Controls Against Biological Hazards in Australian Workplaces, Safe Work Australia, 2011.

Work-Related Infectious and Parasitic Diseases in Australia, Australian Safety and Compensation Council, 2006.

National Code of Practice for the Control of Work-Related Exposure to Hepatitis and HIV (Blood-Borne) Viruses, National Occupational Health and Safety Commission, 2003.

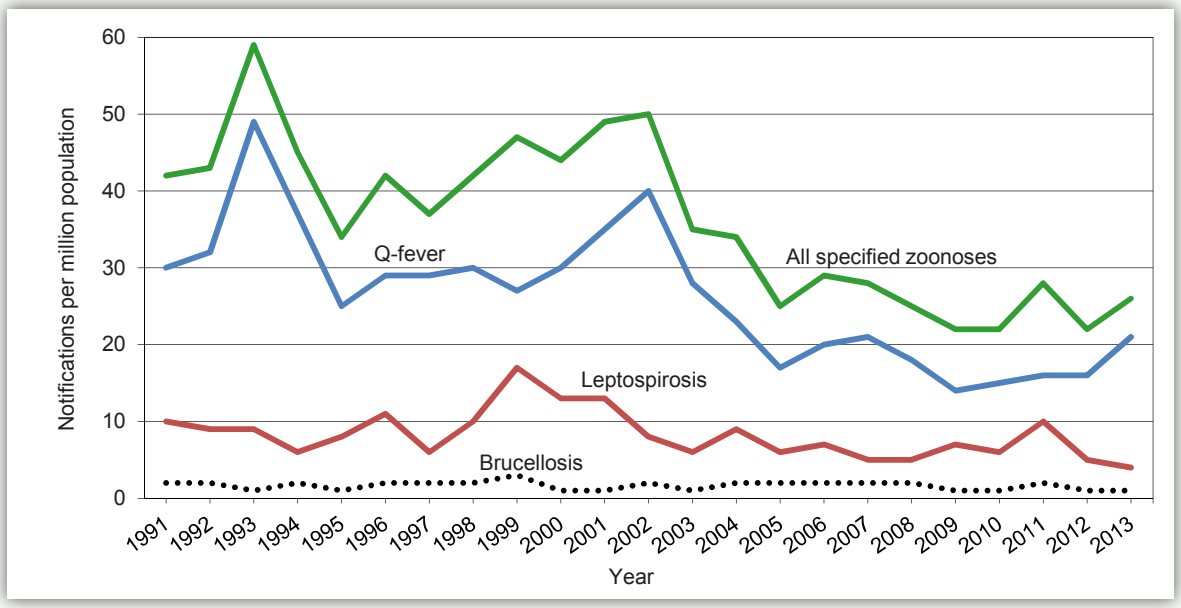
Rate of workers' compensation claims for infectious and parasitic diseases: Claims per million employees, 2000–01 to 2010–11



Source: National Data Set for Compensation-based Statistics (NDS).

The rate of workers' compensation claims for all infectious and parasitic diseases decreased by 53% from a peak of 99 claims per million employees in 2003–04 to a low of 47 in 2010–11. Intestinal infectious diseases accounted for a significant proportion of this trend (related to a 2004 outbreak of gastroenteritis in New South Wales).

Rate of disease notification for specified zoonoses: Notifications per million population, 1991 to 2013



Note: These cases are drawn from the general population and are not necessarily work-related.

Source: National Notifiable Disease Surveillance System (NNDSS).

The notification rate for all specified zoonoses decreased from 2002, coinciding with the introduction of a national vaccination program for Q-fever in 2001. Notification rates for leptospirosis also declined from a peak in 1999 (related to an outbreak in Queensland), while notifications for brucellosis remained relatively low and stable over the period. The increase in the notification rate for all specified zoonoses in 2011 reflected the increase in leptospirosis cases in Queensland that was caused by severe flooding.

5 Respiratory diseases

The condition

Occupational respiratory diseases include: asthma, pneumoconioses (lung disorders related to exposure to mineral dusts like asbestosis); silicosis; legionnaires' disease; hypersensitivity to organic dusts; and respiratory conditions related to breathing in chemicals, gases, fumes and vapours. Data on mesothelioma are provided under 'Occupational cancers' on page 18.

Known causes and impacts

For some occupational respiratory diseases like pneumoconioses, the causative agents are specific to a few industries. For other respiratory diseases such as occupational asthma, the causative agents can be found in a broad spectrum of jobs and industries. Respiratory diseases also vary considerably in their latency and sensitivity to causative agents. Pneumoconioses tend to occur after medium to long periods of moderately high exposure, whereas occupational asthma can occur after short periods of low to moderate exposure.

Respiratory diseases can develop after exposure to workplace hazards like welding gases, fuel vapours, solvents and cleaning agent fumes. *Legionella* bacteria thrive in warm water and can also be found in soil and potting mix. The disease is usually contracted by breathing in the bacteria in aerosols (very small droplets of water) and outbreaks have been associated with poorly disinfected cooling towers and spa pools.

The occupations with the highest rates of workers' compensation claims for diseases of the respiratory system over the three-year period 2008–09 to 2010–11 include: Ambulance officers & paramedics; Primary school teachers; Freight & furniture handlers; Secondary school teachers; General clerks; Education aides; Structural steel & welding tradespersons; Police officers; Metal fitters & machinists; and Carpentry & joinery tradespersons.

