



Australian Government

**Department of Employment and
Workplace Relations**

National Office

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Department of Employment and Workplace Relations

Submission to Inquiry into Workplace Exposure and Toxic Dust

August 2005

Part 1 Introduction

- 1.1 This submission includes an overview of the occupational health and safety arrangements in Australia, the National OHS Strategy and OHS regulation, examples of controls for silica and asbestos and information on OHS data and toxic dust and emerging technologies.

Part 2 Overview

National Occupational Health and Safety Commission

- 2.1 The National Occupational Health and Safety Commission (NOHSC) is a tripartite statutory body, with representation from governments, employers and employees. NOHSC is Australia's national body for occupational health and safety matters, leading and coordinating national efforts to prevent workplace death, injury and disease in Australia. NOHSC's function is to provide a forum for the development of occupational health and safety (OHS) policies and strategies, to promote OHS awareness and to facilitate debate and discussion. NOHSC's vision is Australian workplaces free from injury and disease. NOHSC's objectives are achieved through implementing the National OHS Strategy 2002-2012 and through coordinating a national forum that operates through meetings of the Commission and its committees.

Australian Safety and Compensation Council

- 2.2 The Australian Government is establishing a new tripartite body, the Australian Safety and Compensation Council (ASCC), to lead improvements in workplace safety and workers' compensation in Australia. The ASCC will provide policy advice to the Workplace Relations Ministers' Council (WRMC) on national workers' compensation and occupational health and safety arrangements to deliver nationally consistent regulatory frameworks. The work of the ASCC will be supported by the Office of the ASCC (the Office), based in the Department of Employment and Workplace Relations (DEWR). Until the establishment of the ASCC, the Office will support the work of NOHSC. It is anticipated that the establishment of the ASCC will occur in August 2005.

National OHS Strategy 2002-2012

- 2.3 On 24 May 2002, WRMC endorsed the release of the National OHS Strategy 2002–2012. All Australian governments and the Australian Chamber of Commerce and Industry (ACCI) and the Australian Council of Trade Unions (ACTU) endorsed the National OHS Strategy. This signified their commitment to work cooperatively on national priorities for improving OHS and to achieve minimum national targets for reducing the incidence of workplace deaths and injuries, thereby accelerating Australian OHS improvement.
- 2.4 The National OHS Strategy is a collaborative ten-year plan that reflects government and industry agreement to share responsibility for continuously improving Australia's workplace health and safety performance.
- 2.5 The National OHS Strategy sets a basis for strategic intervention to improve Australia's OHS performance, focusing on five national priorities. The national strategy also contains nine areas requiring national action, identified by WRMC.
- 2.6 One of the national priorities is to prevent occupational disease more effectively. This national priority aims to develop the capacity of authorities, employers, workers, and other

interested parties to identify risks to occupational health and to take practical action to eliminate or otherwise control them. National standards, practical guidance, and OHS awareness are three of the areas requiring national action.

Part 3 OHS Regulation

- 3.1 Responsibility for regulating and enforcing workplace health and safety in Australia rests with the Australian government (for Commonwealth government workplaces) and individual state and territory governments for all other workplaces. The various legislative and related instruments that the Governments use to give effect to these responsibilities comprise the national OHS regulatory framework.
- 3.2 NOHSC maintains (and develops, where need is demonstrated) sets of national OHS standards and related materials. The legal status accorded to national standards by the *NOHSC Act*, is that they are advisory only unless other laws give them a different character.
- 3.3 These standards and related materials aim to improve the health and safety of work environments by providing a means of:
 - facilitating improvement of the regulatory framework by promoting prevention solutions;
 - enabling consolidated national review of priority regulatory requirements; and
 - focusing on the extent of national consistency in relevant areas, particularly where it is considered essential for employers and employees.
- 3.4 There are standards and related material supporting the regulatory framework in five identified priority areas. The five priority areas are to:
 - reduce high incidence/severity risks;
 - develop the capacity of business operators and workers to manage OHS effectively;
 - prevent occupational disease more effectively;
 - eliminate hazards at the design stage; and
 - strengthen the capacity of government to influence OHS outcomes.

