MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

LABOUR AND COMMERCIAL ENVIRONMENT

Work-Related Disease in New Zealand

The state of play in 2010

New Zealand Government

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MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

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Executive summary

This report provides a summary of work-related disease in New Zealand up to 2010 using the latest available data. It is the first report by the Ministry of Business, Innovation and Employment (the Ministry) on work-related disease surveillance. The National Occupational Health and Safety Advisory Committee (NOHSAC) published an initial estimate of work-related disease in 2004 (Pearce et al, 2004).

Mortality

There were an estimated 600–900 deaths due to work-related disease in New Zealand during 2010. This has not changed significantly since 1999 (the year that NOHSAC's 2004 estimate of 700–1,000 deaths a year was based on). In 2010:

- over 80 per cent of work-related deaths were men
- up to 50 per cent of all work-related deaths were due to occupational cancer
- about 170 people died from asbestos-related diseases, making exposure to asbestos the single biggest cause of work-related disease mortality
- cardiovascular and respiratory diseases remained the other main causes of work-related mortality in New Zealand.

The data shows a rise in the number of fatalities from asbestos-related cancers, and a fall in the estimates for work-related cardiovascular and respiratory diseases. The latter reflects a trend of declining fatalities for all causes of those diseases.

The increase in the number of asbestos-related deaths was caused by past exposure to asbestos that could have occurred as far back as the 1950s or 1960s. While preventative measures are too late for this wave of asbestos-related deaths, this data is a timely reminder of the toll of exposure to asbestos. It also reinforces the need to ensure present-day exposure to asbestos is prevented, including in the Christchurch rebuild and earthquake strengthening of older buildings throughout New Zealand.

Most other diseases that feature in the mortality estimates are caused by exposure to hazardous substances, either through direct contact or as exposure to airborne contaminants in the workplace. Ensuring clean air in workplaces should be a key strategy for preventing work-related disease.

The high percentage of men as victims of work-related disease reflects the hazards in the types of work in male-dominated occupations.

Non-fatal disease (morbidity)

There were 29,000–30,500 cases of non-fatal disease in 2010. Non-fatal disease includes noise-induced hearing loss, musculoskeletal disorder, cancer, cardiovascular disease and respiratory disease. The number of Accident Compensation Corporation (ACC) claims, and hospitalisations for work-related disease increased in the years leading to 2010.

Accident Compensation Corporation data

- In 2010, ACC accepted 24,000 claims for work-related disease, including 18,000 medical fees claims and 6,000 claims for work-related disease where an entitlement payment was paid, representing more serious cases[1]
- Just over 78 per cent of these claims were by men, with a three per cent increase in claims for men since 2008
- The most common disease types of claims accepted by ACC are for noise-induced hearing loss, musculoskeletal conditions and occupational overuse syndrome
- The industry sectors with the highest numbers of work-related disease claims are the agriculture, forestry and fishing, manufacturing, and construction sectors.

The increase in ACC claims has been driven by an increase in claims accepted for noise-induced hearing loss and digestive system disorders. Claims for many other diseases have been decreasing since 2006. Diseases found in ACC data that are not represented in mortality or hospitalisation estimates include musculoskeletal disorders, noise-induced hearing loss, skin diseases and digestive system disorders.

Hospital data

- In 2010, an estimated 5,000–6,500 people were hospitalised for work-related disease.
- These estimates are for disease types not accounted for in ACC data.
- Around 77 per cent of hospitalised cases were men.
- The most common causes for hospitalisation were cancer, cardiovascular disease and respiratory disease.

Hospitalisations due to work-related disease have increased since 2002. Increases in non-fatal disease claims and estimates may reflect both a growing participation in the workforce and a changing age profile of the New Zealand workforce.

Conclusions

The data considered for this report indicates that occupational cancer, cardiovascular disease and respiratory disease are the main causes of work-related mortality in New Zealand. These diseases mostly affect men. Past exposure to asbestos is the single largest cause of current disease mortality. Cancer, cardiovascular disease and respiratory disease are also prevalent as non-fatal diseases, together with noise-induced hearing loss and musculoskeletal disorders (including occupational overuse syndrome).

