



Workers' Compensation Dust Diseases Board of NSW

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A GUIDE TO
**COMPENSATED
OCCUPATIONAL LUNG DISEASE**
IN NSW



OCCUPATIONAL LUNG DISEASES |



WHAT ARE OCCUPATIONAL LUNG DISEASES?

Occupational lung diseases develop from exposure to certain workplace dusts and fumes. Exposure usually occurs over a long period but with some agents even a single severe exposure can damage the lungs. Occupational lung diseases sometimes do not appear until well after exposure ceases, and in some cases workers have no recollection of ever being exposed. Smoking can increase the risk of developing an occupational lung disease.

Symptoms of occupational lung diseases differ among individuals in terms of the degree of severity and frequency with which they occur. They are generally worse in smokers and ex-smokers. The most common symptoms for all types of lung disease include; coughing, shortness of breath, chest pain, chest tightness, sputum production and abnormal breathing pattern.

NSW WORKERS' COMPENSATION DUST DISEASES BOARD

The Workers' Compensation Dust Diseases Board provides statutory compensation to workers disabled by dust diseases resulting from exposure to dangerous dusts while employed in NSW. When first established in 1927 its purpose was to provide compensation to workers suffering silicosis- a disease caused by exposure to silica dust. As medical knowledge progressed and more diseases could be attributed to certain work place dusts, the Board's scope was expanded in 1942 to include compensation for a much wider range of diseases. This included the introduction of compensation for asbestos related diseases in 1967.

Today the Board compensates almost 15 different respiratory diseases. Under the legislation the Board is required to determine eligibility and award compensation to workers and dependants of deceased workers. It provides a free screening service for workers who have applied for compensation as a result of exposure to dusts, particularly asbestos or silica. The Board also provides a mobile commercial screening service for private industry for a fee.

DISEASES COMPENSATED BY THE DUST DISEASES BOARD

Diseases compensated by the DDB can be divided into groups based on the agents causing them.

Causative Agent	Asbestos	Silica	Metal Dusts	Organic Dusts
Diseases	<ul style="list-style-type: none"> Mesothelioma Asbestosis Asbestos Related Pleural Disease Lung Cancer 	<ul style="list-style-type: none"> Silicosis Silico Tuberculosis Silicosis & Asbestos Disease Lung Cancer 	<ul style="list-style-type: none"> Siderosis Aluminosis Berylliosis Hard Metal Pneumoconiosis Hexavalent Chromium Associated Lung Cancer 	<ul style="list-style-type: none"> Coal Dust Pneumoconiosis Extrinsic Allergic Alveolitis Byssinosis Bagassosis Farmer's Lung Mushroom Worker's Lung Bird Fancier's Lung

WHAT IS ASBESTOS?

Asbestos is a naturally occurring fibrous mineral found in many countries around the world including Australia. The three most common asbestos types used in industry are chrysotile (white asbestos), amosite (brown asbestos) and crocidolite (blue asbestos). Crocidolite is the most dangerous of the three groups whereas chrysotile is thought to be the least harmful. This is believed to be due to their different physical properties. The body's natural defence mechanisms seem better able to clear the lungs of white asbestos fibres which are longer, thinner and curly. Blue asbestos fibres are shorter and straighter and are far more durable or "biopersistent". They can still be found in the lungs 50 years after exposure. White asbestos on the other hand disappears from the lungs within about 10 years. Long term exposure to asbestos can cause lung scarring (fibrosis), lung cancer and mesothelioma (cancer of the chest lining), however most people do not get any disease. It is still not fully understood why only a small proportion of people exposed to asbestos go on to develop these diseases.

ASBESTOS PRODUCTS

Asbestos was famously described as the miracle mineral. This was due to its durability and resistance against a wide range of conditions including fire, corrosion, cold, acids, alkalis, electricity, noise, and vibration. It is estimated that asbestos has been used in over 3000 products, the majority being building products made from asbestos cement. Due to its excellent insulation properties asbestos was also commonly used as a thermal lagging, applied to boilers and pipes, and included in many different fire protection products such as fire doors and fire resistant panelling. Woven asbestos products such as gloves, mittens,

aprons and blankets were also manufactured for fire safety and heat protection purposes. Some of the more common products are presented in the table below.

Asbestos Products		
Acoustic tiles	Curtains	Heat mats
Adhesives	Decorative wall panels	Insulation blocks
Aprons	Electrical switch shields	Insulation seals
Arc shields	Emulsions	Jointing compounds
Asbestos cement blocks	Expansion joint material	Lagging
Asbestos cement corrugated sheets	Fake snow	Limpet spray
Asbestos cement pipes & gutters	Felt	Millboard
Asbestos flat cement sheets	Fire blankets	Paint additive
Brake linings	Firedoors & panels	Putty
Canvas products (tents & sails)	Fireproofing spray	Refractory cement
Ceiling tiles	Flexible duct connectors	Rope
Ceramic tiles	Gaskets	Seals
Clutch plates	Generator linings	Vinyl floor tiles
Corrugated paper	Gloves	Welding electrodes