Workplace Chemicals Framework

- 3.5 The NOSH National Hazardous Substances Regulatory Framework (HSRF) is a package of national standards and codes of practice that provide a risk-based, outcomes-focused framework for determining the workplace requirements for all substances hazardous to health. The HSRF contributes to the national priority to prevent occupational disease more effectively and three areas identified by WRMC requiring national action; national standards, practical guidance, and OHS awareness.
- 3.6 The centrepiece of the HSRF is the *National Model Regulations for the Control of Workplace Hazardous Substances* [NOHSC:1005(1994)] (the national model regulations). The national model regulations apply to all workplaces in which hazardous substances are used or produced, and to all persons with potential exposure to hazardous substances in those workplaces.
- 3.7 The national model regulations detail how hazardous substances should be controlled in the workplace to minimise the risk of adverse health effects. The two principal components of the national model regulations are:

- information provision (i.e. hazard communication through labels¹ and Material Safety Data Sheets² (MSDS)); and
- assessment and control provisions – identification, assessment and control of hazardous substances in the workplace and those hazards which arise out of the work activity.

- 3.8 The national model regulations require manufacturers and importers to determine whether a substance is a hazardous substance. The *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)] (the Approved Criteria) is the national standard for determining whether a substance is hazardous. The Hazardous Substances Information System (HSIS)³, an internet database, provides hazard information for substances classified according to the Approved Criteria.
- 3.9 The HSRF risk-based approach is complemented with specified requirements to be applied to specific substances or groups of substances. These include prohibitions, national exposure standards and national codes of practice and guidance material.

Prohibitions

- 3.10 Prohibition is the most extreme form of control and is applied where no other control is adequate. It is used where the risks to the health of workers are significant and safer alternatives are available. The specific substances and uses that are prohibited are set out in Schedule 2 to the national model regulations. Prohibitions are given effect by inclusion in each jurisdiction's regulations.

National exposure standards

- 3.11 While supporting the concept that exposure to chemical agents should be kept as low as practicable, national exposure standards have been declared as guidance to assist in ensuring that workers are adequately protected from exposures to hazardous substances. Exposure standards represent airborne concentrations which should neither impair the health of nor cause undue discomfort to nearly all workers.
- 3.12 The national model regulations require that no worker be exposed to hazardous substances at levels above the national exposure standards, as listed in the *Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:1003(1995)] and declared amendments.
- 3.13 Exposure standards do not represent a 'no-effect' level, and are best used to assess the quality of the working environment and indicate where control measures are required. The national exposure standards have been consolidated within HSIS.

Crystalline silica

- 3.14 Silica is a naturally occurring abundant mineral that forms the major component of most rocks and soil. Silica occurs in several crystalline forms, and in amorphous non-crystalline forms. Amorphous non-crystalline forms of silica occur in nature, mainly as diatomaceous earth (the skeletons of marine organisms). The amorphous forms of silica are classified as

¹ Labels should be prepared in accordance with the *National Code of Practice for the Labelling of Workplace Substances* [NOHSC:2012(1994)].

² MSDS should be prepared in accordance with the *National Code of Practice for the Preparation of Material Safety Data Sheets* [NOHSC:2011(1994)] or the *National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition* [NOHSC:2011(2003)].

³ [Hazardous Substance Information System](#)

nuisance dusts and do not induce pneumoconioses⁴. Among the crystalline forms, quartz is the most abundant, cristobalite and tridymite are less common.

- 3.15 A revised national exposure standard of 0.1 mg/m³ (TWA, 8 hours) for quartz, cristobalite and tridymite came into effect on 1 January 2005.
- 3.16 The national exposure standard for quartz, cristobalite and tridymite are each to be measured in accordance with the methodology in Australian Standard AS 2985-2004 Workplace Atmospheres – Method for sampling and gravimetric determination of respirable dust. AS 2985-2004 provides a method to assess personal exposure to respirable dust by sampling in a worker's breathing zone and is consistent with international measurement methodologies.
- 3.17 The silica standards have been consistently adopted across the jurisdictions. The Regulation Impact Statement on the Proposed Amendments to the National Exposure Standards for Crystalline Silica October 2004 (Silica RIS) provides further information on the composition, nature and uses of each type of silica. A copy of the Silica RIS is at **Attachment A**.