Disease prevention

The data suggests that projects to prevent disease could focus on:

- preventing exposure to hazardous airborne substances in workplaces (clean air in workplaces)
- preventing exposure to hazardous noise
- preventing determinants of musculoskeletal disease.

The recently published report of the Independent Taskforce on Workplace Health and Safety recommends that compliance activity should focus on harm prevention (Jager *et al*, 2013). Given the extent of the Christchurch rebuild, mortality from past exposure to asbestos, and the prevalence of

[1] Entitlement payments include weekly compensation, and purchase of rehabilitation equipment such as hearing aids.

cancer and respiratory disease, activities aimed at preventing exposure to demolition and construction dust in Christchurch should be a priority for a “clean air” disease-prevention activity.

Improvements to disease data

A significant problem with linking disease to work is the lack of records on the occupation of disease sufferers, particularly in hospital and cancer data. Research methods that link an individual’s records between government databases have increased in recent years. Linking individual health records to that person’s tax or census records could provide a better record of occupation than is currently available within national health data. Note that projects of this nature would be carried out in a manner that protects the security of data and the privacy of individuals.

However, the problem of setting priorities for disease-prevention activities will not be solved by having better work-related disease estimates on their own. A parallel activity of improving data on workers’ current exposure to disease-causing agents in the workplace is also required.

Priorities in developing better disease data for the Ministry and the proposed Worksafe New Zealand agency include:

- conducting a feasibility study into linking people’s national health data to other databases that contain demographic data
- considering options for an exposure surveillance system with a focus on assessing disease-causing hazards among different occupational groups.

Contents

Introduction

Purpose

This report summarises work-related disease in New Zealand up to 2010 using the latest available data. It is the first report by the Ministry of Business, Innovation and Employment (the Ministry) on work-related disease surveillance. The data presented in this report provides indicative estimates of work-related disease in New Zealand.

Background

The Ministry published an Occupational Health Action Plan in 2011 recommended developing a national occupational disease surveillance framework.

More recently, the Independent Taskforce on Workplace Health and Safety released its report in April 2013, recommending that the Government focus on improving the quality and availability of information on workplace injury and occupational health (Jager *et al*, 2013).

The data

In a previous estimate of work-related disease, the National Occupational Health and Safety Advisory Committee (NOHSAC) used 1999 data as a reference point. Consequently, 1999 data has been used to compare with 2010 data for mortality. The Ministry does not have comparable Accident Compensation Corporation (ACC) data for 1999–2001, so, 2002 data has been used as a comparison year for non-fatal disease. Therefore, the estimates of non-fatal disease in this report should not be compared with NOHSAC's estimates.

Note that data in text and summary tables is presented as rounded numbers. Actual numbers are given in detailed data tables.

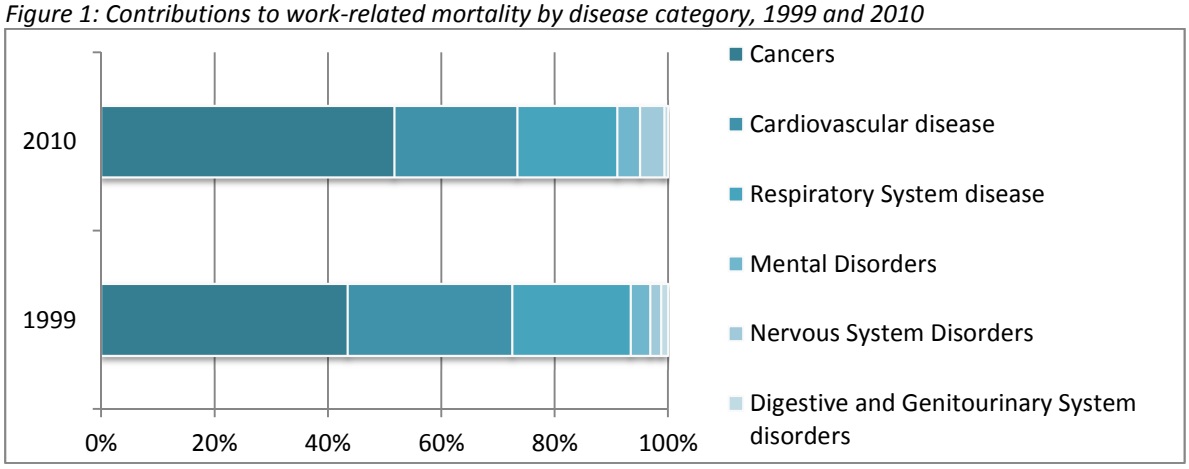
For details on how estimates are derived, see Appendix A.