Prevention policy

Prevention of occupational respiratory diseases requires the identification of workplace hazards and assessment of risk from airborne substances known to cause such diseases. Exposure to workplace hazards can be minimised by eliminating hazardous materials or replacing them with safer alternatives. The use of personal protective equipment can be effective as long as they are used in conjunction with other recognised control measures.

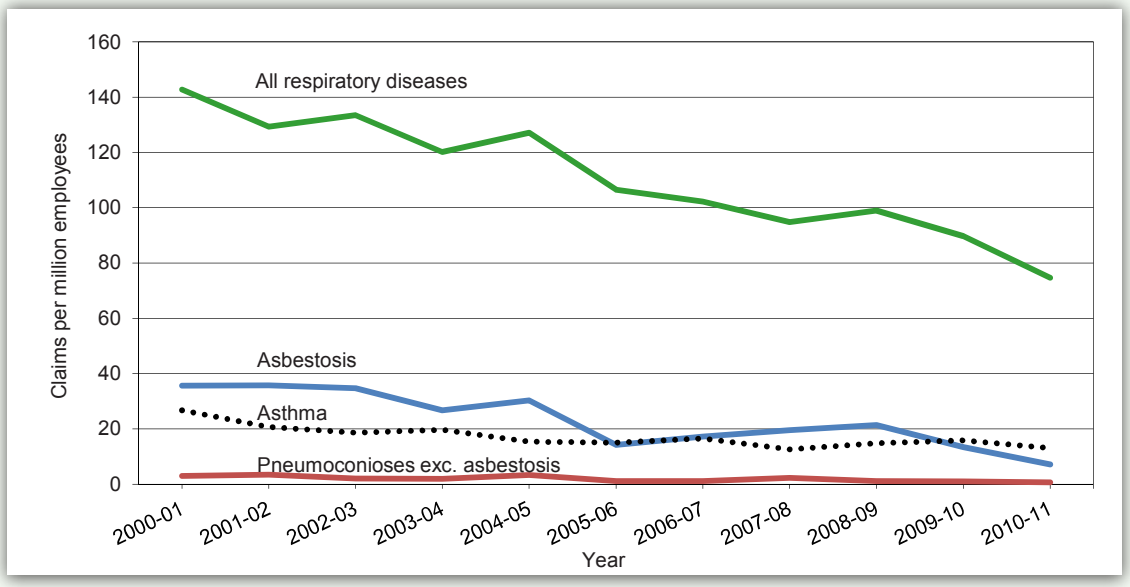
Further information

National Hazard Exposure Worker Surveillance: Exposure to Dust, Gases, Vapours, Smoke and Fumes and the Provision of Controls for These Airborne Hazards in Australian Workplaces, Safe Work Australia, 2010.

Occupational Respiratory Diseases in Australia, Australian Safety and Compensation Council, 2006.

Code of Practice for the Management and Control of Asbestos in Workplaces, National Occupational Health and Safety Commission, 2005.

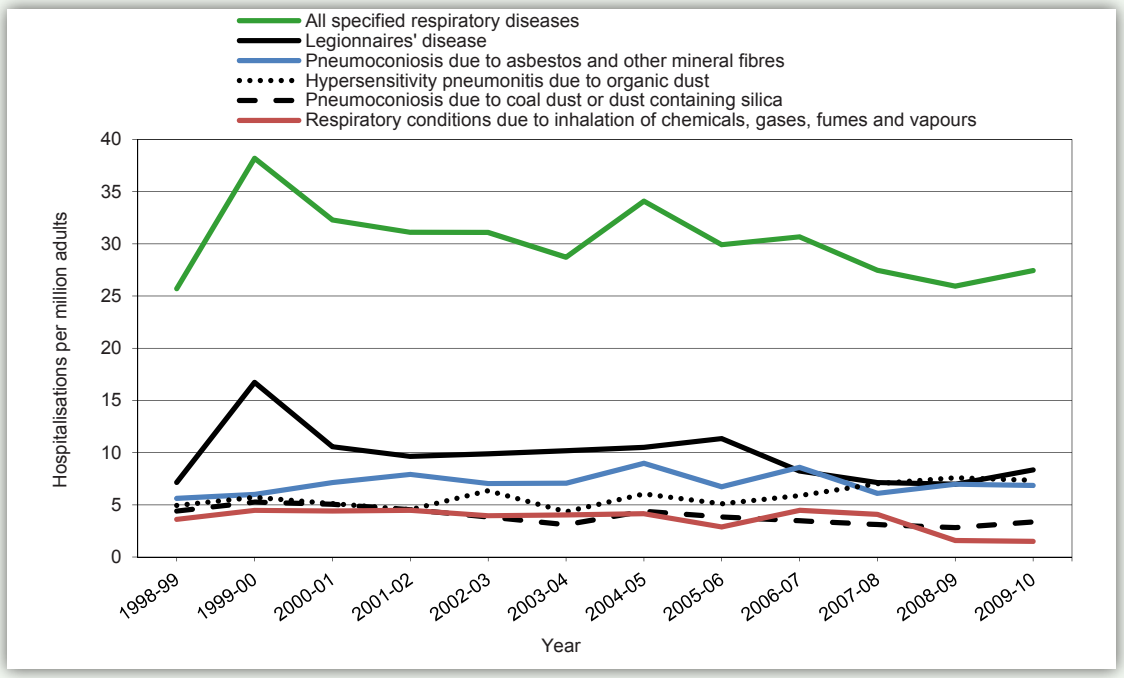
Rate of workers' compensation claims for respiratory diseases: Claims per million employees, 2000–01 to 2010–11



Source: National Data Set for Compensation-based Statistics (NDS).