Asbestos

- 3.18 In 2001 NOHSC declared an amendment to Schedule 2 of the national model regulations to include the prohibition of all uses of chrysotile from 31 December 2003, with some time limited exemptions. The NOHSC declaration was supported with Commonwealth, state and territory legislation and customs regulation.
- 3.19 The 2003 chrysotile prohibition consolidated existing prohibitions on crocidolite (blue), amosite (brown), actinolite, anthophyllite and tremolite asbestos. The chrysotile prohibition specifically applies to workplace use and the importation/exportation of asbestos and asbestos products. To facilitate a nationally consistent exemption process to the prohibition, NOHSC declared a National List of Exemptions in April 2003.
- 3.20 Current national exposure standards for asbestos are 0.1 f/mL TWA (8hrs) for chrysotile, crocidolite, amosite, any mixture of these or where the composition is unknown, and other forms.
- 3.21 In April 2005, NOHSC declared a revised Code of Practice for the Safe Removal of Asbestos 2nd Edition [NOHSC:2002 (2005)], a new Code of Practice for the Management and Control of Asbestos in Workplaces [NOHSC:2018 (2005)] and a revised Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC: 3003(2005)].
- 3.22 The Regulation Impact Statement on the Codes of Practice and Guidance Note for Asbestos (Asbestos RIS) provides further information on asbestos. A copy of the Asbestos RIS is at **Attachment B**.

National Codes of Practice and Guidance Information

- 3.23 NOHSC national codes of practice and other guidance materials are developed to assist stakeholders in recognising the relevance of legal requirements to their operations and to support their application of risk management principles in their workplaces.
- 3.24 NOHSC has declared a number of national codes of practice and guidance materials to support the national model regulations. In particular, the *National Code of Practice for the Control of Workplace Hazardous Substances* [NOHSC:2007(1994)] provides a practical

⁴ Respiratory diseases caused by inhalation of inorganic dusts are referred to as pneumoconioses.

guide on how to comply with the national model regulations, such as applying the hierarchy of controls (elimination, substitution, isolation, administrative controls, safe work practices and personal protective equipment), risk assessments and hazard communication.

- 3.25 *The National Code of Practice for the Labelling of Workplace Substances* [NOHSC:2012(1994)], the *National Code of Practice for the Preparation of Material Safety Data Sheets* [NOHSC:2011(1994)] and the *National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition* [NOHSC:2011(2003)] provides practical guidance on the preparation and provision of critical hazard information to workers.

Part 4 Data

- 4.1 The estimation of occupational contribution to respiratory disease in society is difficult because a respiratory disease can be attributable to other non-occupational factors, unless it is specifically related to a unique workplace causative factor or it can be differentiated by its clinical features.
- 4.2 NOHSC is responsible for providing accurate, comprehensive and timely national OHS data, in accordance with NOHSC's National OHS Data Action Plan, including the overall measurement of OHS performance in Australia. In undertaking this role, NOHSC maintains several internal OHS datasets. The primary OHS data source used in Australia is the National Dataset for Compensation-based Statistics (NDS) which consists of accepted workers' compensation claims. Datasets are also maintained on notified work-related fatalities and voluntary notifications of mesothelioma cases.
- 4.3 Within the National OHS Data Action Plan, NOHSC also identifies and utilises data sources maintained by other bodies to supplement the information from the NDS. These other sources include the National Hospital Morbidity data, the National Coronial Information System, national surveys of households run by the Australian Bureau of Statistics and surveys of GPs.
- 4.4 A review of available data sources shows that there is limited information on the extent of work-related respiratory disease in Australia. The information that is available comes from a variety of sources, including published studies; workers' compensation claims data, the Dust Diseases Board (DDB) of NSW and the two Surveillance of Australian workplace-based Respiratory Events (SABRE) programs in Victoria and NSW. SABRE is the physician-notified cases of occupational respiratory disease in those two states. Published general practitioner and hospital presentation data sources do not provide useable information, because respiratory disease cases are included in categories that also contain such diseases not related to work.