Mortality due to work-related disease

We estimate there were 600–900 deaths from work-related disease in 2010 compared with 700–1,000 deaths in 1999. The number of deaths has not changed significantly over the past 11 years. A detailed comparison of 1999 and 2010 data broken down by disease is in Appendix B.

Cancers make the largest overall contribution to the mortality disease estimates (see Figure 1), contributing to 50 per cent of all work-related deaths in 2010. A recent study identified carcinogens that may be common in some workplaces, including asbestos, formaldehyde, second-hand smoke, paints and thinners, solar radiation and wood dust (t'Mannetje, 2013).

Figure 1: Contributions to work-related mortality by disease category, 1999 and 2010



Source: National health data supplied to the Ministry of Business, Innovation and Employment by Massey University.

Many disease victims are exposed to these hazards as airborne substances. Providing clean air in workplaces and reducing exposure to these substances should be a priority for preventing work-related cancers and other diseases.

Cardiovascular and respiratory diseases are the other main contributors to work-related mortality, with 22 per cent and 18 per cent of fatalities respectively. The reduced number of these diseases in 2010 reflects an overall reduction in all causes for mortality from these diseases. Lifestyle factors may contribute to trends in cardiovascular diseases, in addition to exposure to hazardous substances at work.

Mortality due to asbestos exposure

Since 1999 the number of asbestos-related deaths has significantly increased. Past exposure to asbestos contributes to work-related mortality from mesothelioma (cancer of the lining of the lung), lung cancer and asbestosis (an asbestos-related respiratory disease). The mortality rate for asbestos-related disease peaked at 190 deaths in 2009 (see Table 1).

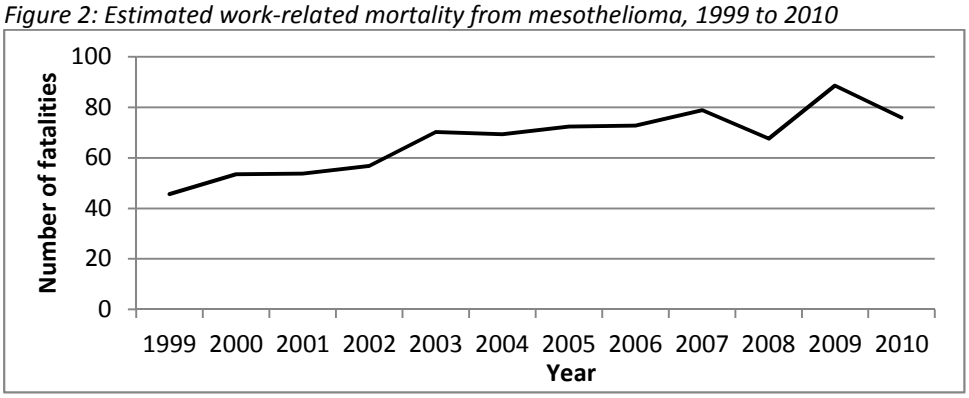
Table 1: Estimated mortality from past exposure to asbestos for selected years

Cause of mortality	Estimated number of cases			
	1999	2008	2009	2010
Mesothelioma	46	68	89	76
Lung cancer	46	68	89	76
Asbestosis	10	17	14	14
Total	101	152	191	166

Source: National health data supplied to the Ministry of Business, Innovation and Employment by Massey University.

