REPORT ON INDICATORS FOR OCCUPATIONAL DISEASE

Endorsed in April 2006

Australian Government
Australian Safety and Compensation Council

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ISBN 0 642 32537 5

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EXECUTIVE SUMMARY

The reduction of occupational disease is one of five priorities under the *National OHS Strategy 2002-2012* (the Strategy).

This paper provides indicators of occupational disease that are designed to provide comparisons over time and identify long-term trends present in the data. This will assist in monitoring the extent to which progress in reducing occupational diseases is being achieved under the Strategy.

This paper follows directly from and updates the previous report, *Occupational Disease Indicators and Summary Statistics*, submitted to the National Occupational Health and Safety Commission (NOHSC) in April 2005. The eight priority diseases are:

Respiratory disease	**Occupational Cancers**
Contact dermatitis	**Infectious and parasitic disease**
Cardio-vascular disease	**Musculoskeletal disorders**
Mental disorders	**Noise-induced hearing loss**

The primary data source for this report was the National Data Set for Compensation-Based Statistics (NDS) 1997-98 to 2003-04. The NDS is sourced from accepted workers' compensation claims and provides a national uniform data set on compensated injuries and diseases. Other data sources used to supplement the NDS were the National Hospital Morbidity Database (NHMD), the National Notifiable Disease Surveillance System (NNDSS) and the Australian Institute of Health and Welfare's National Cancer Statistics Clearing House (NCSCH). The Office of the Australian Safety and Compensation Council (ASCC) will continue to investigate potential sources of data on occupational disease.

The results indicate varying trends for each of the priority disease groups. In summary, over the past six years decreasing trends were observed for four of the eight groups; musculoskeletal disorders, noise induced hearing loss, contact dermatitis and cardiovascular disease. Claims for mental disorders and cancer appear to be increasing, while respiratory disease claims appear to be stable and infectious disease claims, after exhibiting a decreasing trend for a number of years, have increased in the past year. However, it is too soon to say whether the recently observed increase in infectious disease claims will continue.

These results are shown in the Table 1 on page 6.

This report is in five sections:

> Section 1 provides the background to the development of the indicators and a discussion of the issues relating to their development

> Section 2 provides details of how the indicators were constructed including information on what constitutes valid trend data

> the data sources and their analyses are detailed in Section 3

> the results for each priority disease follow in Section 4, and

> Section 5 presents a summary discussion of the results.

Injury and fatality data have been released elsewhere and are available on the ASCC website at ascc.gov.au

These results are shown in the Table 1 below:

Table 1: Summary of results

Result	Disease	Indicator	Data Source/s
↘	Musculoskeletal Disorders	Incidence of musculoskeletal claims per million employees	NDS
↗	Mental Disorders	Incidence of mental disorders claims per million employees	NDS
↘	Noise Induced Hearing Loss	Incidence of noise induced hearing loss claims per million employees	NDS
?	Infectious Disease	Incidence of infectious disease claims per million employees	NDS
		Notification rate of selected zoonoses per million adults	NNDSS
→	Respiratory Disease	Incidence of respiratory disease claims per million employees/ persons	NDS
		Hospital separations rate of asbestosis, pneumconioses and respiratory disease cases per million adults	NHMD
↘	Contact Dermatitis	Incidence of contact dermatitis claims per million employees	NDS
↘	Cardiovascular Disease	Incidence of cardiovascular claims per million employees	NDS
↗	Cancer	Incidence of cancer claims per million employees/ persons	NDS
		Hospital separations rate of mesothelioma cases per million adults	NHMD
		National cancer registry mesothelioma cases	NCSCH

Key

↗ On the balance of evidence there is a rise in incidence

→ On the balance of the evidence the incidence remains steady

↘ On the balance of the evidence there is a decrease in incidence

? Not clear at this stage

SECTION 1
INTRODUCTION

BACKGROUND

The Australian Safety and Compensation Council (ASCC), formerly the National Occupational Health and Safety Commission (NOHSC), works to lead and coordinate national efforts to prevent workplace death, injury and disease. It seeks to achieve this through the quality and relevance of information it provides and to influence the activities of all parties with roles in improving Australia's occupational health and safety (OHS) performance.

As part of this role, the ASCC seeks to establish and monitor credible baseline indicators in occupational disease.

Occupational disease is defined as:

> *All employment-related diseases which result from repeated or long-term exposure to an agent(s) or event(s) or which are the result of a single traumatic event where there was a long latency period.*

On 24 May 2002, the Workplace Relations Ministers' Council endorsed the release of the NOHSC *National OHS Strategy 2002–2012*. The Strategy was developed by the members of NOHSC and reflects their agreement to share responsibility for continuously improving Australia's performance in work related health and safety.

There are five national priority action areas within the strategy to achieve short-term and long-term improvements. The priorities are to:

1. reduce high incidence/severity risks
2. improve the capacity of business operators and workers to manage OHS effectively
3. prevent occupational disease more effectively
4. eliminate hazards at the design stage, and
5. strengthen the capacity of government to influence OHS outcomes.

The Occupational Indicator Project supports the third priority area. Eight diseases groups were identified in consultation with stakeholders and these were endorsed at the 67th NOHSC meeting in March 2004.

The eight priority disease groups are:

Respiratory disease	**Occupational Cancers**
Contact dermatitis	**Infectious and parasitic disease**
Cardio-vascular disease	**Musculoskeletal disorders**
Mental disorders	**Noise-induced hearing loss**

This paper details methods supporting the development of the current suite of adverse health effect indicators for each of the eight diseases completed to date. Data on the disease groups assessed are from the National Data Set for Compensation-Based Statistics (NDS), the National Notifiable Disease Surveillance System (NNDSS), the National Hospital Morbidity Database (NHMD) and the Australian Institute of Health and Welfare's National Cancer Statistics Clearing House (NCSCH). They have been identified as being representative indicators for the eight priority disease groups identified in Table 1.

THE DEVELOPMENT OF THE OCCUPATIONAL DISEASE INDICATORS

In 2003 the AIHW presented to NOHSC[1] the development of Indicator profiles. AIHW consultants also participated in a workshop of interested stakeholders, which confirmed the direction of the project. Work conducted by the Health and Safety Executive (HSE) in the United Kingdom, has also been incorporated into this framework.

This paper follows directly from and updates the previous report, *Occupational Disease Indicators and Summary Statistics*, which was submitted to the NOHSC in April 2005.

The indicators developed in this report draw together the work undertaken by the Office of the ASCC in consultation with the Australian Institute of Health and Welfare (AIHW), Flinders University, the Victorian Institute of Occupational Safety and Health (VIOSH) and the Centre for Informatics and Applied Optimization (CIAO) from the University of Ballarat.

In February 2005 VIOSH completed a peer review of the document *Occupational Disease Indicators and Summary Statistics*. The review concluded that an assessment of data trends for the specified diseases could not be derived from the data in its current form due to a lack of data points. Indicators for diseases with small incidence rates and with multiple but conflicting data trends were also identified as issues that required further statistical development.

VIOSH reported that such problems could be overcome by reconstructing the data in a quarterly rather than in an annual format and that problems resulting from the indicators of the disease trends with small incidence rates could be overcome using advanced statistical methods.

The Australian Bureau of Statistics (ABS) was commissioned in October 2005 to provide additional statistical analysis for the occupational disease indicators in the eight priority disease groups. The NDS was provided for this analysis and was used by the ABS to conduct a series of seasonally adjusted[2] time series analyses on the quarterly data provided. The smoothing of seasonally adjusted time series to create trend estimates is a means of reducing the impact of irregular components of the series. The results of the ABS analyses were then prepared and presented as figures by the Office of the ASCC for the purposes of this report.

This report was endorsed by the Australian Safety and Compensation Council on 6 April 2006.

ISSUES IN OCCUPATIONAL DISEASE

The indicators in this report rely primarily on the NDS but are complemented, where possible, by other data sources to increase the overall validity of the results. As the additional data sources (NHMD, NNDSS and NCSCH) do not identify work-relatedness, only diseases with a high attribution to the work environment were selected from these data sets for inclusion in this report.

Trends in compensated claims for occupational disease are subject to a range of factors. For example, campaigns to increase awareness of occupational diseases may result in increased claims while, conversely, changes to legislation or standards may result in fewer accepted claims through higher thresholds being applied.

Unlike injury, where there is usually a clear cause and effect relationship between a hazard and its health effect, most occupational diseases are multi-factorial in nature, with work place exposures constituting one important part of the risk matrix. Long latency periods in some diseases, such as cancers and the pneumoconioses and a lack of apparent cause and effect, such as with asthma, may result from a variety of different exposures and difficulties in establishing causation through links to the workplace. This may lead to considerable under-reporting of occupational diseases.

Furthermore, for diseases with long latency periods, incidence data may not be the most appropriate

1 *Developing National Indicators.* Presented at the 14th Prevention Committee Meeting; February 2004

2 Seasonal adjustment is a statistical adjustment made to accommodate predictable data fluctuations as a function of the season of the year

indicator of emerging trends as reductions in exposure to disease-causing agents may not lead to any reduction in incidence rate until many years later. Indicators based on hazard exposure or control may be more appropriate. The Office is currently exploring sources of information that could potentially provide data on exposure to disease-causing agents, and may attempt to develop indicators on exposure data in the future.

Given the issues outlined above, it should be noted that the data presented in this paper represent indicators only and should not be taken as representing the true incidence of occupational disease in Australia. The main purpose of this data is in examining trends over time. Where a factor independent of disease incidence, such as the introduction of minimum hearing loss thresholds for compensation, has affected workers' compensation claims data, this is noted in the text.

SECTION 2
CONSTRUCTING AND MEASURING OCCUPATIONAL DISEASE INDICATORS

To be an indicator, AIHW advises that a measure must meet five attributes. These attributes and their definitions are detailed in Table 2.

Not all conditions lend themselves to monitoring by indicators. The extent to which work-relatedness is established or can be reasonably attributed should be taken into account when prioritising which conditions can be appropriately monitored.

Several data sets were examined in order to collect work-related disease information. These data sets include the following:

> National Data Set for Compensation-Based Statistics (NDS)
> National Hospital Morbidity Database (NHMD)
> National Notifiable Disease Surveillance System (NNDSS), and
> Australian Institute of Health and Welfare – National Cancer Statistics Clearing House (NCSCH).

The following sets are currently being assessed to provide information for further development of disease trends:

> Bettering the Evaluation and Care of Health (BEACH) project (University of Sydney), and
> National Deaths Data Set.

Other data sets have been identified for review. These include the SABRE scheme for occupational asthma (Monash University). Strategies for developing data sets are detailed in the National OHS Data Action Plan (ASCC, 2005).

It should be noted that only the NDS data have been selected for the detailed analysis (undertaken by the ABS) in the report as the dataset presents the only available Australian national dataset with sufficient detail.

Additional NDS data comparisons with hospitalisation (NHMD), disease notification data (NNDSS) and cancer registry data (NCSCH), included throughout the report, were performed by the Office of the ASCC Data and Analysis section.

Table 2: Factors influencing selection of an indicator

1	Reliable	Its measurement is not greatly affected by random error and will give the same result whenever it is implemented Sensitive to underlying change
2	Valid	Can compare different indicators that aim to measure the same thing (external validity) Measures what it was meant to measure (construct validity)
3	Viable	Information should be readily available or easily collected
4	Comprehensible	Makes sense to users, general public and policy makers
5	Robustness	Capability of regular updating
6	Representative	Wide coverage of the population or area of interest

SECTION 3
DATA ANALYSIS

OVERVIEW

This report provides at least one variable for each of the eight priority disease groups. The disease groups presented are based on health effects. The specific variables (see Table 4) that were selected to develop each group follow the *Occupational Disease Indicators and Summary Statistics* report that was released in April 2005.

The priority disease groups have been broken down into more specific disease sub-groups where possible and trends identified. In some cases, data permitting, the priority diseases have been examined both at the aggregate level and for the specific conditions within the category. Table 3 below presents a summary of the priority disease groups and associated sub groups.

Results for each of the priority disease groups are presented in Section Four of this report. The results are initially presented as an overview of the priority disease group indicator. Results are then broken down into each of the disease sub-groups where this is applicable. Where possible, comparisons have been made between the NDS and other datasets, i.e. NNDSS, NHMD and NCSCH.

Table 3: Priority disease groups by sub-groups

Priority Disease Group	Disease Sub-Groups
Musculoskeletal Disorders	Skeletal
	Muscular
Mental Disorders	Mental disorders
Noise Induced Hearing Loss	Deafness
Infectious Diseases	Intestinal infectious diseases
	Specified zoonoses
	Viral diseases excluding hepatitis
	Hepatitis
	Other infectious diseases
Respiratory Disease	Asthma
	Respiratory disease due to other substances
	Asbestosis
	Pneumoconiosis
	Other respiratory disease
Contact Dermatitis	Contact dermatitis
Cardiovascular Disease	Ischaemic heart disease
	Other heart disease excluding ischaemic heart disease
	Arterial disease
	Other diseases of the circulatory system
Cancer	Mesothelioma
	Skin cancer

DATA SOURCES AND ANALYSIS

National Data Set for Compensation-Based Statistics (NDS)

The NDS lists a standard set of data items, concepts and definitions for inclusion in workers' compensation systems operating in Australia. The NDS enables the production of national and nationally-comparable workers' compensation data. Since its release, the NDS has been implemented in workers' compensation based collections administered by state, territory and Australian government agencies.