Population-based estimates

- 4.5 In Australia, a proportionate attributable risk approach has been used to estimate the magnitude of premature mortality induced by exposure to hazardous substances in the workforce⁵. The estimated age-adjusted mortality rates (expressed in number of deaths per million per year) were estimated to be 5 and 2 for asthma, and 8 and 0 for dust diseases, respectively in men and in women. However, these estimates only addressed mortality, not morbidity.

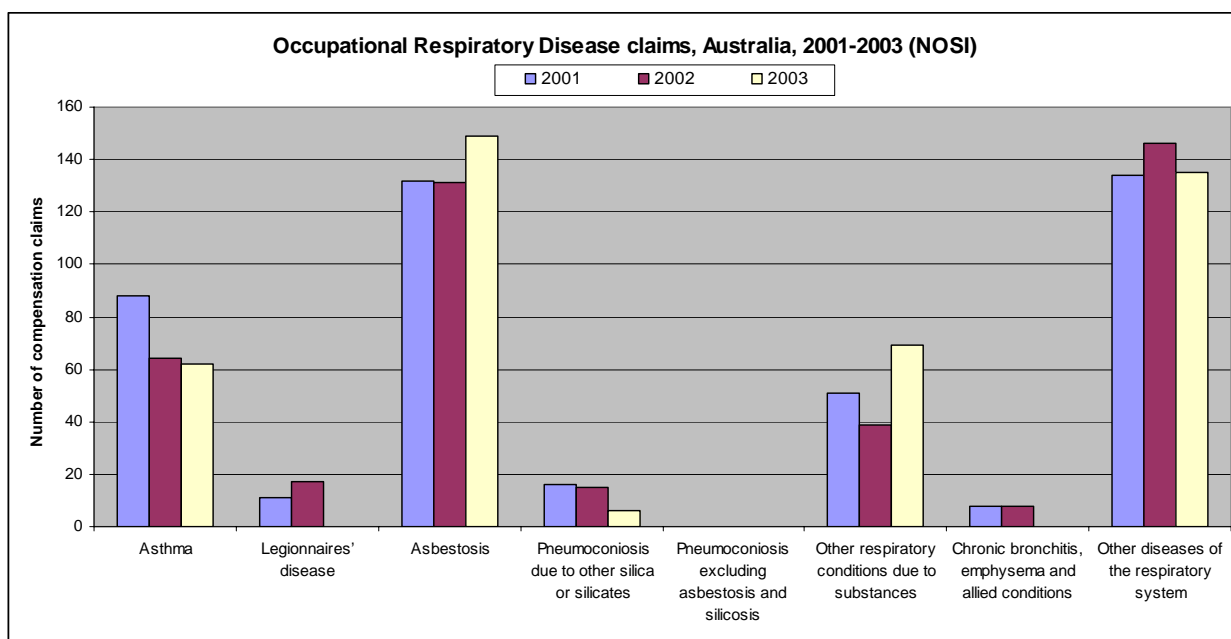
⁵ Morrell S, Kerr C, Driscoll T, Taylor R, Salkeld G, Corbett S. Best estimates of the magnitude of mortality due to occupational exposure to hazardous substances. *Occup Environ Med* 1998;55:634-41.

Workers' compensation-based estimates

4.6 Workers' compensation data systems are known to have limitations in providing reliable data on rates of work-related respiratory disease. One reason is that published workers' compensation information at a national level in Australia only includes cases that result in five or more days off work. A proportion of respiratory disease cases will not be formally diagnosed or will occur in workers after they leave work, in which case the connection to work is unlikely to be established and a workers' compensation claim is unlikely to be made. Also, a sizeable minority of workers has been shown not to be represented in Australian workers' compensation statistics⁶.