There was a downward trend in the rate of workers' compensation claims for all respiratory diseases between 2000–01 and 2010–11. The rate almost halved from 143 claims per million employees in 2000–01 to 73 in 2010–11. Among respiratory diseases, asbestosis had the most marked decline from 36 claims per million employees in 2000–01 to 7 in 2010–11. Asthma remained relatively stable between 2004–05 and 2010–11 with a rate of 15 claims per million employees over the seven-year period.

Rate of hospitalisation for respiratory diseases: Hospitalisations per million adults, 1998–99 to 2009–10



Note: These cases are drawn from the general population and are not necessarily work-related.

Source: National Hospital Morbidity Database (NHMD).

The hospitalisation rate for all specified respiratory diseases peaked in 1999–00 at 38 hospitalisations per million adults largely due to an outbreak of legionnaires' disease in Melbourne. After 1999–00, the hospitalisation rate declined, but increased substantially in 2004–05 due to increases in the hospitalisation rates for pneumoconiosis due to asbestos and other mineral fibres, hypersensitivity pneumonitis due to organic dust, and pneumoconiosis due to coal dust or dust containing silica. After 2004–05, the rate for all specified respiratory diseases fell to 27 hospitalisations per million adults in 2009–10, the most recent period for which data is available.

6 Contact dermatitis

The condition

Contact dermatitis is a condition usually caused by substances interacting with the skin. The condition predominantly affects the hands, although other exposed areas like the arms and face may be involved.

There are three types of contact dermatitis: the most common accounting for about three-quarters of all cases is irritant contact dermatitis. With repeated exposure irritants can eventually cause an inflammatory reaction in the skin that may take many months to heal.

Nearly all the other cases involve allergic contact dermatitis, a delayed hypersensitivity reaction to a substance that induces an allergic reaction, which may take days or even weeks to settle.

A very small proportion of cases involve contact urticaria, an immediate hypersensitivity reaction. It usually causes reddening and itching of the skin within 15 minutes of skin contact with a substance.

Known causes and impacts

Irritant contact dermatitis is caused by substances that dry and irritate the skin such as acids and alkalies, or by the cumulative effect of substances such as soaps, detergents and solvents.

Allergic contact dermatitis occurs when the skin makes contact with a substance that induces an allergic reaction. In some cases, sensitisation to a substance may occur after days, weeks or years of exposure. Once a person is sensitised to a substance the allergy is likely to be lifelong.

The occupations with the highest rates of workers' compensation claims for contact dermatitis over the three-year period 2008–09 to 2010–11 include: Meat & fish process workers; Engineering production process workers; Concreters; Personal care & nursing assistants; Gardeners; Farm hands; Nursery & garden labourers; Handypersons; Metal fitters & machinists; and Enrolled nurses.

Prevention policy

Many jurisdictions have produced a range of advice and guidance material for occupations at risk of contact dermatitis. The guidance material provided to employers mainly focuses on prevention and management of risk by either eliminating the substance of concern, substituting alternative materials, isolating the source of exposure or minimising the risk by engineering and using personal protective equipment. In addition, employers are urged to ensure all hazardous chemicals are labelled with appropriate information such as warnings, directions for use, ingredients and first-aid procedures.

Workers are provided with information about the symptoms of contact dermatitis and advice on what to do if the condition arises (i.e. halt exposure to the cause, advise their employer and seek professional medical advice).

The RASH (Resources about Skin Health) program, an initiative of the Occupational Dermatology Research and Education Centre (ODREC), is designed to educate students attending vocational training institutions about occupational contact dermatitis and to raise awareness about appropriate methods of prevention and to reinforce safe work practices.

Other ODREC initiatives are the Contact Allergen Bank Australia (CABA) and the Skin School. The CABA was established to provide dermatologists with access to patch testing resources, improve diagnosis and identification of allergens, collect national data on test results, and share experience and expertise with other dermatologists. The Skin School is designed to educate workers who have been diagnosed with occupational contact dermatitis about managing the condition.

Further information

Factors Contributing to the Development of Occupational Contact Dermatitis and Occupational Contact Urticaria, Safe Work Australia, 2014.

Occupational Contact Dermatitis: A Review of 18 Years of Data From an Occupational Dermatology Clinic in Australia, Safe Work Australia, 2012.

National Hazard Exposure Worker Surveillance: Wet Work Exposure and the Provision of Wet Work Control Measures in Australian Workplaces, Safe Work Australia, 2011.