Data are received from the jurisdictions on an annual basis. The data are extracted as at 30 November for claims lodged in the previous financial year (1 July to 30 June). The quality of the data is verified through a series of validation edits.

Data for the latest year are preliminary and are taken from an earlier stage of claims processing than data for other years. They are likely to understate the number of claims. Jurisdictions supply unit record files to the Office of the ASCC containing updated NDS data for five years prior to the reference year at the same time as the reference year unit record files are supplied.

The NDS is the only national dataset that includes information on work-relatedness of disease. It also provides a level of detail such as mechanism, industry and occupation that is not available in other datasets. For a claim to be accepted it requires that the connection between workplace and disease be made by a medical practitioner. For the reasons outlined previously, it is more difficult to establish the work-relatedness of individual cases of occupational disease than it is for occupational injury. This may lead to considerable under-reporting of occupational disease in the NDS.

Australian Institute of Health and Welfare National Hospital Morbidity Database (NHMD)

The NHMD provides data on in-patient episodes as hospital separations. These data include diagnosis, duration of hospital stay and procedures performed. These data may or may not relate to the number of individuals admitted to hospital as one person may have multiple admissions in any one year. Work-relatedness is not consistently recorded in the dataset. Only diseases considered to have a high attribution to work have been examined using this data source.

The National Notifiable Diseases Surveillance System (NNDSS)

The NNDSS[3] was established in 1990 under the auspices of the Communicable Diseases Network Australia and is published by this group on a quarterly basis. The system co-ordinates the national surveillance of more than 50 communicable diseases or disease groups. Under this system, notifications are made to the state or territory health authorities under the provisions of the public health legislation in their jurisdiction. Computerised, de-identified unit records of notifications are supplied to the Commonwealth Department of Health and Ageing for collation, analysis and publication on the Internet and in the quarterly journal *Communicable Diseases Intelligence*. Diseases with a high attribution to the workplace have been reported on for the infectious disease group.

3 health.gov.au/internet/wcms/Publishing.nsf/Content/cda-pubs-cdi-cdi2004.htm

Australian Institute of Health and Welfare (AIHW) – National Cancer Statistics Clearing House (NCSCH)

The NCSCH receives data from individual State and Territory cancer registries on cancer diagnosed in residents of Australia[4]. This commenced with cases first diagnosed in 1982. The NCSCH produces reports of national incidence and mortality data. Periodically, analyses of specific cancer sites, cancer histology, differentials in cancer rates by country of birth, geographical variation, trends over time and survival are undertaken on an accumulation of data which permits examination of the data in greater depth. The aim of the NCSCH is to foster the development and dissemination of national cancer statistics for Australia. For the purposes of this report NCSCH Mesothelioma data has been included in the section on cancer.

EXPLANATORY NOTES ON THE DATA ANALYSIS

In analysing trends over time, consideration needs to be given to the extent to which jurisdictional-specific legislative changes have occurred during the period concerned and are reflected in movements in number, incidence and frequency rates from year to year.

Multiple claims from a single individual may not necessarily be identified as being related to a single individual. The NDS data set stipulates that such claims should be linked rather than being counted more than once, however this occurs to varying degrees across jurisdictions. Additionally, NHMD data may include the same individual presenting for multiple hospitalisations during the year.

The date of lodgement has been used as the basis for the analysis, rather than the dates of incident for compensation.

The denominators used for the NDS incidence calculations are the quarterly data from the ABS. These are the number of persons employed by industry and state. For the NNDSS and NHMD the denominator data used for incidence calculations was the ABS Australian Historical Population Statistics. NNDSS and NHMD incidence rates were calculated to include only individuals older than fourteen years. This allows more valid comparisons with NDS incidence rates, which include only denominators for the working population.

It should be noted that incidence rates for figures presenting compensated claims data only, are quarterly rates and hence not comparable to figures containing both NDS and supplementary data set trends as these represent annual incidence rates.

4 Information on NCSCH data items can be found at .aihw.gov.au/datacat/index.cf

SECTION 4
RESULTS

MUSCULOSKELETAL DISORDERS

Background

Musculoskeletal disorders cover a broad group of clinical disorders that impact on the musculoskeletal system. Within these conditions, there is a great variety in the intensity of the impact of the disorder on the affected person's life, the workforce as a whole and the cost to the community.

It should be noted that in some jurisdictions, there is overlap in the impact of the musculoskeletal injury, and the longer-term problems resulting from the initial injury. This has presented technical difficulties when coding these conditions for data collection and insurance purposes.

The information for this indicator is drawn from the workers' compensation data and hence, the data presented in this report is subject to some variation in jurisdictional coding rationales. For this reason, data on claims for musculoskeletal injuries and disease have been used in this report.

Disease Group and Specific Variables

The musculoskeletal disorders group has two sub-groups, which are based on nine specific claim variables. These disease groups include skeletal and muscular disorders.

Table 4: Variables included in the Musculoskeletal Disorders Priority Disease Group

Breakdown Disease Group	Code	Code definition: specific variables
Skeletal	010	Fractures
	020	Fracture of vertebral column with or without mention of spinal cord lesion
	030	Dislocation
	310	Arthropathies and related disorders - disorders of the joints
	320	Dorsopathies - disorders of the spinal vertebrae and intervertebral discs
	340	Osteopathies, chondropathies and acquired musculoskeletal deformities
Muscular	040	Sprains and strains of joints and adjacent muscles
	330	Disorders of muscle, tendons and other soft tissues
	450	Hernia

Source: NDS data set 1996-1997 to 2003-2004

Figure 1: Overview - Indicator (Musculoskeletal Disorders Group)

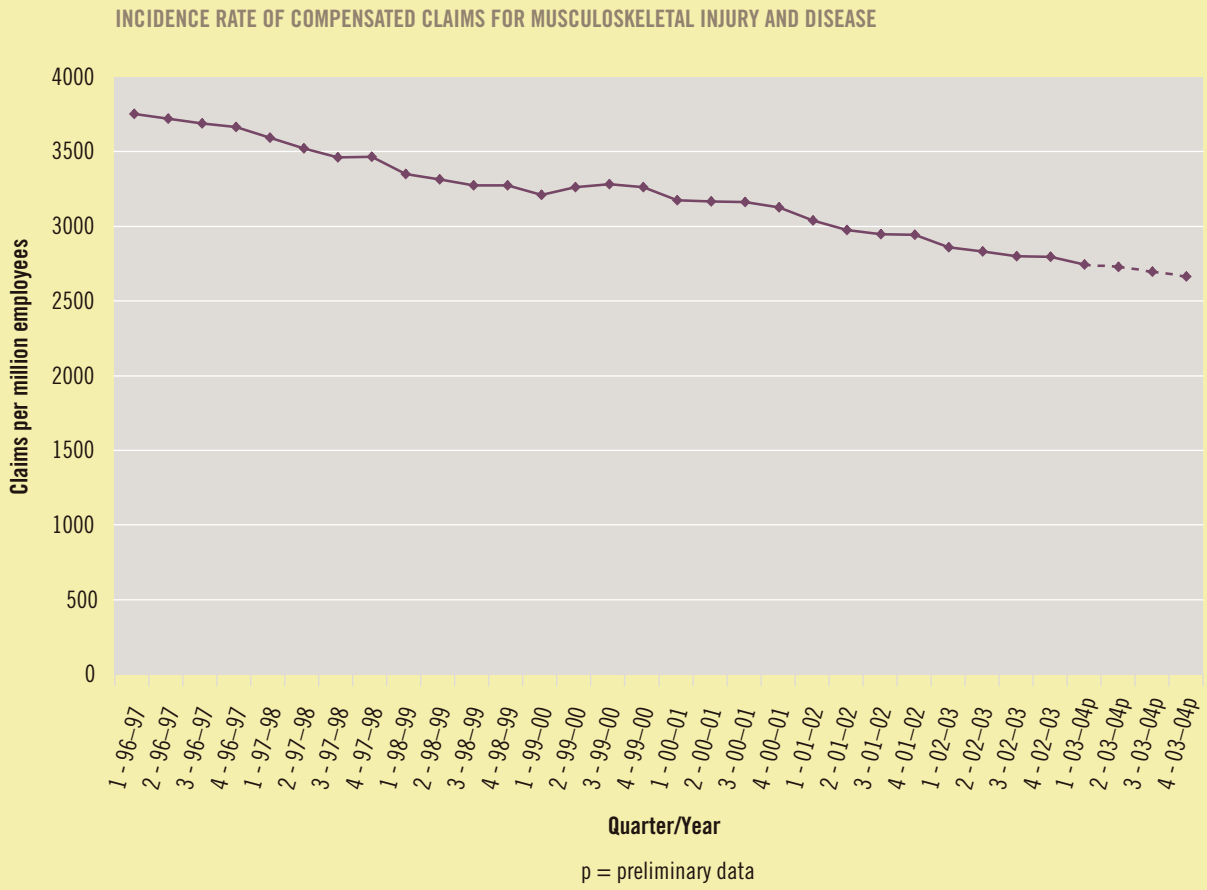


Figure 1 above represents the indicator for the aggregated priority disease group, musculoskeletal disorders. As discussed, this priority disease group includes claims for skeletal and muscular disorders combined. Please note that the scale on this graph is claims per million persons employed.

Summary: Over the period assessed, there was a decrease in the incidence of musculoskeletal claims. The observed decrease is mainly driven by an associated decrease in muscular disorders (see Figure 2). It should be noted that 2003-04 data is preliminary.

Figure 2: Musculoskeletal Disorders (Details of specific indicators)

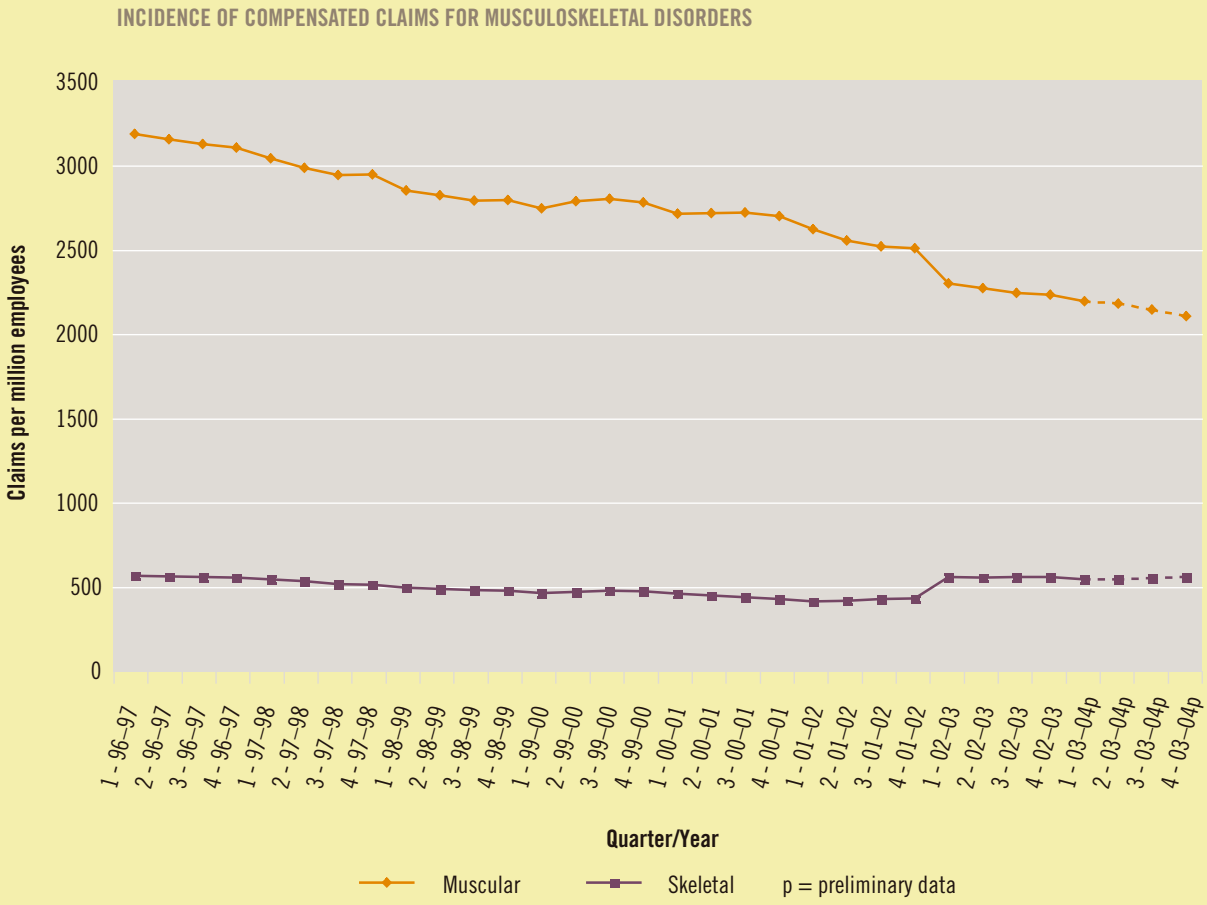


Figure 2 above presents the indicators for musculoskeletal disorders by claims for both muscular and skeletal disorders.