4.7 Figure 1 shows the numbers of cases of accepted claims for occupational respiratory diseases in Australia over the three year period of 2001-2003. The most common occupational respiratory disease in Figure 2 is asbestosis, the numbers of which were fairly constant over each of the three years. The next most common specific condition is asthma, while other specific conditions, such as pneumoconiosis and chronic bronchitis are much less common. Two of the more common categories are 'Other respiratory diseases due to substances, and 'Other diseases of respiratory system'. There is insufficient detail available about what conditions are included in these broad categories to provide any meaningful information.

Figure 1. Occupational Respiratory Disease claims, Australia, 2001-2003 (NOSI)



4.8 When some specific compensation claim subgroups are reviewed, claims are nearly twice as high in men than in women. They are mainly in the categories 'asbestos-related disease' and in 'other diseases' in men. In women, claims are mainly related to 'other diseases' followed by 'asthma'. The three industries with higher disease claims are manufacturing followed by education, and health and community services. In manufacturing, asbestos related-disease is the main disease group (233 claims), with asthma in the second group (59 claims). In education and health and community services, claims are mainly in the 'Other diseases of the respiratory system' group. When considering occupation groups, the higher number of claims occur in professionals,

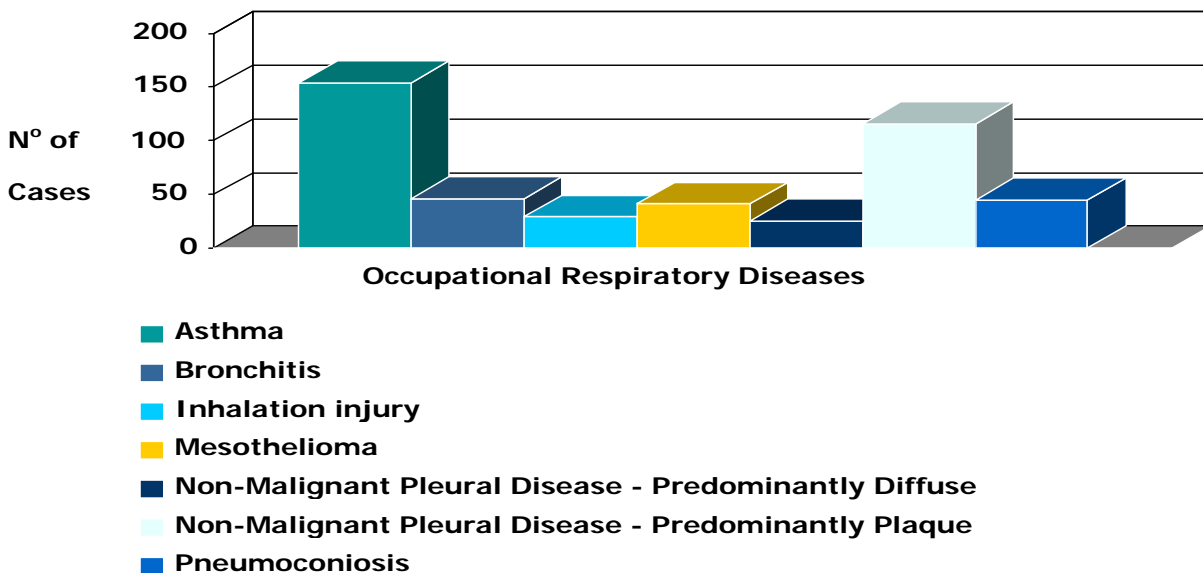
⁶ Macaskill P, Driscoll T. National occupational injury statistics: what can the data tell us? In Feyer A-M, Williamson A. *Occupational injury: risk, prevention and intervention* 1998. London, Taylor and Francis.

associate professionals and labourers respectively. Most claims occur in 'Other diseases of the respiratory system' for professionals, while most claims for associate professionals and labourers are asbestos-related disease.

Physician notification programs in Australia

4.9 According to the SABRE notification scheme, (Figure 2) the most common condition reported by physicians in Victoria and Tasmania is asthma, comprising 33% of the occupational respiratory events reported⁷. The asthma incidence rate is 30.9 (95 % confidence interval = 26.8-35.5) per million workers per year with a 2.4 times higher incidence rate in men compared to women. However, SABRE in Victoria and NSW has incomplete coverage of physicians who see cases. The two most commonly reported causative agents for asthma in the SABRE (Victoria) notification scheme are wood dust and isocyanates (13.5 % and 5.8 % respectively). The finding of asthma as the most commonly reported occupational respiratory disease is similar to that found in overseas physician notification schemes. The next most commonly reported condition in Victoria and Tasmania is non-malignant pleural disease from asbestos exposure.