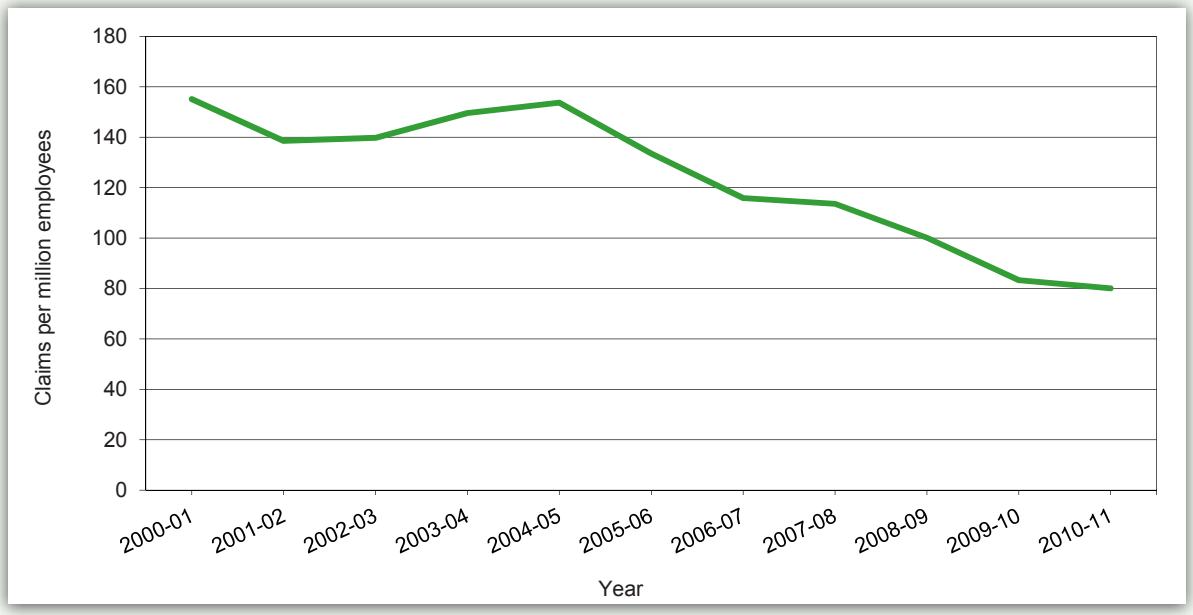
Collecting Surveillance Data on Risks for Occupational Contact Dermatitis, Australian Safety and Compensation Council, 2008.

Occupational Contact Dermatitis in Australia, Australian Safety and Compensation Council, 2006.

Guidance on the Prevention of Dermatitis Caused By Wet Work, Australian Safety and Compensation Council, 2005.

Dermatitis: The facts starting from scratch, Workcover New South Wales, 2002.

Rate of workers' compensation claims for contact dermatitis: Claims per million employees, 2000–01 to 2010–11



Source: National Data Set for Compensation-based Statistics (NDS).

There was a downward trend in the rate of workers' compensation claims for contact dermatitis between 2000–01 and 2010–11. The rate almost halved from 155 claims per million employees in 2000–01 to 80 in 2010–11.

7 Cardiovascular diseases

The condition

Cardiovascular disease encompasses a group of diseases that involve the heart or circulatory system. The most common cardiovascular disease is ischaemic heart disease, which is also known as 'coronary artery disease'. The disease is characterised by atherosclerosis—a build-up of plaque on artery walls that restricts the flow of blood to the heart. The condition can cause angina (chest pain) and can lead to strokes or heart attacks. Other cardiovascular diseases include cerebrovascular disease, arterial disease, hypertension (high blood pressure) and varicose veins.

Work-related cardiovascular disease is caused or exacerbated by occupational factors. However, linking work-related exposure to the development of cardiovascular disease is problematic due to the long latency of these diseases, the existence of multiple possible risk factors and the lack of specific work-related causes of the diseases.

Workers' compensation claims for diseases of the circulatory system are used for this indicator.

Known causes and impacts

Among the many work-related factors that increase the risk of cardiovascular disease, the evidence is strongest for exposure to four chemicals—carbon disulphide and, in terms of acute exposure, carbon monoxide, methylene chloride and nitroglycerin.

Carbon disulphide is a volatile, flammable liquid that is used as an industrial chemical in the production of materials like viscose rayon fibres, cellophane and carbon tetrachloride. Nitroglycerin is an unstable, explosive liquid that is most commonly used to manufacture explosives. There is little exposure to carbon disulphide and nitroglycerin in Australia.

Carbon monoxide is an odourless, colourless gas that is released during the incomplete combustion of hydrocarbons. The gas is most commonly found in exhaust fumes from internal-combustion engines, which are widely used to power vehicles, plants and other types of machinery in workplaces.

Methylene chloride is most commonly found in degreasers and paint removers and is also used as a propellant in many types of aerosols. Although exposure can occur through skin contact and ingestion, it is most likely to occur through inhalation because the colourless liquid evaporates quickly into the air. Workers who use products containing methylene chloride are likely to have greater exposure to the chemical if they work indoors.

In addition to the four chemicals outlined above, there is good evidence that environmental tobacco smoke, psychosocial factors (particularly low job control), noise and shift work can increase the risk of occupational cardiovascular disease.

The occupations with the highest rates of workers' compensation claims for diseases of the circulatory system over the three-year period 2008–09 to 2010–11 include: Fire fighters; Police officers; Truck drivers; Guards & security officers; Sales representatives; General clerks; General managers; and Secondary school teachers.