Note: The time-series split seen in the 2002-03 year relates to a change in coding, where one of the jurisdictions discontinued the use of Type of Occurrence Classification System (TOOCS) code 040 (sprains and strains of joints and adjacent muscles). Following this, claims previously attributed to code 040 were dispersed amongst codes 310, 320, 330 (skeletal codes) and 340 (muscular code).

Summary: Over the six year period, the incidence of muscular disorders decreased steadily. Conversely, there was no change in the incidence of claims for skeletal disorders, over the same period. As seen in Figure 1, skeletal and muscular disorders, when aggregated to all musculoskeletal injury and disease, displayed an overall pattern of decline.

MENTAL DISORDERS

Background

Work-related mental disorders encompass conditions such as post-traumatic stress disorder, burnout, adjustment disorders and affective disorders as well as acute and chronic stress are considered to have multiple causes. Within this disease group, the stimuli themselves become defined as exposures when perceived by an individual as pressures demanding more of the individual than they are able to give. There is no proven causal model of how specific factors contribute to work-related mental disorders, although a number of explanatory models exist. Nonetheless some common experiences contributing to work-related mental disorders are evident. Such exposures include: a traumatic event at work; persistent workplace demands evoking feelings of personal uncertainty, vulnerability and/or helplessness; excessive work pressures; job demands that fall short of, or exceed, the individual's skills set; an absence of support; the individual's sense of control and sense of self at work and experiences of workplace abuse and/or bullying. While responses to workplace stressors vary at the individual level, the disease profile shows that occupational stressors, for example job strain, have a systematic and significant impact on morbidity.

Disease Group

There is only one claim variable for the mental disorders group in the NDS data set. The specific variable is included as follows:

Table 5: Variables included in the Mental Disorders Priority Disease Group

Breakdown Disease Group	Code	Code definition: specific variables
Mental Disorders	910	Mental disorders

Source: NDS data set 1996-1997 to 2003-2004

Figure 3: Overview — Indicator (Mental Disorders Group)

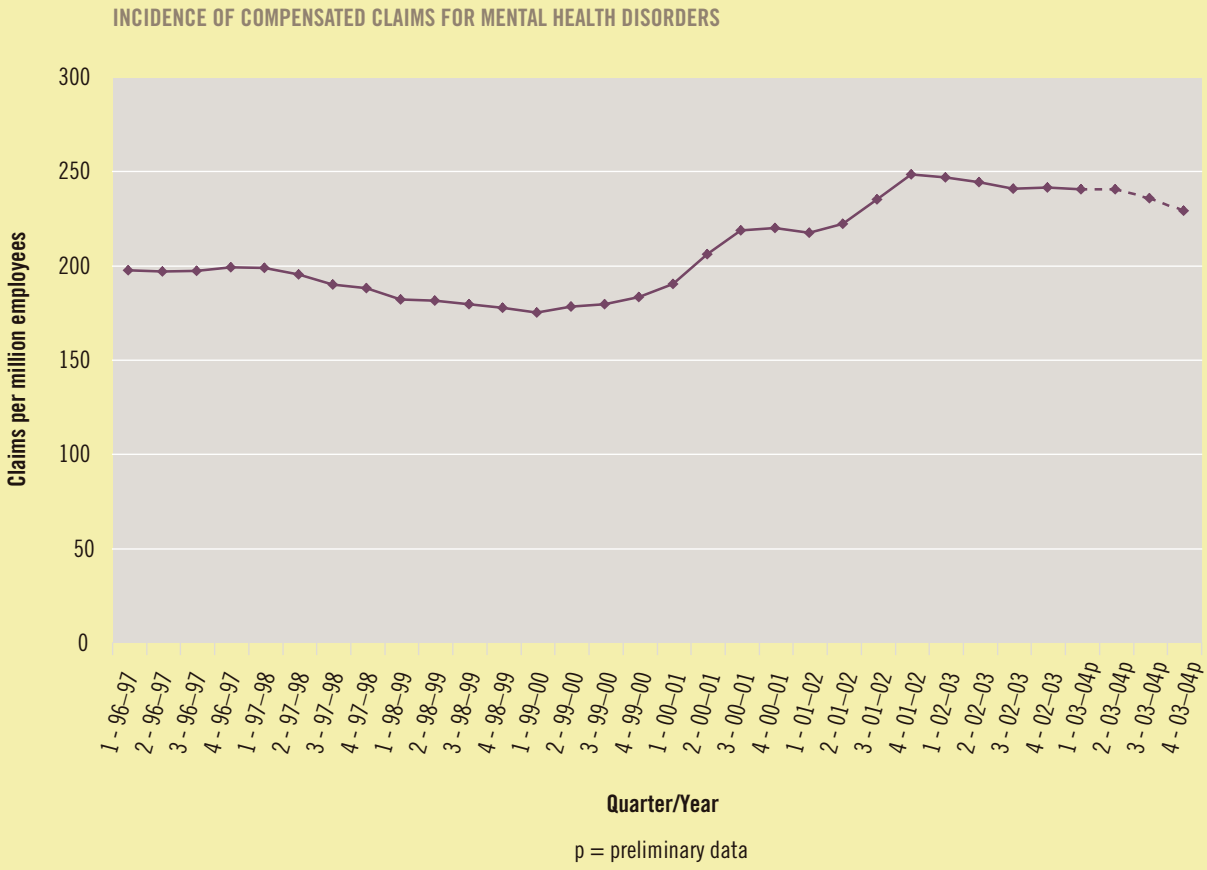


Figure 3 above represents the indicator for the mental disorders priority group claims. As discussed, this priority disease group includes only one variable, mental disorders. Please note that the scale on this graph is claims per million persons employed.

Summary: **Apart from a minor decline from 1997-98 to 1999-00 the incidence of mental disorders appears to have increased, especially when considering that data for the 2003-04 year is preliminary and likely to increase.**

NOISE INDUCED HEARING LOSS

Background

Claims for occupational noise induced hearing loss are for hearing loss caused by sustained exposure to excess sound energy, rather than traumatic exposures. Workers' compensation claims data for 2001-02 showed that 96 per cent of such claims were noise related with the remaining claims attributed to factors such as the use of ototoxic chemicals. Sustained noise exposure results in a sensori-neural (i.e. nerve) hearing loss, particularly evidenced in damage to high frequency hearing receptors (e.g. 4kHz – 6 kHz) in the cochlear.

When assessing any data relating to noise induced hearing loss it is important to note changes to the acceptable hearing loss threshold for compensation claims nationally. A recommendation developed within the Heads of Workers' Compensation Authorities (HOWCA), in 1997, suggested a 10 per cent threshold apply for compensability and minimum thresholds were subsequently adopted by all jurisdictions (although actual threshold percentages still vary amongst jurisdictions). This led to a reduction in the number of accepted noise induced hearing loss claims.

Disease Group

There is only one variable for noise induced hearing loss disease group in the NDS data set. The specific variable included is as follows:

Table 6: Variables included in the Noise Induced Hearing Loss Priority Disease Group

Breakdown Disease Group	Code	Code definition: specific variables
Noise Induced Hearing Loss	250	Deafness

Source: NDS data set 1996-1997 to 2003-2004

Figure 4: Overview — Indicator (Noise Induced Hearing Loss)

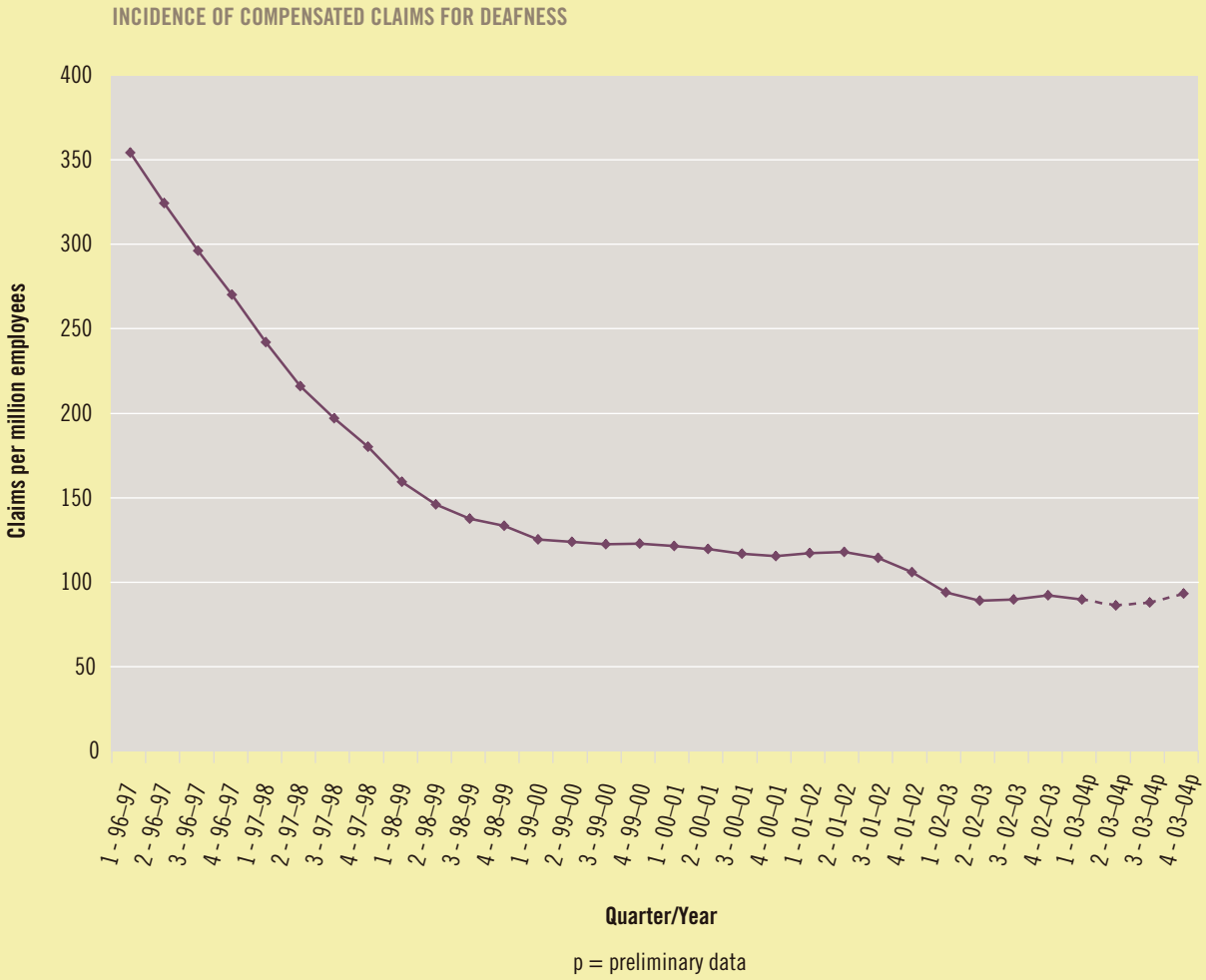


Figure 4 above represents the indicator for the noise induced hearing loss priority group claims. As discussed above, this priority disease group includes only claims for deafness. Please note that the scale on this graph is claims per million persons employed.

Summary: The sharp decrease observed between 1st quarter 1996-97 and 1st quarter 1998-99 is likely to be due to the introduction of minimum thresholds for compensability of deafness by the different jurisdictions. There has continued to be a slight decrease since then.

INFECTIOUS DISEASES

Background

Infectious diseases in the working population are difficult to measure directly. Any one infectious disease may have a variety of sources, some of which can be attributed to the workplace. The NDS is supplemented by the NNDSS for those diseases which are highly attributable to the work environment.