INDUSTRIES AND OCCUPATIONS AT RISK OF ASBESTOS DISEASE

Occupations considered to have a higher risk of developing an asbestos related disease are those which involve direct handling of asbestos products. In NSW during the post war building boom of the 1950s, over 50% of new houses (some 70,000) were built with asbestos cement sheet products, commonly known as "fibro". Not surprisingly, the occupational group with the highest number of compensated cases in NSW is the carpenters whose exposure was related to cutting or drilling asbestos building products. Fitters responsible for the repair and maintenance of asbestos material are the second largest group followed by trade assistants and electricians whose work often involved cutting and drilling into asbestos material to access electrical equipment and wires and also handling electrical products that were insulated with asbestos covers. Asbestos labourers are the workers who were employed by asbestos manufacturing companies. This industry was a large one in Australia, particularly in NSW. The inclusion of asbestos in newly manufactured products in NSW ceased by the mid 1980s. There is some evidence that disease rates from this group are beginning to plateau.

The industry group from which the highest numbers of cases arise is the building industry. This is followed by the transport equipment manufacturing industry which includes shipbuilding and railway locomotive building and maintenance where much asbestos material was used for the lagging of steam engines. The third commonest industry is that of asbestos product manufacturing. Steelworks and power stations were also places where many asbestos products were commonly used and thus these are also featured among the top five industry groups.

DISEASES DUE TO ASBESTOS EXPOSURE

Pleural Plaques

The pleura are the sack-like outside linings of the lungs. Pleural plaques are usually caused by asbestos exposure and appear 15-20 years after exposure. Inhaled asbestos fibres result in small patches of scarring or plaques, which sometimes calcify and can be seen on X-rays. The plaques do not cause symptoms but provide an indication of past asbestos exposure and can develop following a low asbestos exposure. People with pleural plaques alone are not eligible for compensation. However, pleural plaques may be associated with other asbestos related diseases therefore some people choose to have regular X-rays (usually every year) to monitor for these. Each year approximately 230 new cases of pleural plaques are detected in workers attending DDB screening.

Asbestosis

Asbestosis is scarring of the inside of the lungs due to asbestos exposure. The asbestos fibres cause inflammation and fibrosis of the lung tissue resulting in restriction of the lungs. In cases with extensive scarring shortness of breath can be quite severe. The severity and speed with which fibrosis develops will depend on the intensity of the dose breathed in. The development of asbestosis is seen in people with high asbestos exposures with a latency period of 15-30 years. Asbestosis has accounted for about 14% of cases compensated by the DDB in the last decade.

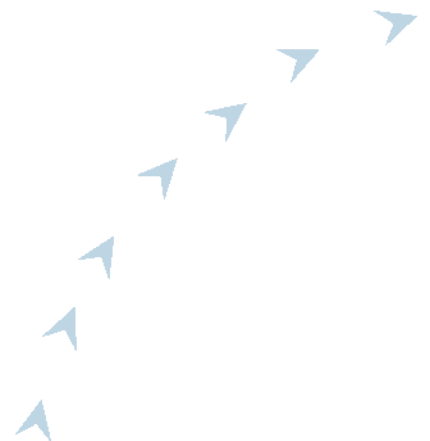
Asbestos Related Pleural Disease (ARPD)

Diffuse pleural thickening is the development of fibrosis of the pleura over a wide area. It involves both layers of the pleura, particularly the inner lining. It is seen less commonly than pleural plaques but produces more symptoms due to the large area affected. It may cause shortness of breath. It usually develops around 10-15 years after exposure.

Benign asbestos related pleural effusion can develop after asbestos exposure. Chest pain or shortness of breath are the main symptoms although often there are no symptoms. The time from exposure to asbestos to the development of symptoms (latency period) ranges from 10-20 years. ARPD is the second commonest disease compensated by the DDB over the past 10 years accounting for 30% of all awarded cases.

Mesothelioma

Mesothelioma is a cancer of the pleura or the peritoneum (abdomen). It is an invasive tumour related almost exclusively to asbestos exposure. Pleural effusion commonly



occurs resulting in chest pain and breathlessness. Sadly, the prognosis is usually poor with a typical survival time after diagnosis of 9-12 months. The latency is much longer than most other asbestos related diseases – 20-50 years. Internationally, Australia has one of the highest incidences of mesothelioma due to substantial usage of asbestos products throughout the 1900's. The incidence in NSW is expected to increase for another 10-15 years. Mesothelioma has been the most frequently compensated disease in the past decade; accounting for 40% of all newly awarded cases. Currently, no treatment has been shown to improve survival in mesothelioma but it is hoped that the results of several new treatment trials will change this.

Asbestos & Lung Cancer

Lung cancer is a malignant tumour of the lung passages that invades the surrounding tissue. Cigarette smoking is responsible for >90% of lung cancers, however asbestos exposure may also result in carcinoma of the lung. Lung cancer due to asbestos exposure is more likely to occur if asbestosis has developed. People who smoke and also have had heavy asbestos exposure have an increased risk of developing lung cancer. There is a long latency period of 20 or more years. Symptoms include chronic cough and chest pain through to hoarseness, wheezing, loss of appetite and weight loss in more advanced cases. Once symptoms present prognosis is usually poor although early treatment may be curative.