Most cases of mesothelioma are caused by exposure to asbestos in the workplace. Studies estimate that for each person who suffers from mesothelioma, there is at least one other person who suffers from asbestos-related lung cancer (McCormack *et al*, 2012). Combined with mortality from asbestosis, we estimate that there were almost 170 deaths related to past asbestos exposure in 2010. Mesothelioma has risen dramatically since 1999 (see Figure 2).

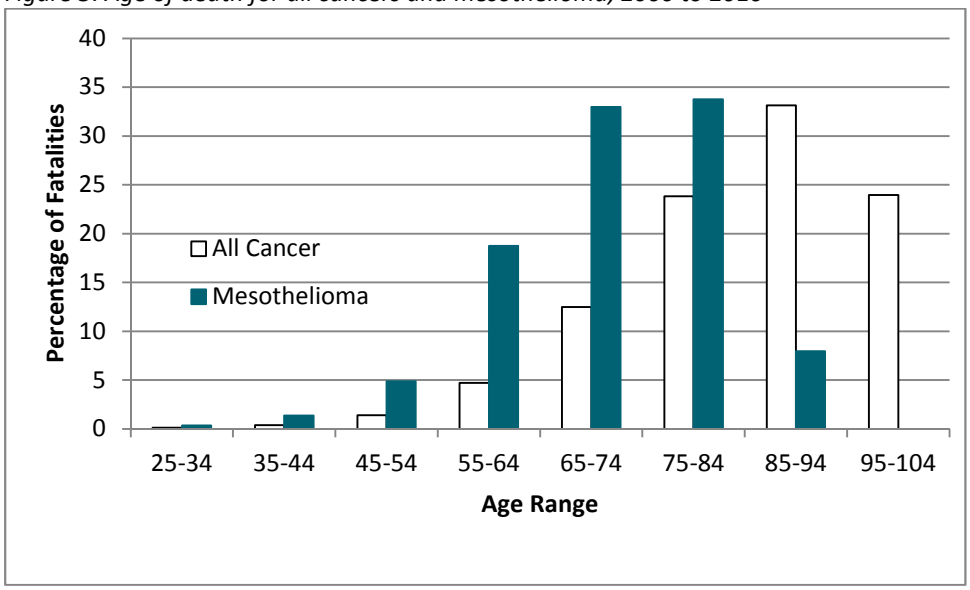
Figure 2: Estimated work-related mortality from mesothelioma, 1999 to 2010



Source: National health data supplied to the Ministry of Business, Innovation and Employment by Massey University.

National health data shows that people with mesothelioma victims tend to die younger than people with other cancers, with 57 per cent of sufferers dying between the ages of 45 and 74 compared with 19 per cent for all cancers (see Figure 3). Death at a younger age can be an indicator of both the impact and work-relatedness of a disease.

Figure 3: Age of death for all cancers and mesothelioma, 2000 to 2010



Source: National health data supplied to the Ministry of Business, Innovation and Employment by Massey University.

Asbestos exposure is still a risk, with many buildings still containing asbestos. Occupations such as electrician, plumber, carpenter, heating and ventilation engineer, demolition worker and asbestos removal worker have an increased risk of exposure to asbestos.

Estimates of non-fatal work-related disease (morbidity)

In 2010, there were 29,000–30,500 cases of work-related morbidity. These cases comprised 24,000 accepted ACC claims and an additional 5,000–6,500 people who were hospitalised for work-related diseases (see Table 2).[2] This is a 12 per cent increase from 2002. The increases have been driven by medical fees claims, claims for ear and digestive system diseases, claims in the primary and manufacturing industries, and hospitalisations for cancers, respiratory and cardiovascular diseases.

Table 2: Estimates of non-fatal work-related disease, 2002 and 2010

Indicators for non-fatal work-related disease	2002	2010
Accepted ACC medical fee claims	15,000	18,000
Accepted ACC entitlement claims	6,500	6,000
Total for ACC claims	21,500	24,000
Work-related disease hospitalisation estimates, excluding diseases covered by ACC	4,500–5,500	5,000–6,500
Total for all disease	26,000–27,000	29,000–30,500

Source: Accident Compensation Corporation (ACC) data supplied to the Ministry of Business, Innovation and Employment by Statistics New Zealand, and national health data supplied to the Ministry by Massey University.