Figure 2. SABRE notifications in Victoria 1999-2002



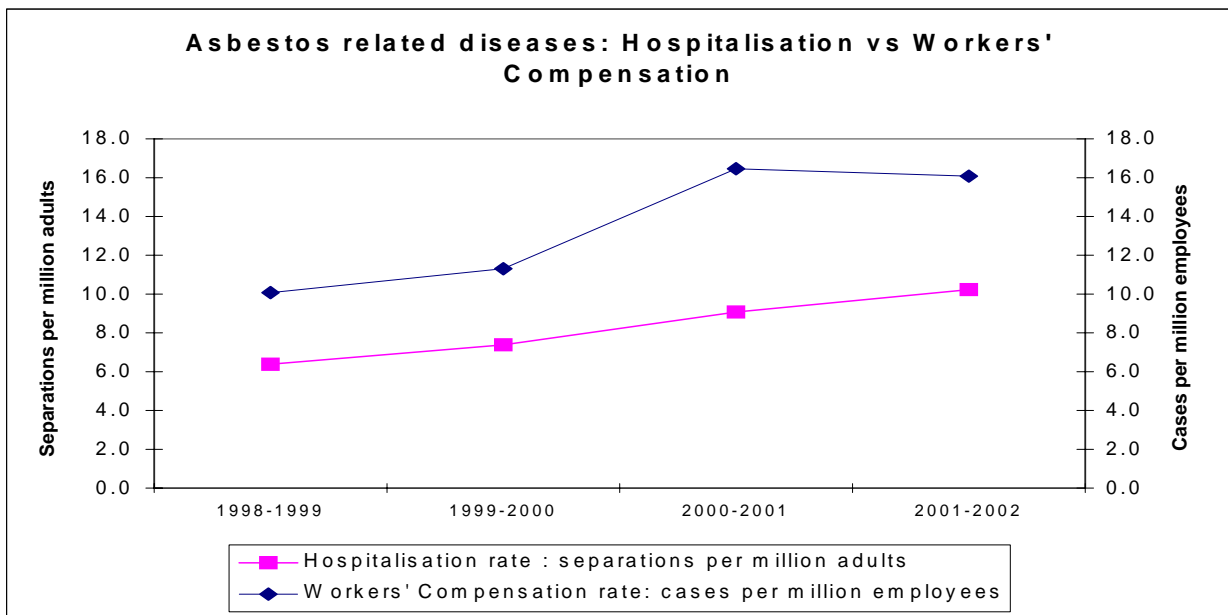
Asbestos related diseases

4.10 Exposure to asbestos in the workplace has decreased over the last 40 years. However, asbestos related diseases have a period of long latency, and it has been estimated the increase in asbestos related disease will continue for the next ten to fifteen years. There is also potentially on-going exposure risk from asbestos removal, building maintenance and the like. 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 cancer of the lung (pleura), abdominal and pelvic cavities (peritoneum).

⁷ Elder D, Abramson M, Fish D, Johnson A, McKenzie D, Sim M. Surveillance of Australian workplace Based Respiratory Events (SABRE): notifications for the first 3.5 years and validation of occupational asthma cases. *Occup Med* 2004;54:395-99.