Due to many cases of lung cancer being related to smoking it can often be very difficult for the DDB to determine if the lung cancer is due to asbestos exposure. In such situations other criteria are used, which include:

- The presence of asbestosis or ARPD
- An asbestos exposure estimate performed by an occupational hygienist. This estimate is based on the Helsinki Criteria, a document that arose from an International Expert Meeting on Asbestos, Asbestosis and Cancer in 1997. This document detailed the criteria required for diagnosis of asbestos related diseases. They concluded that a measurement of 25 fibres/ml-years of cumulative exposure was required to confidently diagnose asbestos related diseases.
- An asbestos fibre count is performed on the lung tissue. This is determined using Transmission Electron Microscopy (TEM) and Energy Dispersive Spectroscopy (EDS) to identify the asbestos fibres. The count needs to be substantially higher than the general population for asbestos to be considered as a causative agent. The DDB is currently establishing a NSW reference population for asbestos exposure.



DISEASES DUE TO SILICA EXPOSURE

Silicosis

Silicosis is caused by exposure to crystalline silica dust. There are three types of silicosis:

1. Chronic Silicosis: This is the most common form occurring after long-term exposure (>10 years) to low and moderate levels.
2. Accelerated Silicosis: Occurring 5-10 years following high exposure levels.
3. Acute silicosis: Occurring up to 2 years after short-term high exposure levels. It is often fatal, sometimes within a few months.

Once deposited in the lung, silica mineral particles may stimulate an inflammatory reaction which results in cell injury and proliferation. In people who develop silicosis this eventually results in the formation of silicotic nodules (hard, rounded fibrous growths) and nearby fibrosis of the lung.

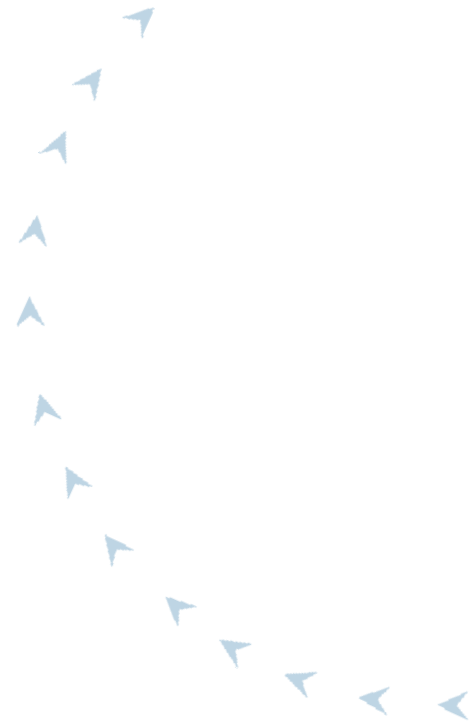
In early disease there are no changes to lung function. But in some people it may progress to produce abnormalities visible on the chest X-ray. This may result in a worsening lung function and symptoms of breathlessness and cough. There is no cure for silicosis. For most people however, lifespan is not affected even though symptoms do not diminish once the disease is established. In a small proportion of patients the disease may become complicated and progress to severe respiratory disability.

The commonest industries of exposure in people receiving DDB compensation for silicosis are foundries, excavation and tunnelling, brickworks and furnace construction. The commonest occupations are jackhammer operators (construction site excavators), foundry moulders and brick makers.

Silicotuberculosis

People with silicosis are at increased risk of tuberculosis. Silicosis impairs the immune function of some of the cells which defend the lung, which are important in controlling tuberculosis infection. Factors which influence the development of tuberculosis in patients with silicosis include, the prevalence of TB in the general population, the severity of silicosis, as well as their age and general health. Although it is now quite rare, this is still the most common complication of silicosis.

Symptoms include cough, sputum, night sweats, malaise and weight loss. Over the last ten years only two cases of silicotuberculosis have been compensated by the Dust Diseases Board.



Silicosis & Lung Cancer

In 1997 the International Agency for Research on Cancer classified crystalline silica as carcinogenic (or cancer producing) to humans. There is still much debate as to whether silicosis is a pre-requisite for its development. Smoking is believed to increase the risk, possibly 2-fold more than in non-smokers. Lung cancer developing in patients with silicosis is accepted for compensation by the DDB, even if the person has smoked or is smoking. Approximately 8% of all DDB compensated lung cancer cases are in association with silicosis.

DISEASES DUE TO ORGANIC DUST EXPOSURE

Extrinsic Allergic Alveolitis

Extrinsic allergic alveolitis (also known as hypersensitivity pneumonitis) represents a group of inflammatory lung diseases resulting from intense or repeated inhalational exposure to organic dusts. There are two forms of the disease, termed acute or chronic. Individuals with the acute disease have episodes of fever, cough and breathlessness several hours after the exposure. Individuals with the chronic disease may develop irreversible scarring of the lung tissue which in some individuals can eventually progress to complete respiratory failure. The organic dusts responsible for this group of diseases can be divided into two groups; i) microbial spores which grow in vegetable matter, such as mushrooms, hay, straw, grain, wood bark and bagasse, and ii) animal proteins both avian (budgerigars and pigeons) and mammalian. The clinical picture and pathology tends to be similar irrespective of which category the organic dust falls into.