Disease Group and Specific Variables

The infectious disease group has five sub-groups, which are based on nine specific variables. These include intestinal infectious diseases, specified zoonoses, viral diseases excluding hepatitis, hepatitis and other infectious diseases. The specific variables included are as follows:

Table 7: Variables included in the Infectious Diseases Priority Disease Group

Breakdown Disease Group	Code	Code definition: specific variables
Intestinal Infectious Diseases	510	Intestinal infectious diseases
Specified Zoonoses	520 *(TOOCS 2)* 521-525 *(TOOCS 2.1)*	Specified zoonoses (Includes anthrax, brucellosis, Q-fever, leptospirosis and 'Other' zoonoses)
Viral Diseases Excluding Hepatitis	540	Viral diseases excluding hepatitis, sexually transmitted diseases and 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 and parasitic diseases

Source: NDS data set 1996-1997 to 2003-2004

Figure 5: Overview — Trends (Infectious Diseases Group)

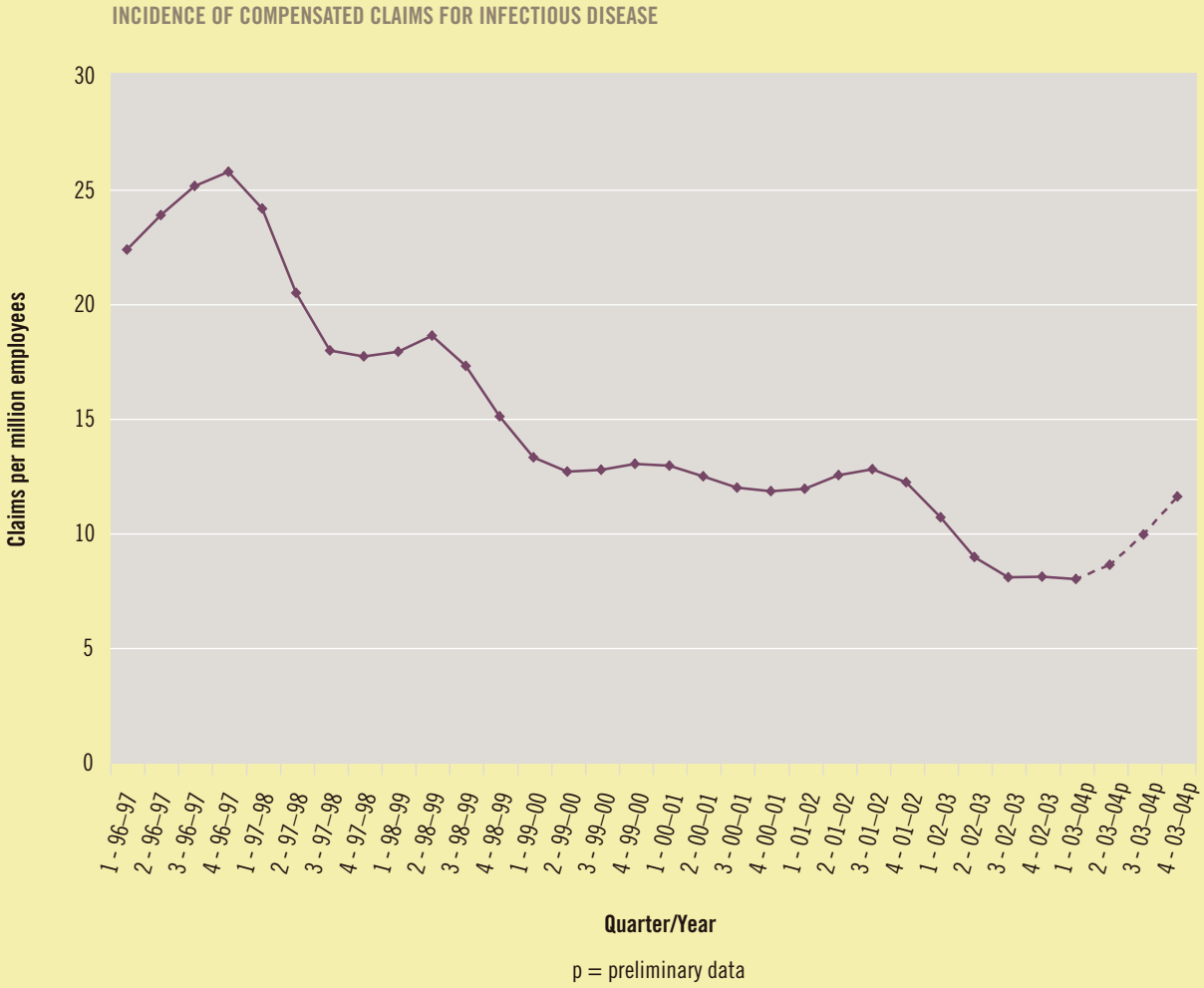


Figure 5 above represents the indicator for the aggregated priority disease group, infectious diseases. As discussed, this priority disease group includes claims for intestinal infectious diseases, specified zoonoses, viral diseases excluding hepatitis, hepatitis and other infectious diseases. Please note that the scale on this graph is claims per million persons employed.

Summary: A decrease in the number of claims relating to infectious diseases was observed over the period assessed. Please note that the data for 2003-04 period is preliminary and likely to increase, however, given the fluctuating nature of previous years it is too early to tell whether the 2003-04 trend increase will be sustained into 2004-05 or whether the trend will again cycle downwards. The observed 2003-04 spike in trend appears to be primarily related to an associated increase in intestinal infectious diseases (see Figure 6).

Figure 6: Infectious Diseases (Details of specific indicators)

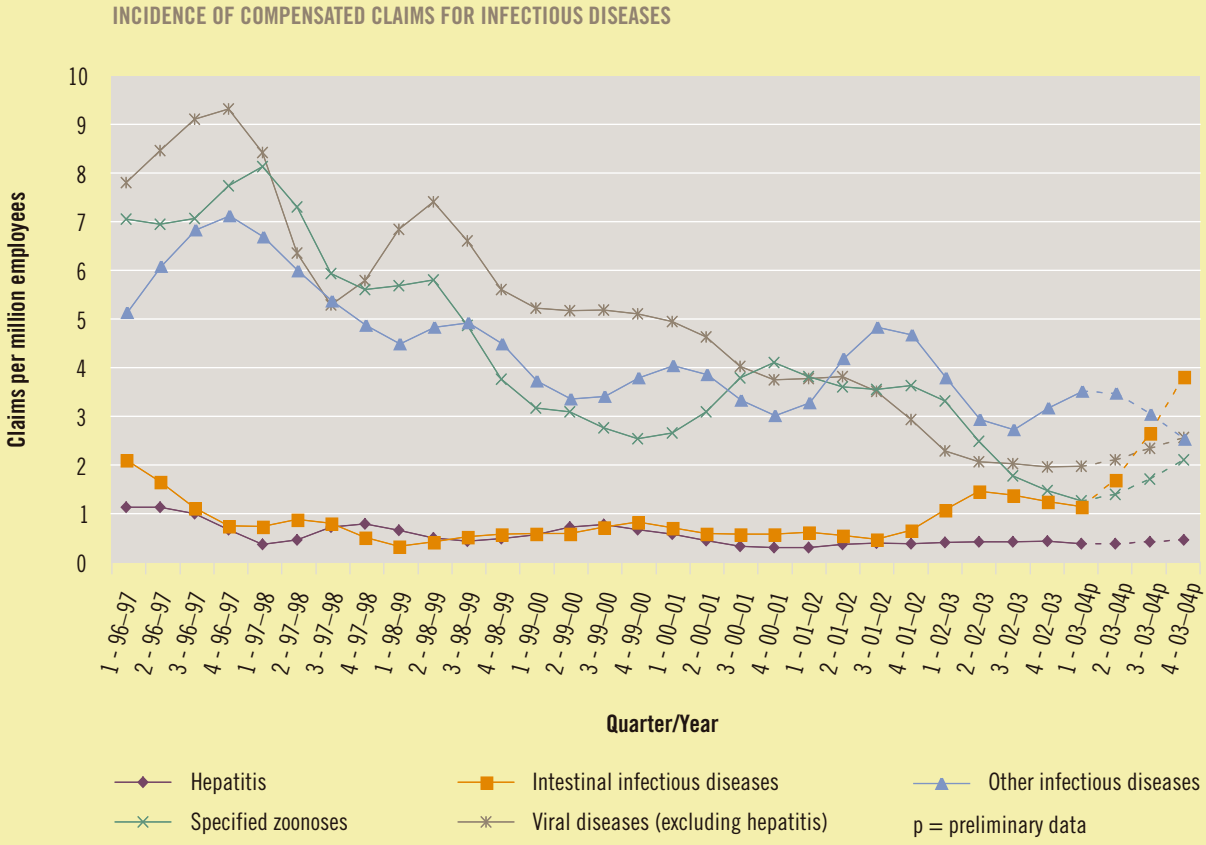


Figure 6 above represents the indicators for the specific variables within the infectious diseases group.

Summary: Over the six year period, there was a decrease in the incidence of claims for zoonoses, viral and 'other' infectious diseases, while intestinal infectious diseases appeared to increase over the same period. The incidence of hepatitis-related claims appears to have remained steady.

National Notifiable Diseases Surveillance System (NNDSS)

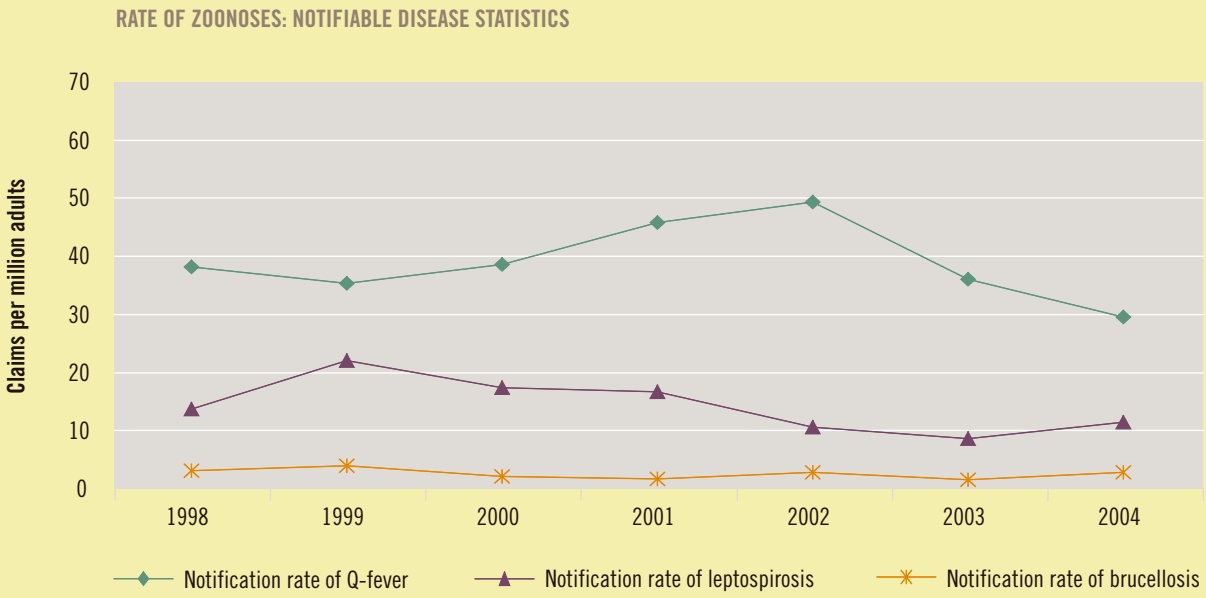
Specified Zoonoses

Q-fever is regarded as primarily an occupational disease of pastoralists and workers from the meat processing and livestock industries. The clinical features of the disease are varied from a mild 'flu-like' illness to longer term complications involving major organs including the heart and liver. In 2001, the Q-fever vaccination program was introduced. The trend in the existing data showed Q-fever to be increasing until 2002, followed by a marked decline in following years. It may be inferred, therefore, that the observed decreasing trend relates to the established vaccination program.

Leptospirosis is a general term for a disease with many subtypes (serovars). It may be caused by incidental exposure to contaminated water while swimming; or contact with dogs and rats. Meatworkers and those involved in work on banana farms are two high-risk occupations for leptospirosis. There was an increase in 1999 which may reflect an increasing awareness of the disease as well as optimal conditions for the survival of the organism with the higher than average rainfall experienced. However, in recent years the trend for Leptospirosis appears to indicate an overall decline.