Prevention policy

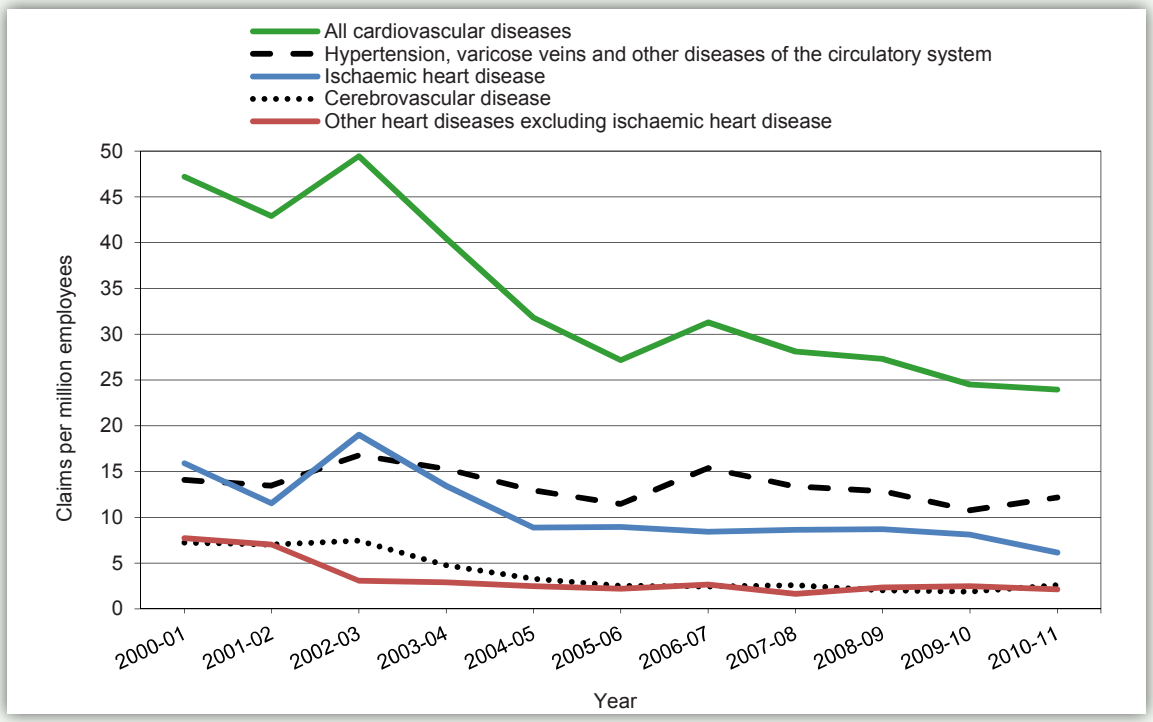
The onset of cardiovascular disease may be related to lifestyle factors, non-occupational exposures and genetic predispositions. Therefore, prevention broadly targets these causes, some of which overlap with other indicators discussed in this report.

Prevention policies include: implementation and enforcement of non-smoking policies; promotion of exercise and sensible diets (particularly for sedentary workers); minimisation of exposure to hazardous chemicals, noise and psychosocial risk factors like stress; and optimisation of shift work design.

Further information

Work-Related Cardiovascular Disease Australia, Australian Safety and Compensation Council, 2006.

Rate of workers' compensation claims for cardiovascular diseases: Claims per million employees, 2000–01 to 2010–11



Source: National Data Set for Compensation-based Statistics (NDS).

There were declines in the rates of workers' compensation claims for all cardiovascular diseases. Between 2000–01 and 2010–11, the rate for all cardiovascular diseases had a peak of 49 claims per million employees in 2002–03 and a low of 24 in 2010–11. The decline was most pronounced between 2002–03 and 2005–06, which was largely due to a decline in ischaemic heart disease. Of the cardiovascular diseases, ischaemic heart disease experienced the most marked decline, falling from 19 claims per million employees in 2002–03 to 6 in 2010–11. Although they declined over the period, the rates for cerebrovascular disease and other heart diseases excluding ischaemic heart disease remained relatively low and stable between 2004–05 and 2010–11.

8 Occupational cancers

The condition

Cancer is a term that groups diseases characterised by the abnormal division of cells. These new cells (neoplasms) can invade nearby tissues and spread throughout the body via the circulatory system and grow in major organs (metastasise).

Included under occupational cancer is mesothelioma, a fatal cancer caused by exposure to asbestos which usually manifests 20 to 40 years after exposure. Other occupational cancers include skin cancer (usually related to ultra-violet light exposure) and neoplasms of the lymphatic and haematopoietic tissue (these include leukaemia and lymphoma).

Known causes and impacts

Current theories on cancer suggest that its cause is a multi-step process arising from a combination of factors that vary by nature and degree of exposure to carcinogens over time, mediated by individual behaviour and genetic factors. There are a number of known carcinogens, but the specific toxicity, potency and latency periods associated with many agents are unknown. Due to the long latency period associated with many carcinogenic exposures, workplace exposure and the onset of a specific cancer may not be readily associated.

Firefighters are faced with unique working conditions that increase their risk of exposure to carcinogenic chemicals and substances. Under recent laws in the Commonwealth, South Australia, Tasmania and Western Australia, firefighters who are diagnosed with specific cancers are presumed to have developed the disease due to occupational exposure. Presumptive legislation makes it easier for those affected to access workers' compensation as they are not required to establish a link between the cancer and occupational exposure.

The occupations with the highest rates of workers' compensation claims for cancers over the three-year period 2008–09 to 2010–11 include: Freight & furniture handlers; Railway labourers; Electrical distribution tradespersons; Carpentry & joinery tradespersons; Gardeners; Electricians; and Truck drivers.

Prevention policy

The International Agency for Research on Cancer (http://www.iarc.fr/) has identified more than 400 agents that are carcinogenic or potentially carcinogenic to humans. Elimination is the preferred method of dealing with known carcinogens used in the workplace, usually by replacing them with safer alternatives.