Farmer's Lung is the name given to the disease due to exposure to mouldy hay, straw or grain. It occurs more commonly in areas where rainfall is high and crops are not able to be completely dried before storage.

Bagassosis is caused by inhalation of mouldy bagasse which is the fibrous cellulose residue of sugar cane. The disease is uncommon.

Mushroom Worker's Lung is caused by the inhalation of microbial spores living in the compost used to cultivate mushrooms on. Due to changes in cultivation practices (and specifically the introduction of mechanical spawning) the incidence of this disease has greatly decreased.

Bird Fancier's Lung is another one of the more common forms of occupational diseases in this group and is due to exposure to bird excreta and bloom.



Byssinosis

Byssinosis is an occupational airways disease seen in textile workers due to the inhalation of certain cotton textile dusts. The symptoms experienced by workers include chest tightness, wheezing and shortness of breath. Initially symptoms appear several hours after arriving at work on the first day of the working week or the first day back from a holiday. They generally improve over the course of the week and do not recur until the beginning of the following week after the worker has had at least two days of no exposure to the textile dust. With prolonged and intense exposure a worker's symptoms may progress to become continuous throughout the week, both at work and at home. This continuous irritation of the airways can lead to permanent irreversible impairment of a worker's lung function.

The products known to cause byssinosis are; cotton fibres, hemp fibres and flax fibres. The disease is relatively rare nowadays due to improvements in workplace conditions. Only 34 cases (1 female) have ever been compensated and no new cases have been reported to the dust board in the last 10 years. Nearly all cases were exposed during employment in NSW cotton mills, with the exception of 2 who were employed at a cotton seed oil manufacturing plant. Only 20% of deaths in this group were certified as being due to byssinosis.

Coal Dust Pneumoconiosis

Coal Dust Pneumoconiosis is a disease resulting from the inhalation and retention of coal dust in the lungs. The disease may be simple progressing to complicated, especially if the worker remains exposed to excessive amounts of dust. In simple pneumoconiosis nodules develop in the lungs. In the complicated form these nodules develop into large lesions, fusing together to form masses of scar tissue. In the past this disease was more common in coal miners who were exposed to much higher dust levels in poorly ventilated underground work. It should be noted however that coal miners are excluded from claiming compensation through the DDB. Instead they are eligible to seek statutory compensation through Coal Services Pty Limited. This company was formed in 2001, replacing the former Joint Coal Board and the Mines Rescue Board, and is responsible for workers' compensation services to the NSW coal mine industry.



DISEASES DUE TO METAL DUST EXPOSURE

Siderosis

Siderosis is caused by the long-term inhalation of iron oxide fumes and is generally assumed to be a benign condition, not associated with respiratory symptoms or functional impairment. Chest x-rays of affected workers show small opacities uniformly distributed throughout the lungs. These may disappear once exposure to the iron compounds ceases. Exposure to asbestos or silica in combination with iron exposure however, can cause a more harmful form of disease referred to as mixed dust fibrosis.

Aluminosis

Aluminium is a light, white metal used across a wide range of industries in the manufacture of a variety of metal products. Aluminosis is the occupational lung disease seen in workers exposed to the fine aluminium powder or dust. The disease is characterized by a scarring of lung tissue after prolonged inhalation. The degree of scarring is related to the duration of a workers exposure to the dust, the concentration of the dust in the air and the fineness of the particles. There are only 3 compensated cases of aluminosis recorded at the DDB.

Products manufactured from aluminium include; alloys, engine and aircraft components, building structures such as window frames and roofs, electric wires and cables and containers for beverages and foodstuffs. Exposure to aluminium may occur during aluminium smelting, manufacturing of aluminium abrasives, aluminium polishing and aluminium arc-welding.

Berylliosis

Beryllium is a hard, grayish coloured metal, which is used in a variety of workplaces. Chronic berylliosis is an inflammatory disease of the lungs, is caused by the inhalation of dust or fumes containing beryllium. Symptoms include, cough, weight loss and shortness of breath. The disease differs from other occupational lung diseases in that it only occurs in workers who are sensitive to beryllium (about 2% of workers). Beryllium metal and several beryllium compounds have been shown to cause cancer in animals and as a consequence since 1994 the substance has been classified as a human carcinogen.

Beryllium and beryllium alloys are used in electronics components, fibre optics components, descaling equipment, nuclear weapons, nuclear reactors, aerospace equipment, X-ray transmission windows, mirrors, ceramics, bicycle frames, and golf club heads. The Dust Diseases Board has never been presented with a claim for berylliosis.