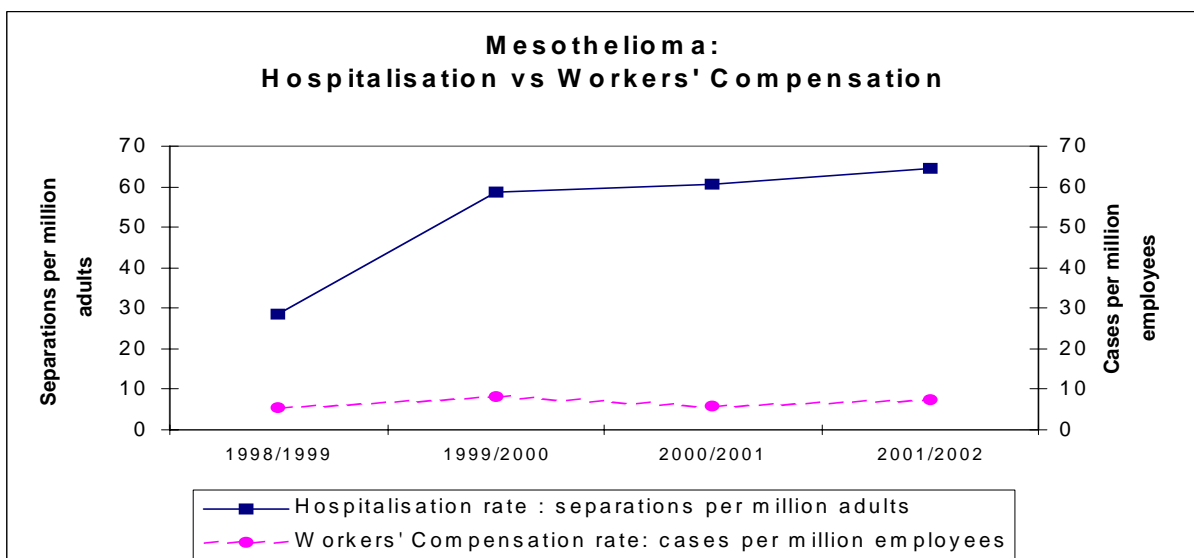
4.11 For asbestos related diseases, Figure 3 shows an increase in the incidence rate of workers' compensation cases and hospitalisations. In 1998–99 there were 10.1 cases per million employees, and in 2001–02 there were 16.0 cases per million employees. The numbers from the two sources are similar in order of magnitude; in 2001–02 there were 158 hospitalisations with 138 compensated cases for asbestosis. The hospitalisation number may include the same individual presenting for multiple hospitalisations during the year.

Figure 3: Rate of asbestos related disease (comparing hospital separations and NDS 1998/1999 to 2001/2002)



4.12 Figure 4 shows the rate of mesothelioma for workers compensation claims and hospitalisations and shows an increase in the incidence rate of hospitalisations. The rate for workers' compensation cases appears steadier; in 1998–99 the rate was 5.4 cases per million employees, in 2001–02 the rate had slightly increased to 7.4 cases per million employees. The numbers differ in the order of magnitude. In 2002–03 there were 998 hospitalisations compared with 60 workers' compensation claims accepted. The hospitalisation figures may include repeat admissions.

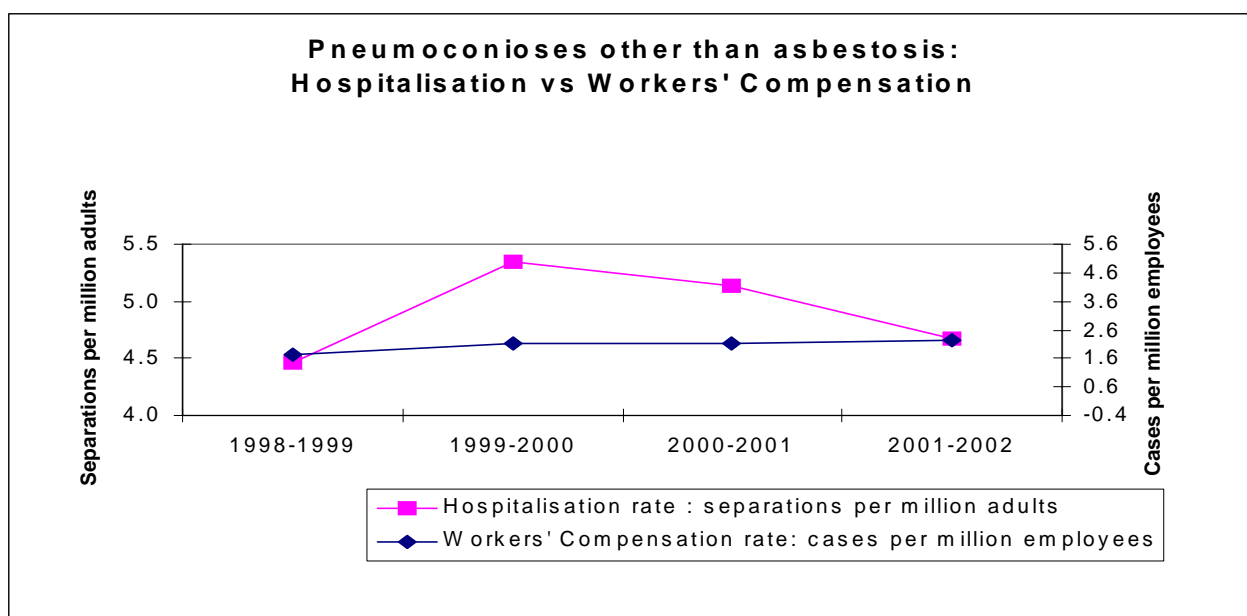
Figure 4: Rate of mesothelioma (Comparing hospitalisations and NDS 1998/99 to 2001/02)