Skin cancer is the most commonly diagnosed cancer in Australia and outdoor workers are at particular risk. Non-government organisations such as the Cancer Council publish extensive information on protection from excessive ultra-violet radiation exposure. All Australian work health and safety jurisdictions publish guidance information on protecting workers from exposure to the sun. In most jurisdictions, information is provided to highlight the employer's responsibilities and to advise employees on skin cancer and personal protection from exposure.

Further information

Mesothelioma in Australia: Incidence 1982 to 2009, Mortality 1997 to 2011, Safe Work Australia, 2013.

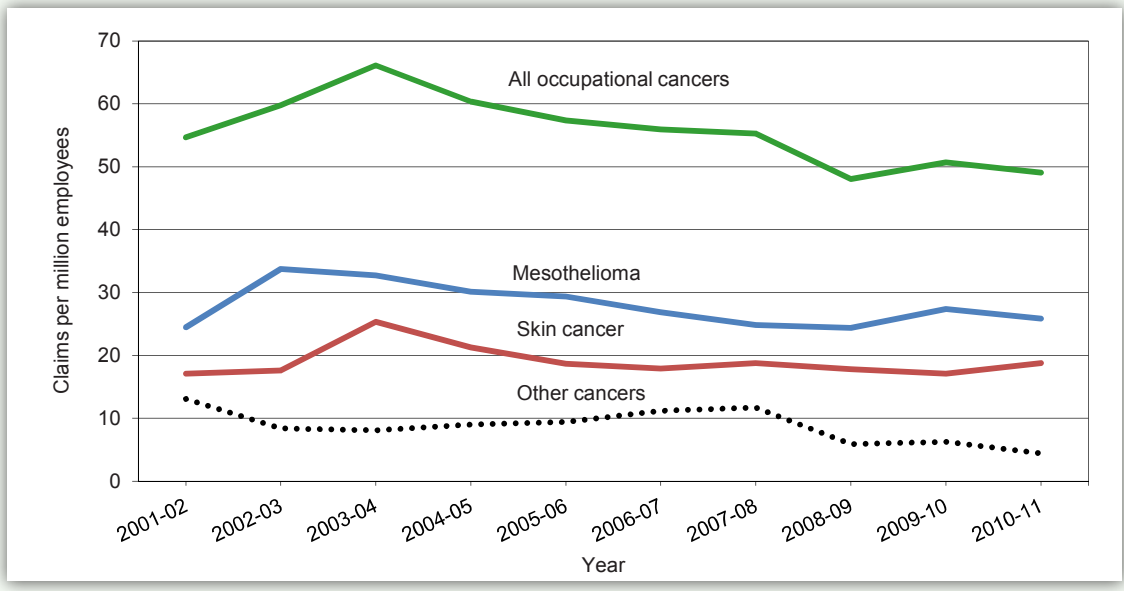
Mesothelioma in Australia 2012, Australian Mesothelioma Registry, 2013.

National Hazard Exposure Worker Surveillance: Exposure to Direct Sunlight and the Provision of Sun Exposure Controls in Australian Workplaces, Safe Work Australia, 2010.

Guidance Note for the Protection of Workers From the Ultra-Violet Radiation in Sunlight, Australian Safety and Compensation Council, 2008.

Occupational Cancers in Australia, Australian Safety and Compensation Council, 2006.

Rate of workers' compensation claims for occupational cancers: Claims per million employees, 2000–01 to 2010–11

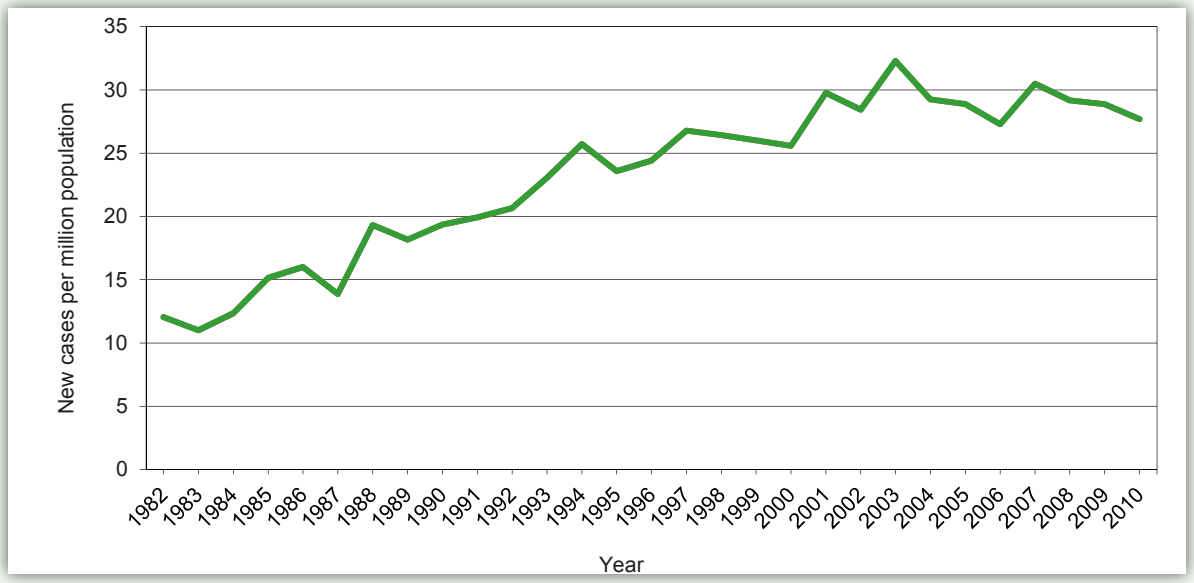


Note: In New South Wales compensation claims for pneumoconioses and silicosis can be made through the DDB. In this graph, claims compensated for mesothelioma by state, territory and Commonwealth workers' compensation schemes (NDS) have been combined with claims compensated for mesothelioma by the DDB.