ACC work-related non-fatal disease claims

ACC accepts claims for work-related gradual process, disease and infection. This report does not distinguish between a gradual process condition, a disease or an infection; they are all treated as components of work-related disease.

Data is presented for two categories of claims: "medical" fees claims and "entitlement" claims. Medical fees claims are where ACC has agreed to pay all or part of treatment fees for a work-related disease case. Entitlement claims are for more serious cases, where ACC may have agreed to pay weekly compensation or purchase equipment such as a hearing aid.

Accepted ACC claims for work-related disease

In 2010, ACC accepted 18,000 work-related disease claims for medical fees. Medical fees claims in 2010 remain higher than in 2002, but have declined since the 2006 peak (see Table 3).

In 2010, ACC accepted 6,000 entitlement claims for work-related disease (see Table 4). These claims exclude claims for medical fees only and fatal claims.

Trends in claim numbers

Overall, all ACC claims rose between 2002 and 2010. This increase is accounted for by increases in entitlement claims for noise-induced hearing loss and medical claims for digestive system disorders.

However, claims for most disease categories have declined since 2006. This could be because of several reasons, including better management of disease-causing hazards in workplaces, changes in the way ACC claims are managed, and the effects of the 2008–09 global recession.

[2] Note that these estimates should not be compared with NOHSAC's estimates published in 2004.

Table 3: Accepted Accident Compensation Corporation medical fees claims for work-related disease, 2002 to 2010

Disease category	Year								
	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Eye diseases	387	419	445	509	483	489	442	374	377
Ear-mastoid process (including noise-induced hearing loss)	1,838	1,877	2,100	2,650	3,001	3,041	3,865	4,692	4,462
Digestive system	794	933	1,019	2,358	2,892	2,722	2,701	2,695	2,468
Skin and subcutaneous tissue	3,334	3,466	3,404	3,137	2,954	2,834	2,536	2,426	2,532
Occupational overuse conditions	3,363	3,906	3,961	4,129	4,216	4,143	3,824	3,470	3,155
Other musculoskeletal disorders	5,178	5,545	5,512	5,512	5,885	5,431	5,054	4,810	4,650
Other diseases	180	235	339	327	369	343	412	349	304
Total	**15,074**	**16,381**	**16,780**	**18,622**	**19,800**	**19,003**	**18,834**	**18,816**	**17,948**

Source: Accident Compensation Corporation data supplied to the Ministry of Business, Innovation and Employment by Statistics New Zealand.

Table 4: Accepted Accident Compensation Corporation entitlement claims for work-related disease, 2002 to 2010

Disease category	Year								
	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Ear-mastoid process (including noise-induced hearing loss)	2,267	2,565	3,132	3,295	3,537	3,558	4,643	4,424	3,505
Digestive system	534	559	590	595	619	602	527	438	318
Skin and subcutaneous tissue	210	205	258	303	284	236	195	183	151
Occupational overuse conditions	1,124	1,155	1,186	1,361	1,353	1,080	877	682	547
Other musculoskeletal disorders	2,105	2,277	2,011	2,221	2,402	1,829	1,687	1,385	1,243
Eye diseases and other diseases	S	S	S	S	S	S	S	S	S
Total	**6,363**	**6,879**	**7,308**	**7,905**	**8,344**	**7,412**	**8,028**	**7,216**	**5,839**

Source: Accident Compensation Corporation data supplied to the Ministry of Business, Innovation and Employment by Statistics New Zealand.
Claim numbers for eye diseases and other diseases have been suppressed as most values are ≤100, and are shown as "S" in the table.

Claims by industry

The industry groups with the highest claim numbers are agriculture, forestry, and fishing, manufacturing, and construction. These three sectors dominate both medical fees and entitlement claims, across all disease categories (see Table 5 and Table 6). However, a large number of ACC claims do not specify the industry group in which the claimant works, so sector data should be taken as indicative only. Overall, the manufacturing sector has the highest number of disease claims.