Hard Metal Pneumoconiosis

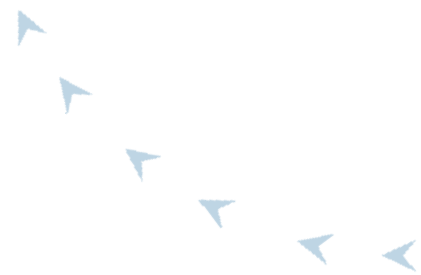
This disease is a consequence of the inhalation of cobalt containing dust, either in the manufacture of hard metals or the sharpening of tools made from hard metals. Hard metal material contains mostly tungsten carbide together with varying amounts of cobalt. Symptoms of the disease include shortness of breath, tightness of the chest and with prolonged exposure, scarring of the lungs. The condition generally can be reversed upon cessation of exposure. Development of the disease does not appear to be dependant on duration of exposure as the disease has been reported in young workers with only short exposures. This may suggest that a genetic susceptibility may play a role.

Products containing hard metals include; tools used for drilling, sawing, cutting, grinding or polishing various materials such as stones, concrete, metals or woods. Only 8 workers have been compensated by the Dust Diseases Board for Hard Metal Pneumoconiosis. Their occupations include toolmakers, miners and a metal polisher:

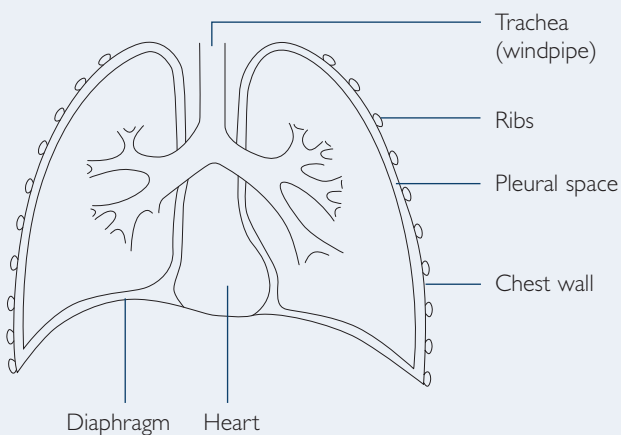
Hexavalent Chromium associated Lung Cancer

Chromium is a hard silvery white metal used in electroplating and the manufacture of a wide range of steel products. Only the hexavalent compound of chromium is believed to be carcinogenic. It is also corrosive and toxic to the skin. Heavy inhalational exposure can cause coughing, wheezing, pain and weight loss. Only 1% of all lung cancers awarded compensation by the DDB are associated with hexavalent chromium exposure and there have been only five cases compensated in the past ten years.

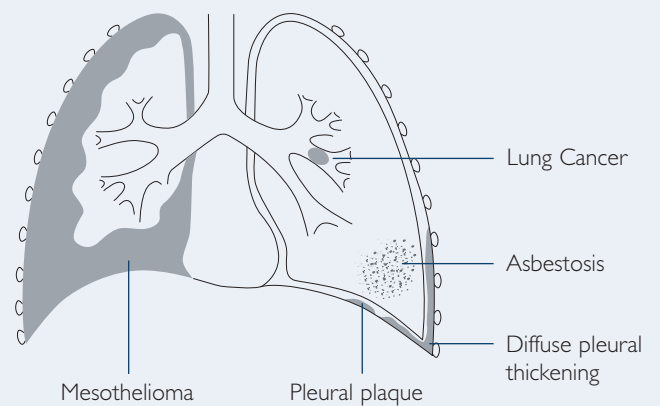
Products containing chromium include; anticorrosive agents, batteries, cement, electroplating agents, explosives, paints and varnishes, paper, leather tanning agents, television screens and wood preservatives.



NORMAL LUNG ANATOMY



LUNG DISEASES



OTHER OCCUPATIONAL LUNG DISEASES

(NOT COVERED BY DDB COMPENSATION SCHEME)

Occupational Asthma

Asthma is an inflammatory disorder of the lungs and is the result of a hypersensitive reaction to an inhaled foreign substance. It is characterized by episodic contraction of smooth muscle in the lungs, causing difficulty breathing with symptoms of wheezing and shortness of breath. It occurs in up to 30% of all people at some stage in their life.

Occupational asthma is the commonest occupational lung disease in Australia. It is no different to non-occupational asthma except that it is provoked by agents in the workplace. In order to develop occupational asthma a worker must first become sensitized to the agent at work. Sensitization generally occurs in the first six months of starting work but may take longer. Asthmatic reactions in sensitized workers can be immediate, occurring within 10-20 minutes after exposure to the agent at work, or they can be delayed, presenting in some cases after the worker has returned home. Episodes of asthma can last for several hours but symptoms can be treated with medications, which help to relax the constricted muscles, decrease the inflammatory response, and open up the airways. Occupational rhinitis may occur in combination with occupational asthma. Symptoms of rhinitis include sneezing, nasal discharge and nasal obstruction. There are over 300 substances known to cause occupational asthma and rhinitis but as with most toxic substances it is more often the dose of exposure rather than the agent which will determine if a worker becomes sensitized. Some people may be more prone to becoming sensitized than others because of their genetic makeup.

Some of the many products in the workplace known to be sensitizing agents for occupational asthma include: isocyanates (used in making foam, the base of shoes, and paint hardener), plicatic acid in western cedar dust, Tasmanian blackwood dust, platinum salts, enzymes used in detergents, potroom fumes in the aluminium industry, dander and dried urine of animals, flour, certain dyes, formaldehyde, penicillin, aspirin and morphine. Occupations at risk include animal handlers, bakers, workers in pharmaceutical manufacturing industry, factory workers manufacturing detergents, spray painters, wood workers.