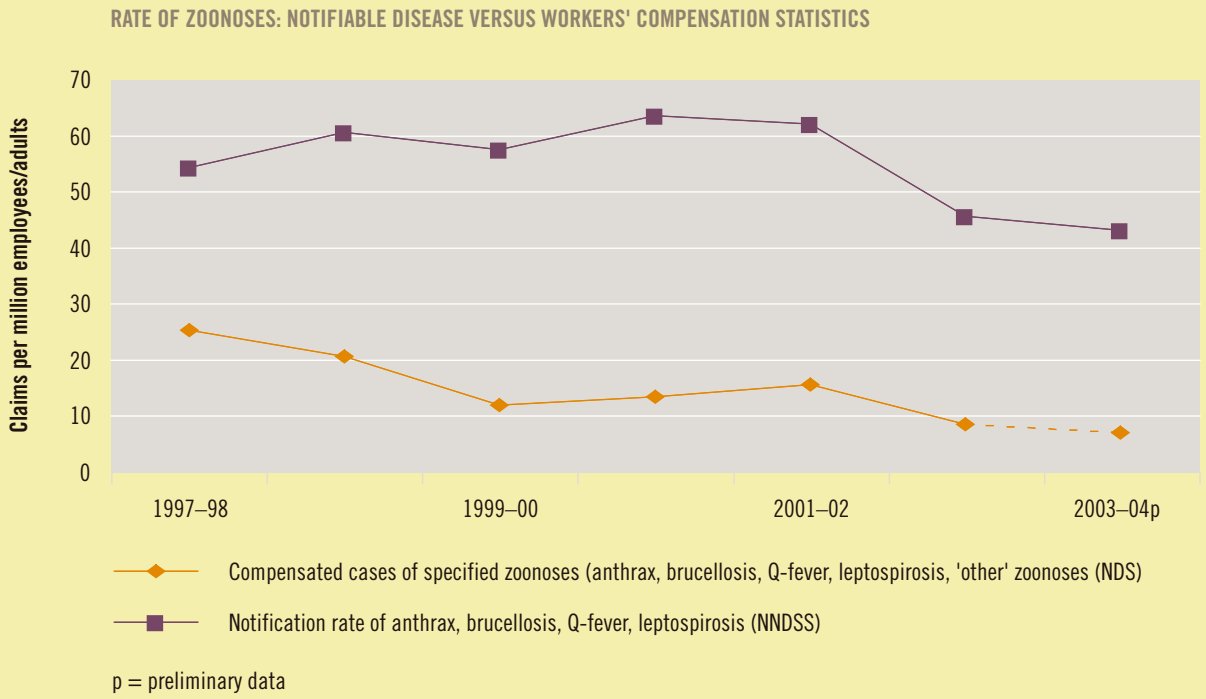
Brucellosis is a bacterial based disease that is found in farm animals. Brucellosis can be transmitted to humans either via direct contact with an infected animal or by drinking unpasteurised milk. Infection results in a fever-like illness that can become chronic. The trend for brucellosis for the period assessed appears to have remained stable.

Figure 7: Rate of zoonoses NNDSS



Summary: Over the six year period, a decrease in the incidence of notification of leptospirosis was observed, although the trend appears to be stabilising. Conversely, no discernable change in notification frequency for brucellosis was apparent. Q-ever exhibited an increase until 2001-02, after which, the trend declined markedly.

Figure 8: Rate of zoonoses NNDSS versus NDS



p = preliminary data

Note: Notification incidence refers to cases per million adults and compensated cases incidence refers to claims per million employees.

Summary: The incidence of claims relating to specified zoonoses declined over the period observed (as also seen in Figure 6). While the trend for NNDSS combined zoonoses notification is more difficult to interpret there was an observed decline following 2002. The noticeably greater rate of NNDSS zoonoses notifications, than NDS claims incidence for zoonoses, is primarily driven by the Q-fever notification rate (see Figure 7).

RESPIRATORY DISEASE

Background

Respiratory diseases can result from workplace exposures to a variety of dusts, particles, gases, vapours, musty odours and fumes. Workers commonly affected by such exposures include process workers such as food processors, bakers, farmers, spray painters, miners, hairdressers and construction workers.

Respiratory diseases caused by inhalation of inorganic dusts are referred to as pneumoconioses. The most common pneumoconioses are asbestosis and those resulting from the inhalation of silica or coal and less commonly, talc.

Exposure to asbestos in the workplace has decreased over the last 40 years, and a nationwide ban on importing and using all forms of asbestos occurred in December 2003. However, asbestos-related diseases have a period of long latency (typically 20–30 years), and the number of recorded cases are therefore expected to increase for the next 10 to 15 years. There is also potentially ongoing exposure risk from asbestos removal, building maintenance and renovations. Exposure to asbestos can result in two disease types, asbestosis and mesothelioma. Asbestosis is characterised by a fibrosis (scarring and shrinking) of the lung tissue from exposure to asbestos, which makes breathing difficult. Mesothelioma is included in the section of this report on Cancer.

The pneumoconioses, other than asbestosis and silicosis disease group, shows the rate of pneumoconioses due to inorganic dusts other than asbestos (see above). These pneumoconioses require prolonged exposure and, similar to asbestosis, have a long latency period.

Exposures to other dusts can result in a variety of diseases including: chronic obstructive pulmonary disease, chronic bronchitis, chronic bronchitis with airway obstruction, shortness of breath with airway obstruction, wheezing, asthma, nasal allergy, chronic phlegm and organic dust syndrome. Episodes of specific diseases, for example asthma, can result in increased rates of hospitalisation.

As with other disease processes, some workers may be more susceptible to exposures than others. Sensitisation can occur to specific exposures over time, with the literature suggesting that particularly sensitive workers may leave a specific occupation early in their career. Cigarette smoking has also been identified as a cause of chronic obstructive pulmonary disease and chronic bronchitis, confounding the extent to which work-relatedness is causal. However, while smoking alone may cause these diseases, occupational factors alone have also been shown to cause them, irrespective of whether the worker smoked.

Disease Groups and Specific Variables

The respiratory disease group has five sub-groups which are based on eight specific variables. These disease groups include asthma, asbestosis, pneumoconiosis, other substances and other respiratory diseases. The specific variables included in these disease groups are as follows:

Table 8: Variables included in the Respiratory Diseases Priority Disease Group

Breakdown Disease Group	Code	Code definition: specific variables
Asthma	610	Asthma
Legionnaires and Other Respiratory Conditions due to Substances	620	Legionnaires disease
	660	Other respiratory conditions due to substances
Asbestosis	630	Asbestosis (excludes mesothelioma)
Pneumoconiosis	640	Pneumoconiosis due to other silica or silicates
	650	Pneumoconiosis excluding asbestosis and silicosis
Other Respiratory Disease	670	Chronic bronchitis, emphysema and allied conditions
	680	Other diseases of the respiratory system

Source: NDS data set 1996-1997 to 2003-2004

Figure 9: Overview — Trends (Respiratory Diseases Group)

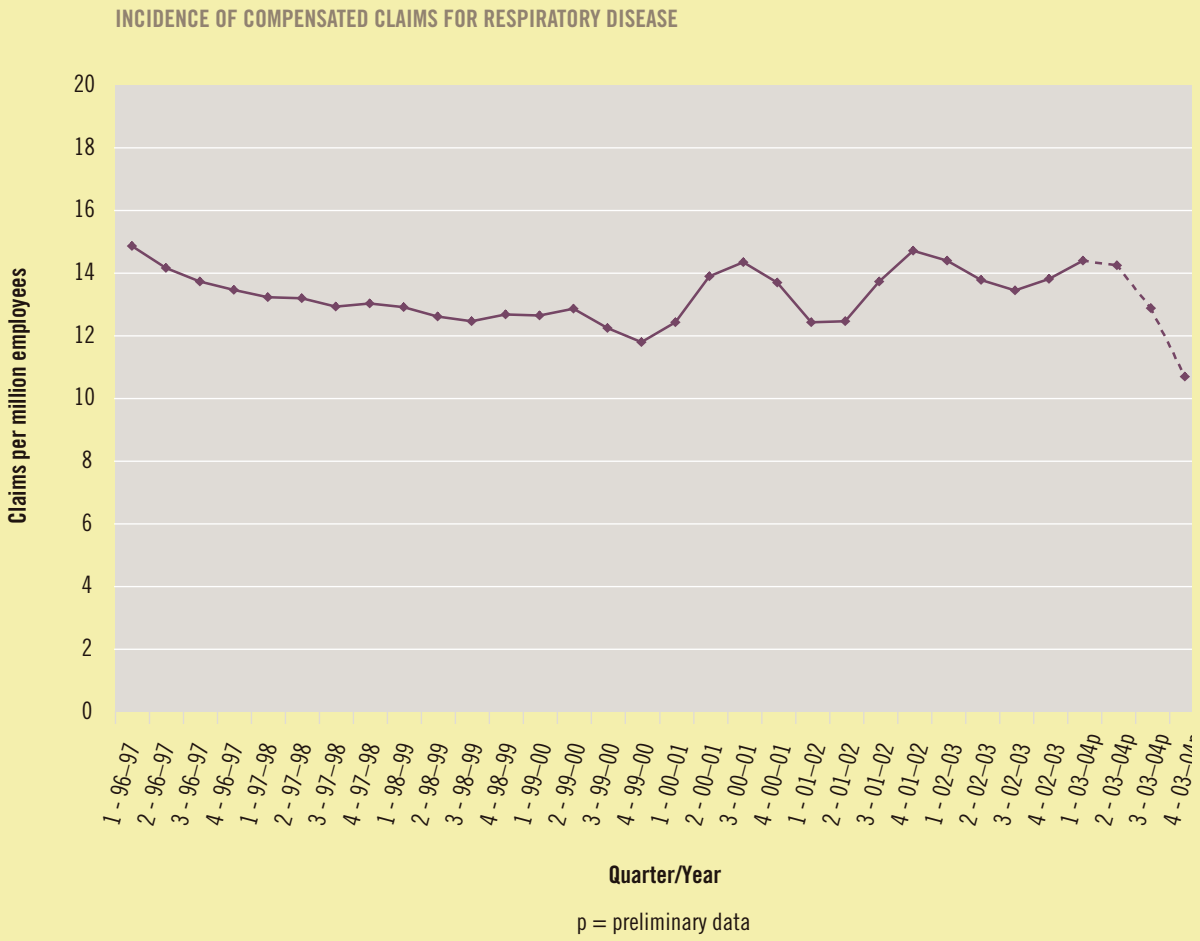


Figure 8 above represents the indicator for the aggregated priority disease group, respiratory diseases. As discussed, this priority disease group consists of five variables including asthma, asbestosis, pneumoconiosis, respiratory disease due to other substances and other respiratory diseases. Please note that the scale on this graph is claims per million persons employed.

Summary: **When considering that the 2003-04 data is preliminary and likely to increase, in conjunction with the trend observed over previous years, the incidence of compensated respiratory disease claims appears to be stable.**

Figure 10: Respiratory Diseases (Details of specific indicators)