Sources: National Data Set for Compensation-based Statistics (NDS); New South Wales Dust Diseases Board (DDB; mesothelioma only).

The rate of workers' compensation claims for all occupational cancers peaked at 66 claims per million employees in 2003–04 and declined to a low of 48 in 2008–09, remaining relatively stable thereafter. Between 2004–05 and 2010–11, the rate of claims for skin cancer remained relatively stable while mesothelioma declined slightly.

Incidence rate of mesothelioma: New cases per million population, 1982 to 2010



Note: Rates are age-standardised to improve comparability of data over time. These cases are drawn from the general population and are not necessarily work-related.

Source: Australian Cancer Incidence and Mortality books (ACIM).

The incidence rate for mesothelioma increased from a low of 11 new cases per million population in 1983 to a peak of 32 in 2003. After 2003, the rate fell to 28 new cases per million population in 2010. A mesothelioma publication by the Australian Mesothelioma Registry can be found in 'Further information' on page 17.

Explanatory notes

The occupational disease indicators presented in this report were sourced from five data sets:

- National Data Set for Compensation-based Statistics (NDS)
- New South Wales Dust Diseases Board (DDB)
- National Notifiable Disease Surveillance System (NNDSS)
- National Hospital Morbidity Database (NHMD), and
- Australian Cancer Incidence and Mortality books (ACIM).

A summary of the data sources used for each disease category is presented in Table 1 below, with further information on these sources provided thereafter.

Table 1: Summary of data sources

Disease	Indicator	Source
Musculoskeletal disorders	Claims for musculoskeletal disorders per thousand employees	NDS
Mental disorders	Claims for mental disorders per million employees	NDS
Noise-induced hearing loss	Claims for noise-induced hearing loss per million employees	NDS
Infectious and parasitic diseases	Claims for infectious and parasitic diseases per million employees	NDS
	Notifications for specified zoonoses per million population	NNDSS
Respiratory diseases	Claims for diseases of the respiratory system per million employees	NDS
	Hospitalisations for respiratory diseases per million adults	NHMD
Contact dermatitis	Claims for contact dermatitis per million employees	NDS
Cardiovascular diseases	Claims for cardiovascular diseases per million employees	NDS
Occupational cancers	Claims for occupational cancers per million employees	NDS
	Claims for mesothelioma per million employees	DDB
	New mesothelioma cases per million population	ACIM

Compensation

National Data Set for Compensation-based Statistics

The rates presented in this report comprise only accepted workers' compensation claims lodged in the reference year.

NDS data are based on information received annually from Australian workers' compensation authorities. The data supplied includes both new data for the most recent year and updated data for the previous five years. Because some claims lodged in the most recent year may not be accepted until the following year, the number of accepted claims reported in the most recent year is likely to increase by about 3% when updated.

The NDS is the only national data set that provides information on workers' compensation claims that involve work-related disease. For a claim to be accepted the workers' compensation authorities require the connection between the workplace and the disease to be established by a medical practitioner. This may lead to considerable under-reporting of occupational disease in the NDS. Claims data are based on date of lodgement which is usually closer to the date of diagnosis than the date of exposure. Further information on the NDS can be found on the Safe Work Australia website.

The calculation of incidence rates from NDS data requires the number of employees in the Australian work force. These data are supplied to Safe Work Australia by the Australian Bureau of Statistics and are specifically calculated to match the scope of workers' compensation coverage.

Table 2 shows the Type of Occurrence Coding System (TOOCS 2.1) codes for the disease data extracted from the NDS.

Table 2: TOOCS disease variables used in this report

Disease category	NDS code	Nature of injury or disease
Musculoskeletal disorders (limited to Body Stressing mechanism of injury or disease)		
Skeletal disorders	010	Fractures
	020	Fracture of vertebral column with or without mention of spinal cord lesion
	030	Dislocation
	310	Arthropathies & related disorders—disorders of the joints
	320	Dorsopathies—disorders of the spinal vertebrae & intervertebral discs
	340	Osteopathies, chondropathies & acquired musculoskeletal deformities
Muscular disorders	040	Sprains & strains of joints & adjacent muscles
	330	Disorders of muscle, tendons & other soft tissues
	450	Hernia
Mental disorders (limited to claims with Mental Stress mechanism of injury or disease)		
Mental disorders	910	Mental disorders
Occupational noise-induced hearing loss (limited to claims with Long-term exposure to sound mechanism of injury or disease)		
Deafness	250	Deafness
Infectious and parasitic diseases		
Intestinal infectious diseases	510	Intestinal infectious diseases
Specified zoonoses	521-525	Specified zoonoses (includes anthrax, brucellosis, Q-fever, leptospirosis & other zoonoses)
Viral diseases excluding hepatitis	540	Viral diseases excluding hepatitis, sexually transmitted diseases & acquired immune deficiency syndrome (AIDS)
Hepatitis	550	Viral hepatitis
Other infectious diseases	530	Protozoal diseases
	560	Specified sexually transmitted diseases excluding AIDS
	561	Human immunodeficiency virus (HIV)—AIDS
	570	Mycoses
	580	Other infectious & parasitic diseases
Respiratory diseases		
Asthma	610	Asthma
Legionnaires' disease	620	Legionnaires' disease
Asbestosis	630	Asbestosis (excludes mesothelioma)
Pneumoconioses (exc. asbestosis)	640	Pneumoconioses due to other silica or silicates
	650	Pneumoconioses excluding asbestosis or silicosis
Other respiratory conditions due to substances	660	Other respiratory conditions due to substances
Other respiratory disease	670	Chronic bronchitis, emphysymea & allied conditions
	680	Other diseases of the respiratory system
Contact dermatitis		
Contact dermatitis	410	Contact dermatitis
	420	Other & unspecified dermatitis & eczema