Reactive Airways Dysfunction Syndrome (RADS)

Reactive airways dysfunction syndrome is an irritant induced asthmatic disease occurring after a single high dose exposure to an irritating vapour, smoke or fume. It is often the result of an industrial accident. The time period between exposure and development of symptoms is short – lasting from between a few minutes to several hours. Symptoms simulate asthma with coughing, wheezing, difficulty breathing. These last for at least 3 months and in some cases can persist for years after the incident. The main difference between occupational asthma and RADS is that there is no preceding period of sensitization and exposure is usually a one off, high dose event.

Some agents associated with RADS include: sulphuric acid, hydrochloric acid, chlorine gas, acetic acid, smoke, welding fumes, floor sealant, spray paint, bleach, tear gas, and pesticides.

Inhalational Injuries

Inhalation injuries can be thermal, chemical, or asphyxial in nature. Both the upper and lower respiratory tract may be involved and the degree and type of impairment depends upon the agent and the intensity of exposure. Thermal inhalational injuries are most often due to accidents involving steam and damage is largely limited to the upper airways. Chemical injuries result most commonly from the inhalation of smoke. The composition of the toxic by-products present in the smoke depends on the fire environment. Chemical inhalational injuries are also common in active military personnel due to exposure to toxic war gases. Sequelae of inhalational injuries can include rhinitis, laryngitis, tracheobronchitis, chemical pneumonitis and severe pulmonary oedema causing frothy, bloody sputum production. Symptoms vary but can include watery eyes, sore throat, cough, and chest pain. Severe cases may present with symptoms of lung failure.



THE SURVEILLANCE OF AUSTRALIAN WORKPLACE BASED RESPIRATORY EVENTS (SABRE)


All occupational lung diseases are preventable when proper precautions are taken to avoid exposure to toxic products. Surveillance schemes have been established throughout the world to detect which work related diseases are occurring, which industries and occupations are affected, and to provide an estimate of the number of new cases occurring each year. They provide a centralised method of collecting information which makes detection of important agents and trends of disease prompt

and accurate. Surveillance schemes specifically collecting information on lung diseases have identified some unique and important disease causing agents.

The SABRE Scheme is a voluntary, anonymous notification scheme of occupational lung diseases that has been operating in NSW since June 2001. Individuals who notify cases to SABRE are respiratory physicians, occupational physicians or WorkCover accredited general practitioners with a special interest in occupational medicine. Currently, 120 doctors actively participate in the scheme. Every two months, participating doctors who see new cases of occupational lung disease in their normal practice, notify SABRE of these new cases. SABRE collects information on all occupational lung diseases, including those specifically listed under the Dust Diseases Act. Occupational lung diseases can be caused by a vast array of agents in the form of gases, vapours, mists, fumes and dusts and may be biological or chemical. Information collected by the doctor includes age, gender, smoking history, the causal agent, and the occupation and industry thought to be responsible for exposure to an agent.

Since June 2001, 1658 new cases of occupational lung disease have been reported to SABRE. From these new cases, 1808 diagnoses have been notified. There are more diagnoses than cases because some individuals have developed more than one occupational lung disease. Many of the diseases notified to SABRE have been caused by exposure to asbestos.

The SABRE Scheme plays an important role in determining which occupations and industries are likely to cause disease and why. Once known, positive strategies can be developed to prevent lung diseases in these industries and occupations. The Scheme has the potential to decrease the incidence of occupational lung disease and to be of significant public health benefit.



Dust Diseases Notified to SABRE 2001-2005	N (%)
Diffuse pleural thickening	442 (24.4)
Mesothelioma	446 (24.7)
Pleural plaques	371 (20.5)
Asbestosis	246 (13.6)
Occupational Asthma	64 (3.5)
Lung Cancer	102 (5.6)
Silicosis	54 (3.0)
Other (includes bronchitis, byssinosis, rhinitis, sinusitis)	50 (2.8)
Inhalation Injury	31 (1.7)
Allergic alveolitis	2 (0.1)
Total	1808