Pneumoconioses other than asbestosis

- 4.13 Figure 5 shows the rate of pneumoconioses due to inorganic dusts other than asbestos. These pneumoconioses require prolonged exposure and, similar to asbestosis, have a long latency period.
- 4.14 There is a decrease in the hospitalisation rate. This may be because the curves reflect different time periods in the history of the disease; or there may be better treatment available, which means less hospitalisation. In 2001–02 there were 72 hospitalisations, with 20 workers compensation cases accepted. The hospitalisation number may include the same individual presenting for multiple hospitalisation during the year. While these numbers are small in reporting terms, the existence of two data sets offers a validity to the numbers.
- 4.15 The workers' compensation cases slightly increased, from 1.8 cases per million employed in 1998–1999 to 2.2 cases per million employed in 2001–02.

Figure 5: Rate of pneumoconioses other than asbestosis (Comparing hospital separations and NDS 1998/99 to 2001/02)



Part 5 Emerging technologies including nanoparticles.

- 5.1 Nanoparticles can be generated naturally by combustion (bush fires), fossil fuel usage, diesel and petrol emissions, or otherwise are engineered. Currently, combustion or combustion-like processes in industry have the potential to generate nanoparticles. An example of such a process is welding which can generate metal fume in the nanoparticle range.
- 5.2 NOHSC has a number of national exposure standards for chemicals that produce nanoparticles, generally metal fumes (aluminium [welding fumes, pyro powders], cobalt [metal dust and fume], copper [dust and mist, fume], iron oxide fume, lead inorganic dusts and fumes, magnesium oxide fume, manganese [fume], nickel sulphide roasting [fume and dust], paraffin wax fume, Rosin core solder pyrolysis products, silica fume, vanadium respirable dust and fume, welding fumes not otherwise classified, zinc chloride fume and zinc oxide fume).

- 5.3 Nanoparticle generation will increase beyond current industrial practices as a result of the industrial-scale application of new or existing nanotechnology. This may come from the creation and industrial application of new nanoparticles, or new industrial uses of nanoparticles. As new and more nanoparticles are generated, the potential for Australian workers to be exposed to nanoparticles may increase. If nanoparticle atmospheres present new or increased health hazards over and above current uses, then additional national exposure standards may be required.
- 5.4 Currently, there is very little information on the interaction between nanoparticles and people i.e., how nanoparticles enter the body, are transported, how they interact with body processes and their potential for toxicity and clearance from the body. OHS regulation should be underpinned by sound science on the health hazards posed by nanoparticles. Currently that information is not available.
- 5.5 The Office currently maintains a watching brief on the OHS developments with respect to nanotechnology and reports to Australian Government (Comcare), state and territory OHS authorities, ACCI and ACTU. The Office represents DEWR on an interdepartmental committee on nanotechnology, organised by the National Nanotechnology Strategy Taskforce within the Department of Industry, Tourism and Resources. The role of the Office on this committee is to provide input on OHS issues.