Musculoskeletal disease

The largest group of ACC work-related disease claims are for musculoskeletal disease claims (including occupational overuse conditions and other musculoskeletal disorders). This disease includes damage to bones, tendons and other soft tissues from repeated overuse or overloading of the musculoskeletal system.

Table 5: Accident Compensation Corporation work-related disease medical fees claims by industry, 2010

	Percentage of medical fees claims (%)				
Disease category	**Agriculture, forestry & fishing**	**Manufacturing**	**Construction**	**All other industries**	**Not specified**
Eye diseases	9	33	10	24	24
Ear-mastoid process (including noise induced hearing loss)	13	20	10	22	35
Digestive system	17	10	12	37	24
Skin and subcutaneous tissue	12	24	11	28	25
Occupational overuse conditions	10	18	11	41	19
Other musculoskeletal disorders	10	15	9	45	21
Other diseases	12	22	8	34	25
Total	**83**	**142**	**71**	**231**	**173**

Source: Accident Compensation Corporation data supplied to the Ministry of Business, Innovation and Employment by Statistics New Zealand.

Table 6: Accident Compensation Corporation work-related entitlement claims by industry, 2010

	Percentage of entitlement claims (%)				
Disease category	**Agriculture, forestry & fishing**	**Manufacturing**	**Construction**	**All other industries**	**Not specified**
Eye diseases	18	26	11	38	7
Ear-mastoid process (including noise induced hearing loss)	25	24	18	21	12
Digestive system	14	24	19	38	5
Skin and subcutaneous tissue	11	36	13	30	9
Occupational overuse conditions	11	29	13	40	7
Other musculoskeletal disorders	13	20	14	47	6
Other diseases	10	34	19	25	12
Total	**102**	**193**	**107**	**239**	**58**

Source: Accident Compensation Corporation data supplied to the Ministry of Business, Innovation and Employment by Statistics New Zealand.

Diseases of the ear and mastoid process

Most of the claims for diseases of the ear and mastoid process are for noise-induced hearing loss. In 2010, 44 per cent of all ACC claims for the ear and mastoid process were entitlement claims, because of ACC's providing claimants with rehabilitation equipment in the form of hearing aids.

Entitlement claims dropped in 2010, with a large decrease in the retail industry. In 2011, the criteria for ACC's accepting of hearing loss claims changed. Therefore, future figures are likely to be lower.

Diseases of the digestive system

Most of the work-related medical fee claims for diseases of the digestive system in 2010 are for dental disorders. Most of the entitlement claims are for hernias, where claimants would require surgery and weekly compensation for post-operative recovery. Dental-related claims rose significantly from 2004 to 2006. The reason for this rise could be related to a change in the way ACC processed claims of this nature rather than a rise in the underlying occurrence of harm.

Diseases of the skin and subcutaneous tissue

Most claims for diseases of the skin and subcutaneous tissue in ACC data do not record a specific diagnosis. Where a specific diagnosis is listed, most claims are for skin infections, dermatitis or eczema. Both medical fees claims and entitlement claims have declined since 2006 with a notable decrease in the number of claims from the manufacturing industry.

Diseases of the eye

Most claims for diseases of the eye are for conjunctivitis (caused by irritation from chemicals or microorganisms) or scleritis (an inflammation of the outer coating of the eye). Claim numbers for these conditions remained relatively unchanged from 2002 to 2010.

Other non-fatal work-related diseases

Other work-related diseases, including cancer and respiratory diseases, account for less than two per cent of accepted ACC claims for work-related disease (see Table 7). Hospitalisation data may provide a better indication of the incidence of these diseases.

Table 7: ACC claims for other work-related diseases, 2002 to 2010

Disease category	Number of claims
Cancer	127
Infectious diseases	455
Respiratory system disease	249
Other diseases including mental/behavioural disorders, nervous system disease, cardiovascular disease, and genitourinary system disease	322
Total	**1,153**

Source: Accident Compensation Corporation data supplied to the Ministry of Business, Innovation and Employment by Statistics New Zealand.