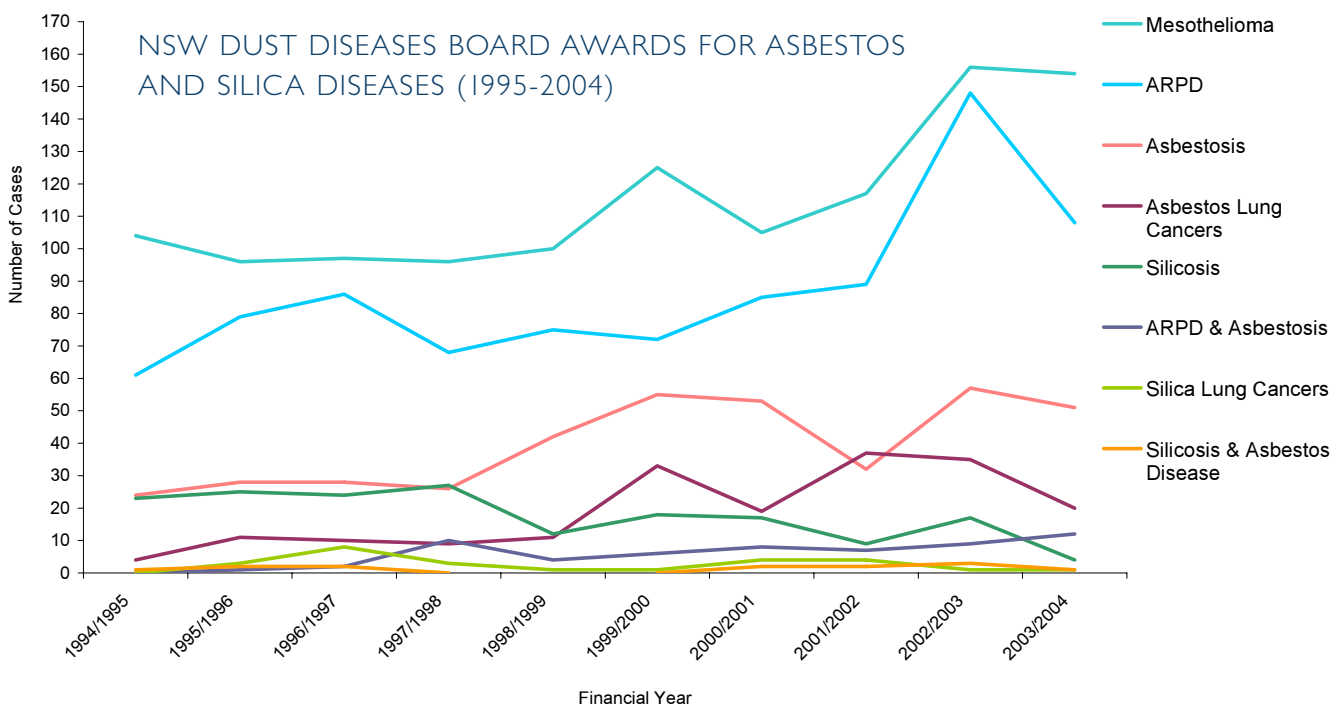
INVESTIGATION AND PREVENTION OF OCCUPATIONAL LUNG DISEASE

Screening

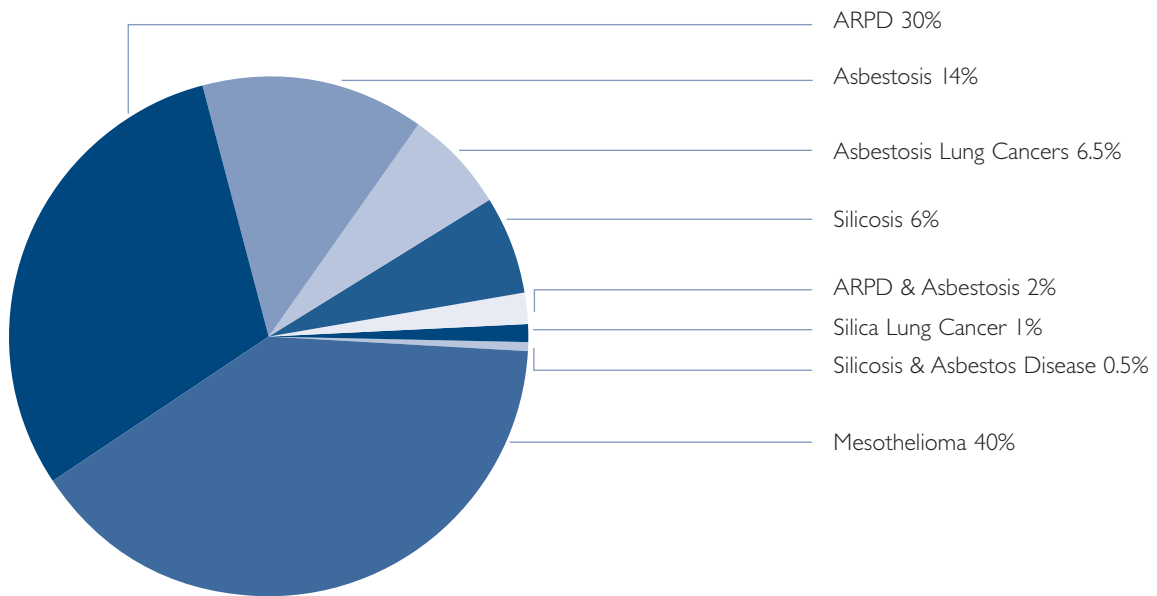
Screening for lung diseases can involve medical examinations, x-rays, CAT scans and lung function (breathing) tests. Doctors can examine x-rays and CAT scans for the presence of pleural plaques and areas of thickening or abnormal markings. Lung function is determined by measuring the movement and volume of air into and out of the lungs using devices called spirometers and other machines. Results can be compared with normal ranges to determine if breathing is being affected by an underlying condition.