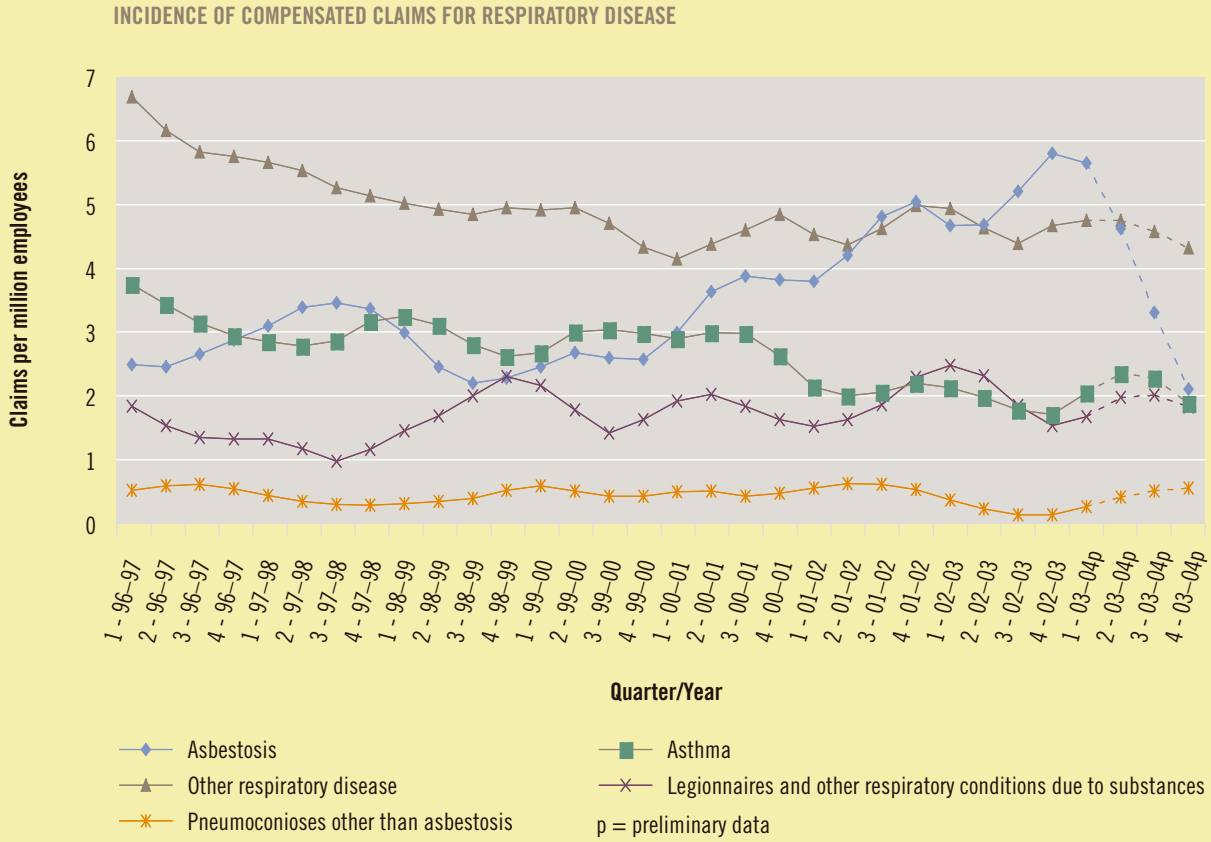


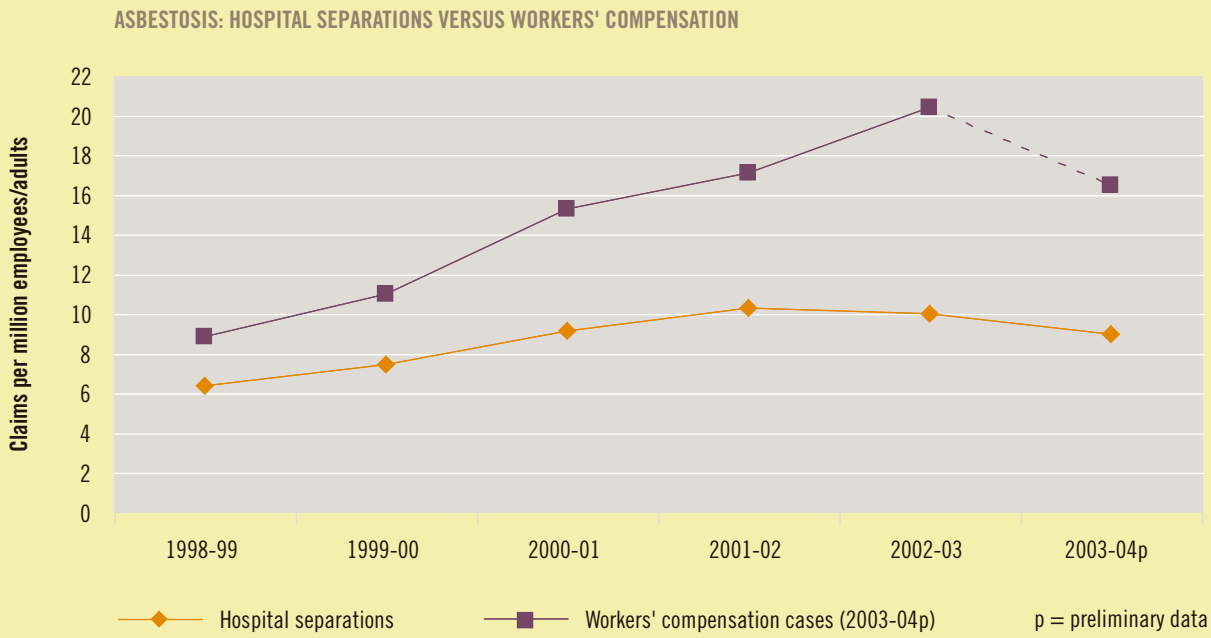
Figure 10 above represents the indicators for the specific variables within the respiratory diseases group

Summary: Over the six year period, a decrease in the incidence of claims for asthma and 'other' respiratory diseases was observed. Conversely, no discernable change in claims frequency for pneumoconioses and legionnaires & respiratory conditions due to other substances was apparent. Claims for asbestosis exhibited the greatest increase of all the respiratory disease groups up until 2003-04. It should be noted, however, that the incidence of 2003-04 claims for asbestosis is expected to increase once preliminary data has been updated.

National Hospital Morbidity Database (NHMD)

The following table compares the rates of asbestosis in the NHMD and the NDS. For asbestosis, the figures below confirm the expected increase in case numbers by showing an increasing trend in the incidence rate of both workers' compensation claims as well as hospitalisations. It should be noted that the 2003-04 data is preliminary and final values are likely to increase. Hence, when updates to NDS data for asbestosis are completed in coming years, it is expected that an overall increase in incidence will be reported.

Figure 11: Rate of asbestosis (Comparing hospital separations and NDS 1998-99 to 2003-04p)



Note: The hospital separation rate may include the same individual presenting for multiple hospitalisations during the year. Additionally, hospital separations incidence refers to cases per million adults.

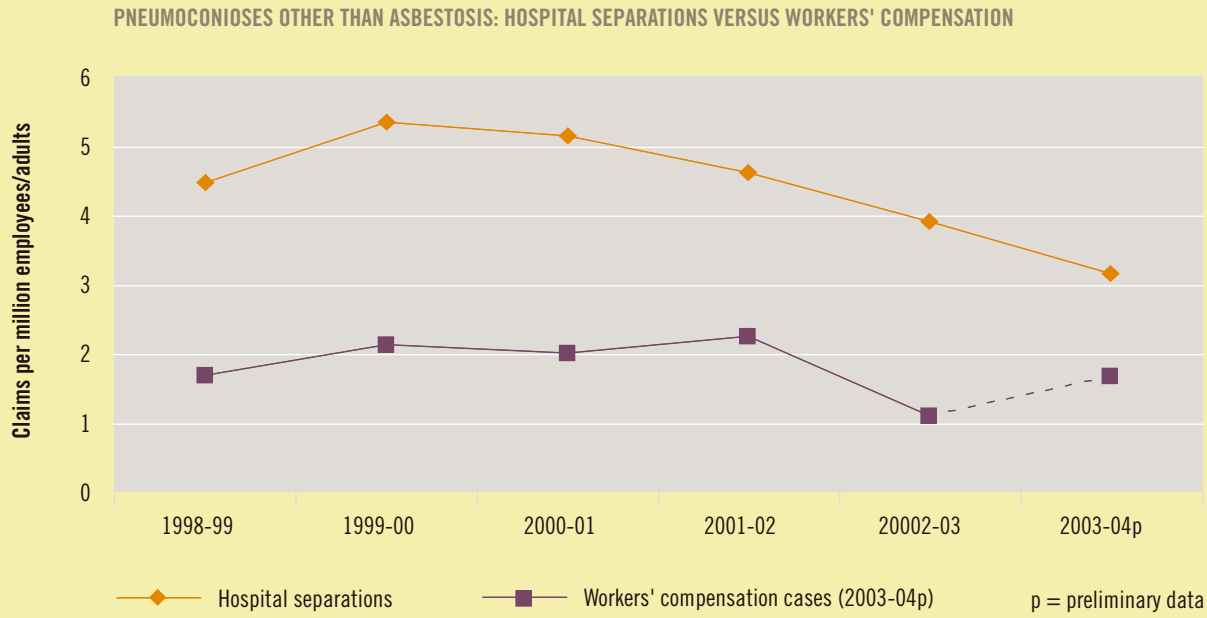
Summary: Both hospital separations and workers' compensation claims for asbestosis show an overall increase for the period assessed.

Pneumoconioses other than asbestosis

There is a decreasing trend in the hospitalisation rate of pneumoconiosis other than asbestosis, contradicting the workers' compensation data. This may be because the curves reflect different time periods in the history of the disease, there may be better treatment available or changes in admission practices, all of which may mean less hospitalisation.

The workers' compensation rate increased slightly from 1998-99 to 1999-00, followed by an observed decrease for the 2002-03 year. However, based on 2003-04 preliminary data, the trend appears to be stabilising.

Figure 12: Rate of pneumoconioses other than asbestosis (Comparing hospital separations and NDS 1998–99 to 2003–04p)



Note: The hospital separations rate number may include the same individual presenting for multiple hospitalisations during the year. Separations incidence refers to cases per million adults.

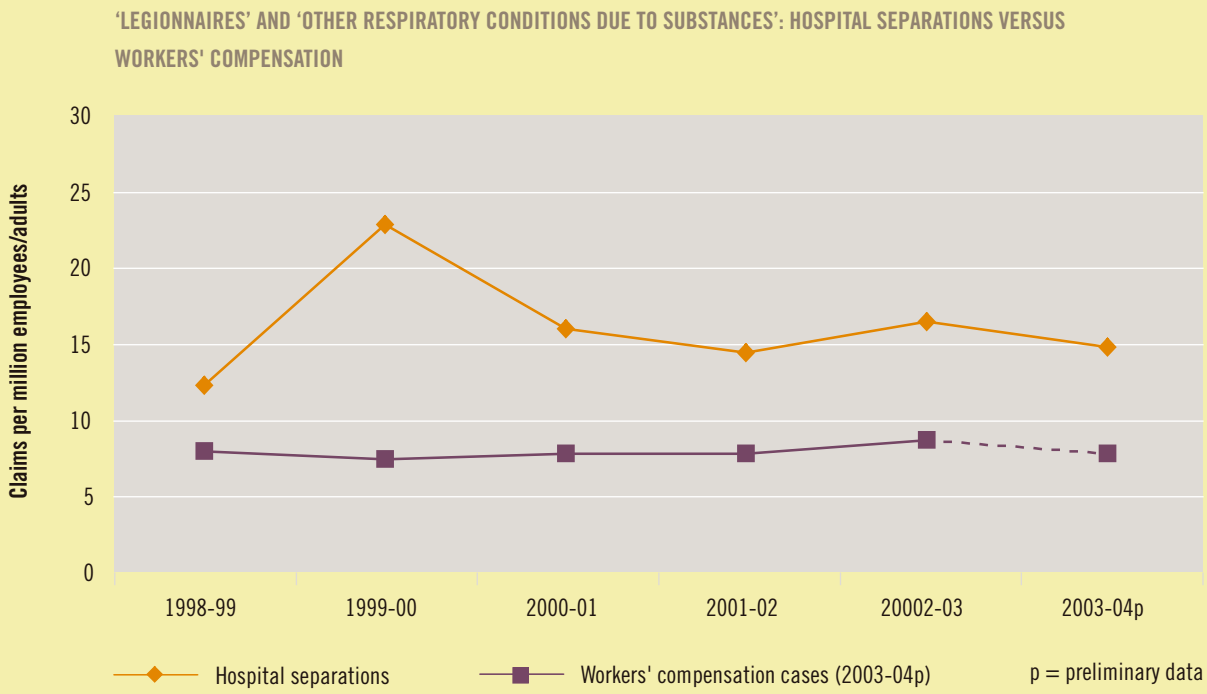
Summary: For the period assessed, pneumoconioses case incidence for hospital separations appears to be in decline. The trend for workers' compensation claims appears to be stabilising, after a noticeable decrease in 2002-03.

Legionnaires and other respiratory conditions due to substances

This trend line shows the rate of legionnaires and other respiratory conditions due to a broad group of substances other than those mentioned previously.

From the hospital separations data, legionnaires and the following cases of hypersensitivity pneumonitis are included; farmer's lung, bagassosis, bird fancier's lung, mushroom-worker's lung, air-conditioner and humidifier lung, hypersensitivity pneumonitis due to other organic dusts, hypersensitivity pneumonitis due to unspecified organic dust (which is assumed to have a high attribution to workplace exposures). From the workers' compensation figures: 'legionnaires' and 'other respiratory conditions due to substances' were included.

Figure 13: Rate of 'legionnaires' and 'other respiratory conditions due to substances' (Comparing hospital separations and NDS 1998–99 to 2003–04p)



Note: The hospitalisation number may include the same individual presenting for multiple hospitalisations during the year. Hospital separations incidence refers to cases per million adults.

Summary: The trend for 'legionnaires' and 'other respiratory conditions due to substances' appears to be relatively stable, aside from an isolated increase in 1999-00 hospital separations trend.

CONTACT DERMATITIS

Background

Contact dermatitis is a skin condition caused by external factors, particularly substances interacting with the skin. It predominantly affects the hands although other exposed areas such as the arms and face may be involved. There are three main types of contact dermatitis; irritant (75%), allergic (25%) and urticaria (1%).

Irritant contact dermatitis may be caused by skin exposure to chemicals (such as acidic or alkaline substances) that damage the skin's natural barrier function. It can also be caused by the cumulative effect of substances such as water, soaps, detergents and solvents as well as heat and sweat. These substances dry and irritate the skin eventually causing an inflammatory reaction. Allergic contact dermatitis results from the skin's exposure to an allergen (a chemical able to generate an allergic reaction). Approximately three per cent of chemicals are known allergens. Other chemicals can cause allergic reactions once personal sensitivity has occurred. Once sensitised, the individual remains allergic to the chemical. Contact urticaria is a transient hives-like reaction to a specific substance.

As with other occupational diseases, personal factors may play a role in the onset of contact dermatitis. For example, a person may exhibit pre-existing dermatological or related disorder. In addition to pre-existing conditions, workers commonly conducting wet work and who use gloves at work are at risk of contact dermatitis. Affected workers commonly include hairdressers, people involved in food preparation, health care workers and workers involved in aspects of manufacturing.

Disease Group

There is only one variable for contact dermatitis in the NDS data set. The specific variable included is as follows:

Table 9: Variables included in the Contact Dermatitis Priority Disease Group

Breakdown Disease Group	Code	Code definition: specific variables
Contact dermatitis	410	Contact dermatitis

Source: NDS data set 1996-1997 to 2003-2004

Figure 14: Overview — Trends (Contact Dermatitis Group)

Figure 14 above presents the data for the priority disease group, contact dermatitis. As discussed, this priority disease group includes only one variable, contact dermatitis. Please note that the scale on this graph is claims per million persons employed.

Summary: There was an observed decrease in the incidence of contact dermatitis related claims over the period assessed.