Cardiovascular diseases		
Ischaemic heart disease (IHD)	710	Ischaemic heart disease
Other heart disease excluding IHD	720	Other heart disease excluding IHD
Cerebrovascular disease	730	Cerebrovascular disease
Arterial disease	740	Arterial disease
Other diseases of the circulatory system	750	Hypertension (high blood pressure)
	760	Varicose veins
	780	Other diseases of the circulatory system
Occupational cancers		
Mesothelioma	810	Malignant neoplasm of pleura (mesothelioma)
Skin cancer	820	Malignant melanoma of skin
	830	Other malignant neoplasm of skin
	850	Carcinoma in situ of skin
Other cancers	840	Malignant neoplasm of lymphatic & haematopoietic tissue
	860	Other malignant neoplasms & carcinomas
	890	Neoplasms of uncertain behaviour or unspecified nature

New South Wales Dust Diseases Board

In New South Wales, compensation claims for pneumoconioses and silicosis can also be made through the DDB. The DDB provides statutory, no-fault compensation to New South Wales workers disabled by dust diseases resulting from exposure to dusts in the workplace. In this report claims compensated for mesothelioma by the DDB have been combined with claims compensated for mesothelioma by state, territory and Commonwealth workers' compensation schemes (NDS).

Common law claims

Not all claims for compensation are made through workers' compensation schemes. Many claims for compensation are pursued through common law courts and an unknown number of these are settled before ever going to trial. Consequently, the number of compensation claims reported from the NDS and the DDB do not represent the total number of compensation claims accepted for occupational diseases in Australia.

Compensation claims may be pursued through the common law process rather than workers' compensation schemes when for example:

- greater entitlements are offered through the common law process
- self-employed workers are not covered by workers' compensation
- workers are exposed to hazards at multiple workplaces, and
- negligent employers have gone out of business.

The National Notifiable Diseases Surveillance System

The NNDSS was established in 1990 by the Communicable Disease Network of Australia which publishes these data on a quarterly basis. The system coordinates the national surveillance of more than 50 communicable diseases or disease groups. Under this system notifications are made to health authorities under the public health legislation in each Australian jurisdiction. Computerised, de-identified unit records of notifications are supplied to the Commonwealth Department of Health for collation, analysis and publication on the internet and in the quarterly journal known as *Communicable Diseases Intelligence*. Only infectious diseases with a strong link to occupational exposures have been used in this report.

The NNDSS data includes disease notification rates that are standardised to 100 000 population. To maintain consistency with most rates presented in this report the notification rates were re-standardised to one million population.

Australian Institute of Health and Welfare

National Hospital Morbidity Database

The hospitalisation data used in this report come from the NHMD, which is a database compiled by the Australian Institute of Health and Welfare (AIHW) from data supplied by the state and territory health authorities. The NHMD contains diagnosis and treatment information for hospitalisations of admitted patients from almost all public and private hospitals in Australia starting from the 1993–94 financial year.

Unlike NDS cases NHMD hospitalisations are not necessarily work-related. However, most of the NHMD diseases presented in this report are highly attributable to work-related exposures, particularly the pneumoconioses.

Because NHMD data are drawn from the general population, hospitalisation rates were calculated for this report using population data from the Australian Bureau of Statistics. The population figures used were estimated for June of the reference year and were limited to residents aged 15 years and over (referred to as adults in the report).

Australian Cancer Incidence and Mortality books

The ACIM books are interactive Excel workbooks comprising cause-specific Australian cancer incidence and mortality information for the most recent years and historically for some cancer data from 1968. Individual workbooks have been created for selected cancers.

Cancer (except basal cell and squamous cell carcinomas of the skin) is a notifiable disease in all Australian jurisdictions. By law data on every cancer diagnosis must be collected and reported to state and territory cancer registries who release this information to the AIHW National Cancer Statistics Clearing House. The ACIM book for mesothelioma contains data on new cases of mesothelioma diagnosed each year from 1982 to 2010.

The ACIM book includes age-standardised incidence rates of mesothelioma in Australia. Age-standardisation is a technique used to remove the influence of gradual shifts over time in the age and sex composition of a population. By applying the age-specific incidence rates in each year to a standard population, the expected number of cases can be calculated and an aggregate, age-standardised rate can be calculated.

The incidence rates in the ACIM book for mesothelioma are standardised to 100 000 population. To maintain consistency with most rates presented in this report the incidence rates were re-standardised to one million population.

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