Prevention

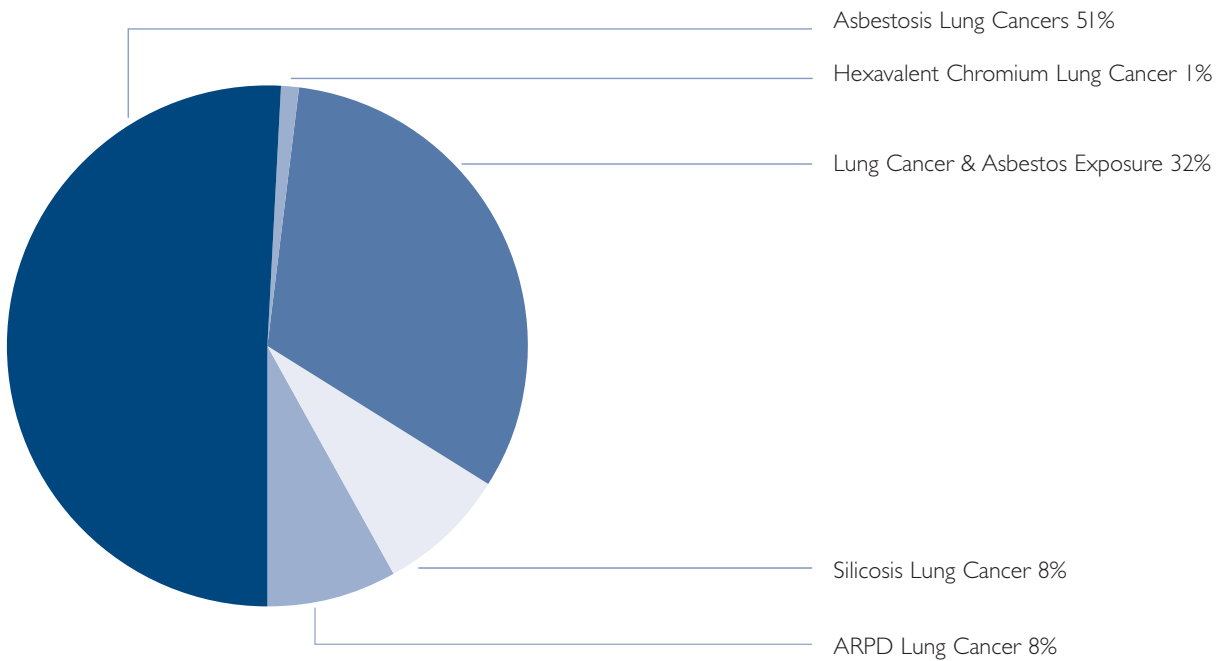
All occupational lung diseases are preventable and simple measures can be taken to achieve their eradication. The most obvious is to eliminate the culprit workplace exposures. This can be done by either replacing them with non-toxic substitutes or reducing their use to safe working levels. Regular dust monitoring may be necessary to ensure the latter is maintained. Even if this can be done, accidents can still happen so measures need to be in place to firstly prevent the likelihood of these and secondly to reduce their consequences if they do occur. Physical barriers and altered working patterns can separate workers from potential exposures. Stringent housekeeping and respiratory protection equipment are other effective measures. Where respiratory protection is required, it is the duty of the employer to enforce its wearing and to ensure that it is properly maintained. Educating workers on the dangers and need for safe handling practices is a crucial part of these control measures.



DISTRIBUTION OF ASBESTOS AND SILICA DISEASES
COMPENSATED BY THE NSW DUST DISEASES BOARD (1994-2005)



DISTRIBUTION OF DUST RELATED LUNG CANCERS
COMPENSATED BY THE NSW DUST DISEASES BOARD



GLOSSARY



Bronchi: The larger tubes which lead down into the lungs from the voice box and wind pipe and which, after several branches, end in the lung tissue (alveoli, or gas exchange area).

Carcinogenic: A term meaning something capable of causing cancer.

DDB: NSW Workers' Compensation Dust Diseases Board.

Fibrosis: The formation of excessive fibrous (or scar) tissue.

Irritant: Something causing physical irritation.

Laryngitis: Inflammation of the voice box or larynx.

Latency period: The time from exposure to an agent until symptoms appear.

Pulmonary oedema: Fluid in the lungs.

Pneumoconiosis: Lung diseases resulting from inhalation of dusts and aerosols.

Pneumonitis: Inflammation of the lung tissue or alveoli.

Rhinitis: Inflammation of the nasal mucous membranes.

Sensitize: To make hypersensitive or abnormally reactive to a foreign substance, especially by repeated exposure.

Sequelae: The eventual consequences of an event, here usually a dust inhalation or injury.

Trachea: The windpipe, which runs down the throat from the mouth to the lungs.

Tracheobronchitis: Inflammation of the mucous membrane of the trachea and bronchi.

Tuberculosis: An infectious disease caused by tubercle bacillus (a bacteria) and characterized by the formation of nodules (tubercles) in the lungs and other tissues of the body, coughing up of mucous, fever, weight loss, and chest pain.

Tumour or carcinoma: A collection of cells that grow abnormally in the body.