CARDIOVASCULAR DISEASE

Background

Work-related cardiovascular disease is cardiovascular disease caused or exacerbated by occupational factors. While cardiovascular disease is considered to be largely synonymous with ischaemic heart disease, a number of other circulatory diseases are considered within this grouping. The current evidence identifies chemical exposures as increasing the risk of sustaining a cardiovascular event in relation to work, although other factors (environmental tobacco smoke, low job control, noise and shiftwork) have also been implicated. Notably, a person sustaining an acute coronary event at work may make a successful claim for compensation, even though the fact that the event occurred while working was coincidental. Cardiovascular disease results in significant morbidity and mortality.

Disease Group and Specific Variables

The cardiovascular diseases group has four sub-groups, which are based on six specific variables. These groups include ischaemic heart disease, other heart disease excluding ischaemic heart disease, arterial disease and other diseases of the circulatory system. The specific variables included in each of these are as follows:

Table 10: Variables included in the Cardiovascular Diseases Priority Disease Group

Breakdown Disease Group	Code	Code definition: specific variables
Ischaemic Heart Disease	710	Ischaemic heart disease
Other Heart Disease Excluding IHD	720	Other heart disease excluding Ischaemic heart 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

Source: NDS data set 1996-1997 to 2003-2004

Figure 15: Overview — Trends (Cardiovascular Diseases Group)

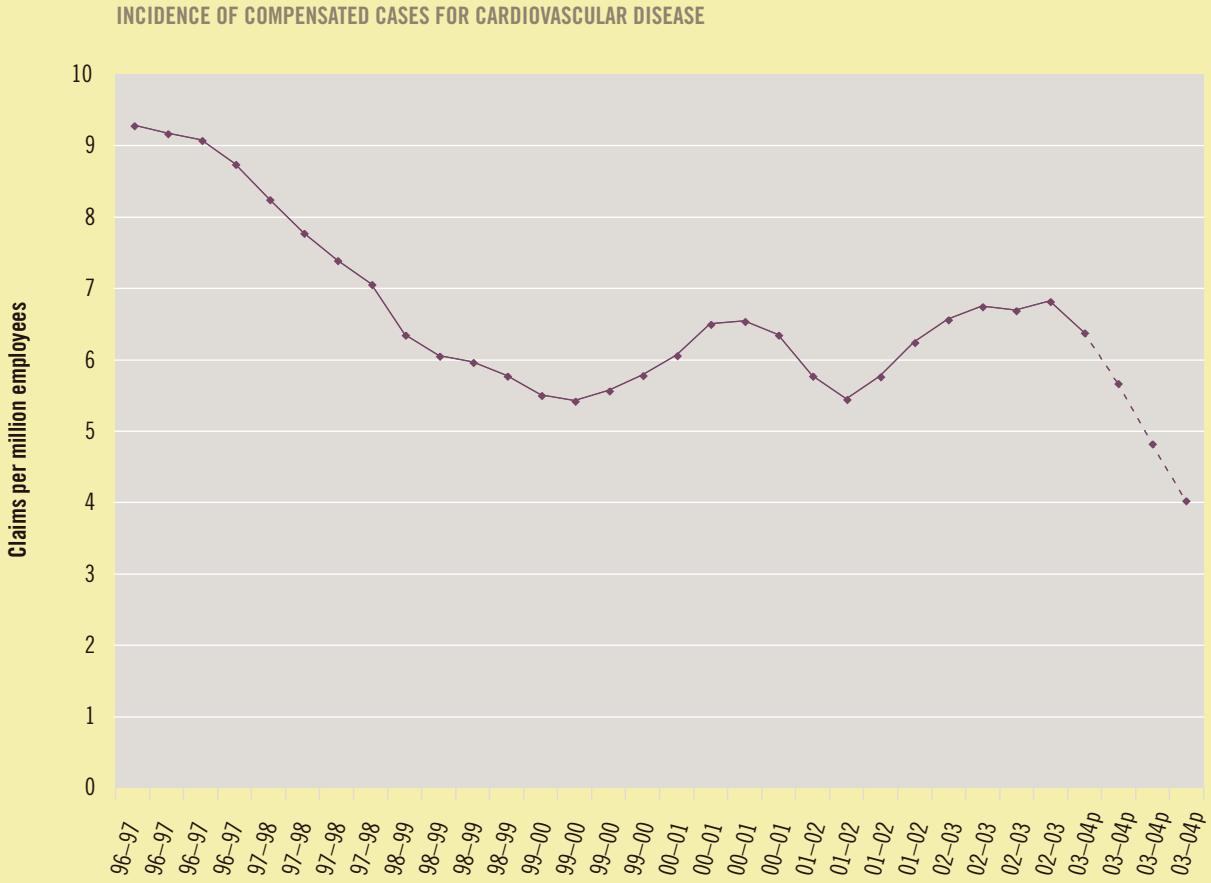


Figure 15 above represents the indicator for the aggregated priority disease group, cardiovascular diseases. As discussed, this priority disease group consists of four breakdown disease groups including ischaemic heart disease, other heart disease excluding ischaemic heart disease, arterial disease and other diseases of the circulatory system. Please note that the scale on this graph is claims per million persons employed.

Summary: Over the six year period assessed, an overall decrease in claims incidence for cardiovascular disease was observed, however, the trend appears to be stabilising.

Figure 16: Cardiovascular Diseases (Details of specific indicators)

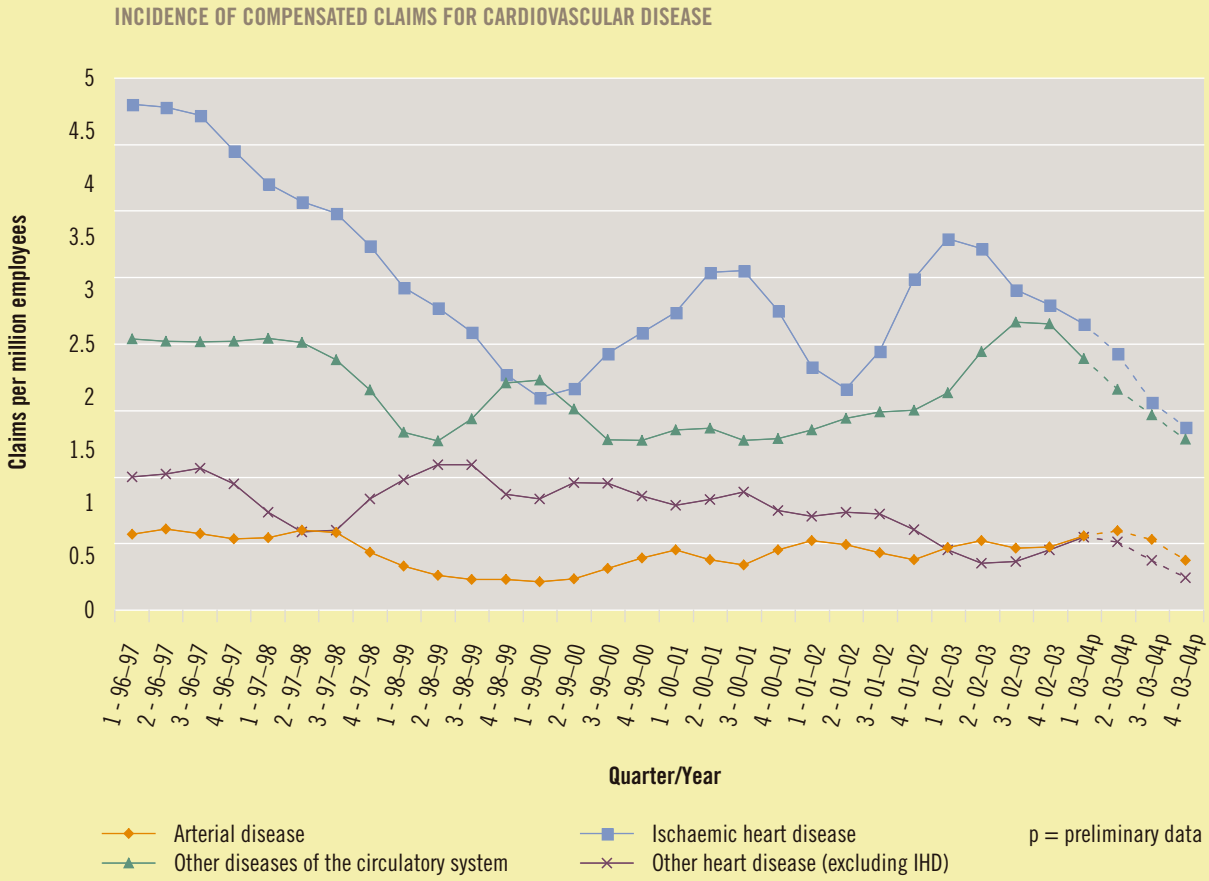


Figure 16 above represents the indicators for the specific variables within the cardiovascular diseases group.

Summary: Claims incidence for ischaemic heart disease appeared to decline overall, while other heart disease (excluding ischaemic heart disease) appears to have increased marginally when considering that the 2003-04 data are preliminary and likely to increase. No discernable change was observed for arterial disease and other diseases of the circulatory system for the period assessed.

CANCER

Background

Cancer is a generic term that groups disease processes that result in the abnormal division of cells. These new cells (neoplasms) can invade nearby tissues. They can also be spread throughout the body via the circulatory system and can lodge themselves in the lymphatic system and in major organs (metastasise). Specific cancers may also occur within haemopoietic tissue, for example leukaemia. Neoplasms may alter the function of the affected organ(s) resulting in morbidity and mortality.

Workplace carcinogenic effects on the body result from chemical or radiation, for example solar, exposures and viral infections. Current theories on cancer suggest that its genesis 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 behaviours, for example cigarette smoking, and genetic factors. While a number of agents present in the workplace are known to be carcinogenic, for example vinyl chloride monomer, the specific toxicity, potency and latency periods associated with many agents are unknown. Further, given the long latency period associated with many carcinogenic exposures, the workplace and the onset of a specific cancer may not be readily associated. Disease-based trends such as those based on compensation claims consequently greatly understate the real incidence of cancer.

Data centred on exposures to known and probable carcinogens may further serve to support the development of disease prevention benchmarks in this area.

Mesothelioma and skin cancer (malignant melanoma, carcinoma in situ of the skin and other skin malignancies) are the focus of this report.

Disease Group and Specific Variables

The cancer disease group has two sub-groups, which are based on four specific variables. These groups include mesothelioma and skin cancer. The specific variables included in each of these are as follows:

Table 11: Variables included in the Cancer Priority Disease Group

Breakdown Disease Group	Code	Code definition: specific variables
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

Source: NDS data set 1996-1997 to 2003-2004

Figure 17: Overview — Trends (Cancer Group)

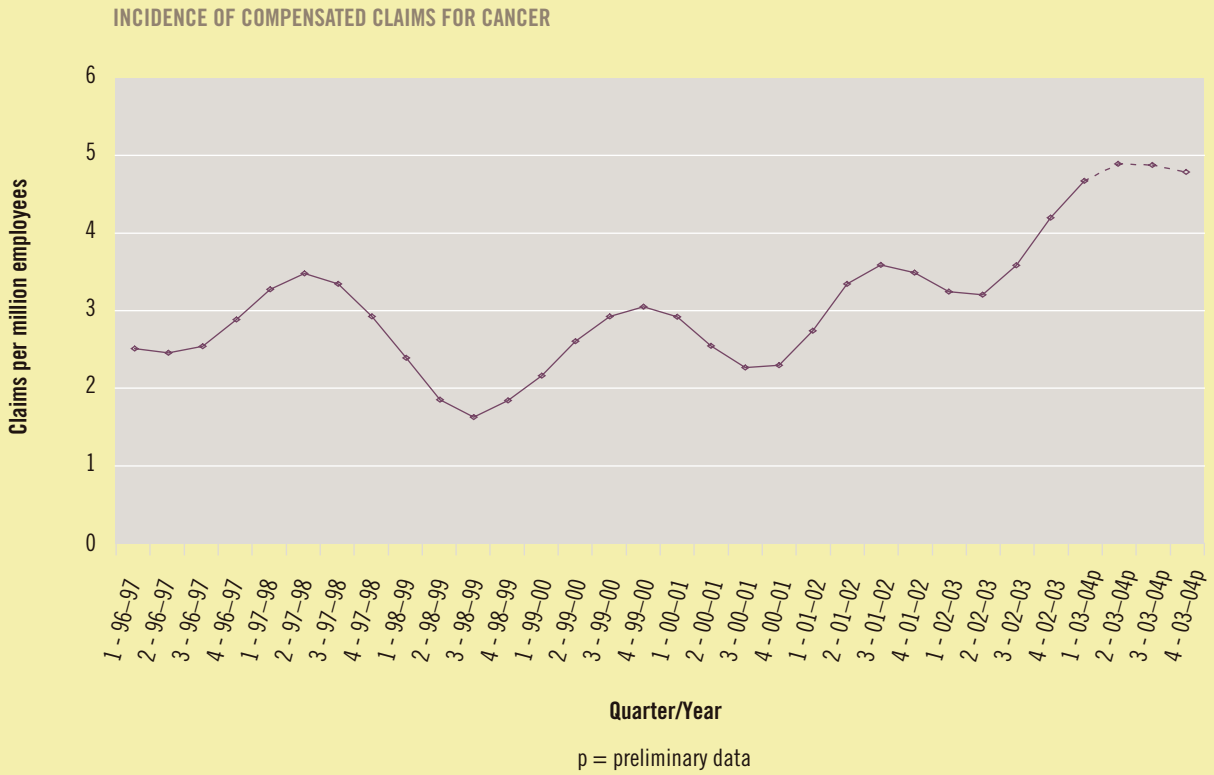


Figure 17 above represents the indicator for the aggregated priority disease group, cancer. As discussed above, this priority disease group includes two breakdown disease groups; skin cancer and mesothelioma. Please note that the scale on this graph is claims per million persons employed.

Summary: Over the six year period, there was an overall increase in claims in the cancer priority disease group.

Figure 18: Cancer (Details of specific indicator)

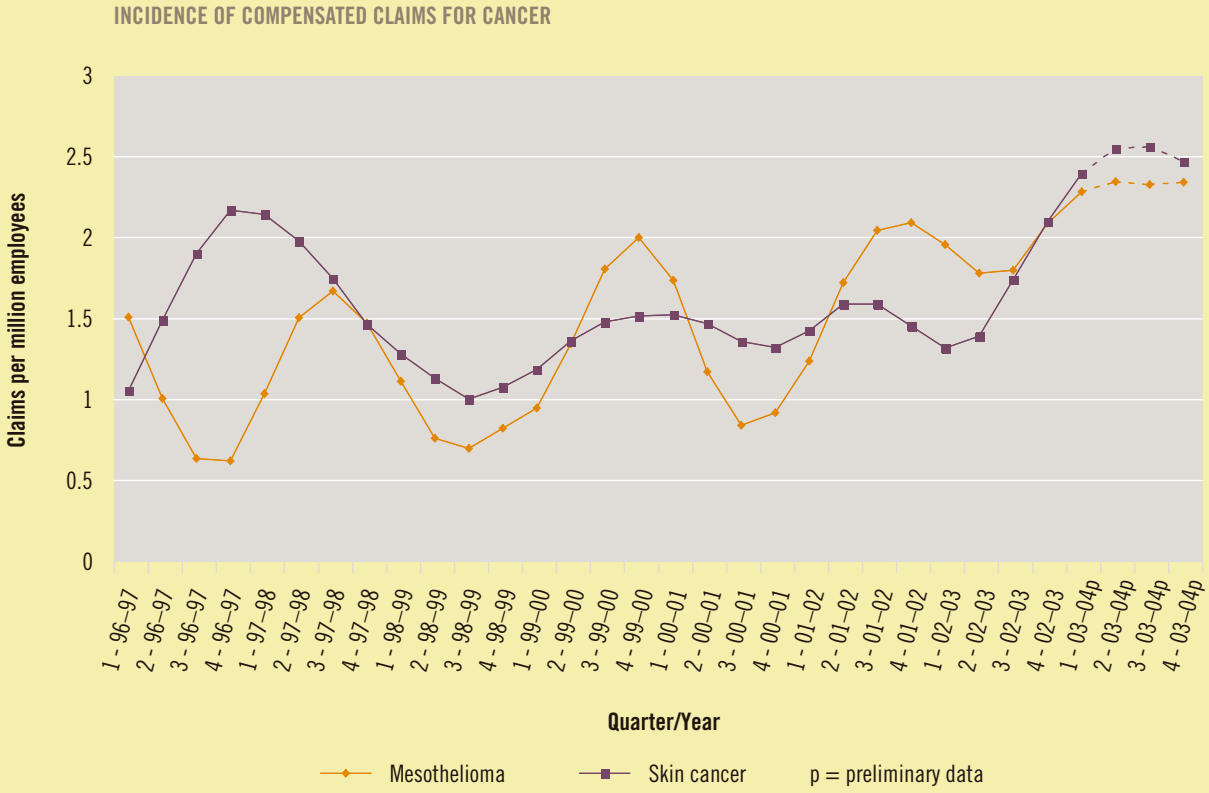


Figure 18 above represents the indicators for the disease groups within the cancer group.

Summary: Overall, the incidence of claims for mesothelioma and skin cancer increased over the period assessed.

Mesothelioma

Mesothelioma is usually a fatal cancer, typically associated with occupational exposure to asbestos. There is a long latency period associated with the disease with exposure often twenty to thirty years prior to diagnosis.

The figures below contain both a comparison between the NDS and NHMD recorded incidences of mesothelioma and the NCSCH data on registered mesothelioma cases. NHMD hospital separations incidence should be treated with caution as the inclusion of repeat admissions in the data appears to have greatly over-estimated the incidence of mesothelioma, when compared to NCSCH data which presents a much more accurate indicator of national mesothelioma incidence, as only registered cases are recorded. Additionally, NHMD hospital separations incidence for mesothelioma is greater in this report than NCSCH incidence projections[5] as incidence rates calculated are for adults, for example individuals eligible to work who are older than 14 years, whereas NCSCH projections consider the population as a whole.

Based on extrapolation of current NCSCH data trends, the number of registered mesothelioma cases is expected to increase from 612 in 2001 to around 997 by 2011[6]. This represents a predicted increase of approximately 63 per cent. An article published in the *International Journal of Occupational and Environmental Health*, considered the timeline for legislative restrictions on asbestos use and the delay of 20 to 30 years between exposure, diagnosis and analysis and suggested the number of new cases of mesothelioma will peak around 2010.

5 AIHW report: 'Cancer incidence projection 2002 to 2011' (aihw.gov.au/publications/can/cipa02-011/cipa02-011.pdf)
6 Leigh J & Driscoll T 2003. 'Malignant mesothelioma in Australia', 1945–2002. *International Journal of Occupational and Environmental Health* 9:206–17

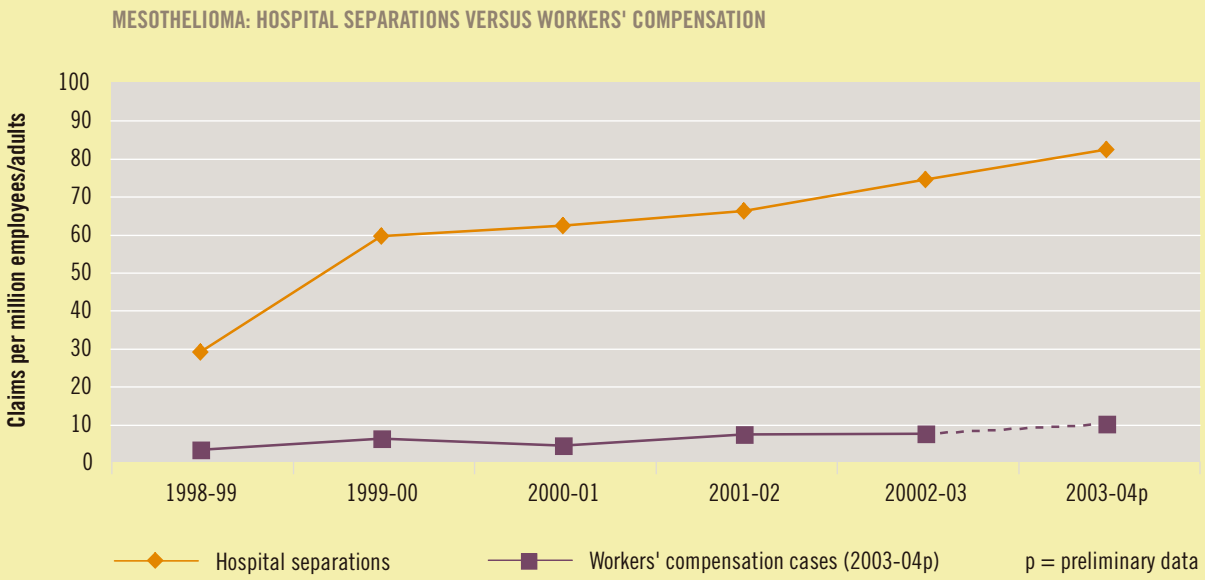
National Hospital Morbidity Database (NHMD)

This shows the rate of mesothelioma for workers' compensation claims and hospitalisations.

Figure 19 below shows an increasing trend for the incidence rate of hospitalisations.

For the workers' compensation claims, the rate appears steadier, with some fluctuations possibly due to the smaller number of cases.

Figure 19: Rate of Mesothelioma (Comparing hospitalisations and NDS 1998–99 to 2003–04p)



Note: The hospitalisation figures may include repeat admissions, and there is under-reporting in the NDS. Hospital separations incidence refers to cases per million adults.

Summary: For the period assessed mesothelioma workers' compensation claims incidence appeared to be relatively stable. In contrast, hospital separations cases for mesothelioma increased sharply in 1999-2000 and continued to increase for the remainder of the period assessed.

National Cancer Statistics Clearing House (NCSCH)

The data contained below is sourced from the AIHW's NCSCH. A national minimum data set from the state and territory registries is provided to the NCSCH to enable national trends in cancer to be monitored[7]. Data is currently available up until 2001 as jurisdictional submission of data is staggered over a two year period which, when coupled with report preparation time, leads to a considerable lag in the publication of the data.

Figure 20: Registered Mesothelioma Cases (NCSCH cancer registry 1995-2001)

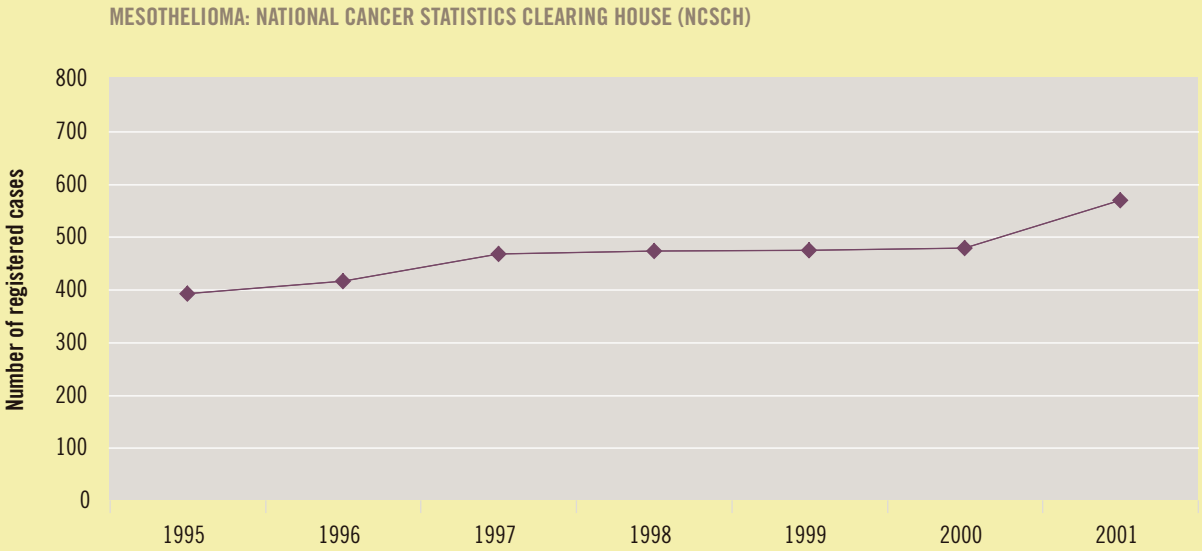


Figure 20 above shows an increasing trend for the number of mesothelioma cancer registrations.

Summary: For the period assessed, the number of NCSCH cancer registry cases for mesothelioma increased, with the exception of a more stable period between 1997 and 2000.

7 Information on NCSCH data items can be found at aihw.gov.au/datacat/index.cfm

SUMMARY DISCUSSION

The results indicate varying trends for each of the priority disease groups. In summary, over the past six years, decreasing trends were observed for four of the eight groups; musculoskeletal disorders, noise induced hearing loss, contact dermatitis and cardiovascular disease. Claims for mental disorders and cancer appear to be increasing, while respiratory disease claims appear to be stable and infectious disease claims, after exhibiting a decreasing trend for a number of years, have increased in the past year. However, it is too soon to say whether the recently observed increase in infectious disease claims will continue.

While the methods used in this report are an improvement on earlier attempts to develop occupational disease indicators, further development is still required to achieve trends that are robust enough to be used to set targets. It is likely that for some diseases, such as those with long latency periods, targets based on incidence only will be unreliable. Ideally, targets should be a composite of both incidence and exposure rates. The current indicators still rely heavily on the workers' compensation claims as they are the only national data currently available that include work-relatedness. Targets based on incidence of workers' compensation claims do not take into account legislative changes relating to thresholds for compensability and may also be subject to under-reporting.

However, given that workers' compensation data remains the best source of national data on occupational disease and the increasing availability of supplementary data sources, the continued monitoring of occupational disease trends presents the most reliable basis for monitoring progress in the incidence of occupational disease.