Work-related non-fatal disease hospitalisation estimates

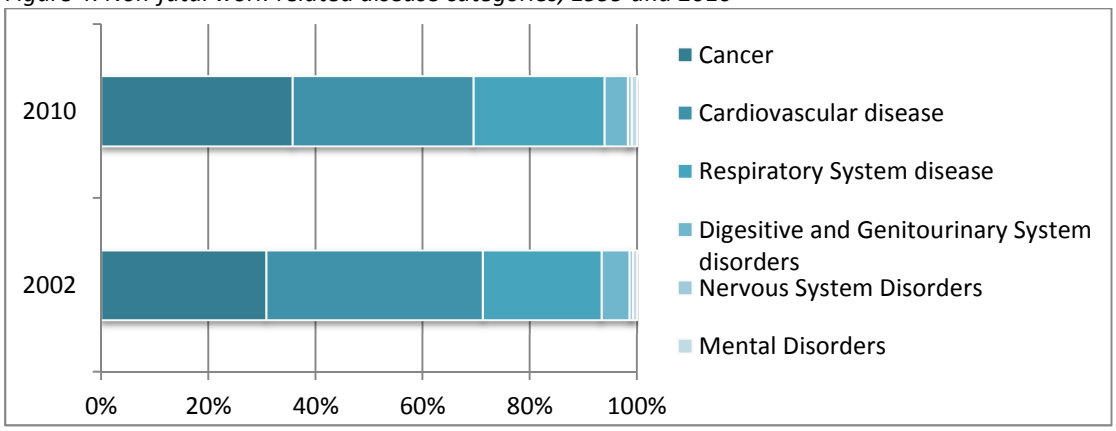
We estimate there were 5,000–6,500 hospitalisations for work-related diseases in 2010. This is an increase from the estimated 4,500–5,500 cases in 2002. These estimates are in addition to the ACC claims listed above, and care has been taken to ensure cases have not been double-counted. Detailed hospitalisation data for 2002 and 2010 is in Appendix C.

Between 2002 and 2010, there was a modest increase in the number of cases of cancer attributed to work-related factors. In 2010, cancer accounted for just over a third of non-fatal cases, cardiovascular system disease accounted for another third of cases, and respiratory disease for a quarter of non-fatal cases (see Figure 4).

The cancers that contributed most to this increase were mesothelioma and leukaemia. As discussed above, mesothelioma is mainly caused by asbestos exposure. Leukaemia is associated with exposure to benzene (which is found in petrol), but the reason for the increase in leukaemia is not known.

Respiratory disease has remained at similar levels in 2010 to 1999. Cardiovascular system disease has decreased, reflecting a reduction in all causes of this disease.

Figure 4: Non-fatal work-related disease categories, 1999 and 2010



Source: National health data supplied to the Ministry of Business, Innovation and Employment by Massey University.

Conclusions

Work-related mortality

There were 600–900 fatalities from work-related disease at in 2010. Disease fatalities remain static with no real change from NOHSAC's estimate of 700–1,000 based on 1999 data.

Cancer remains the largest contributor, accounting for up to 50 per cent of the fatalities. Deaths from respiratory disease and cardiovascular system disease remain the other main contributors, accounting for an additional 40 per cent of fatalities.

We estimate that at least 170 people died in 2010 from asbestos-related diseases, including the cancers mesothelioma and lung cancer and the respiratory disease asbestosis. The number of mesothelioma deaths have increased dramatically since 1999. While preventative measures are too late for this wave of asbestos-related deaths, this data is a timely reminder of the toll of exposure to asbestos. It also reinforces the need to ensure present-day exposure to asbestos is prevented.

Most other diseases that feature in the mortality estimates are caused by exposure to hazardous substances, either through direct contact or as airborne contaminants in the workplace. Providing clean air in workplaces should be a key strategy for preventing diseases such as cancers, respiratory disease and cardiovascular system disease.

The high percentage of men as victims of work-related disease reflects the hazards in the types of work in male-dominated occupations. Lifestyle factors may also contribute to, for example, cardiovascular disease.

Non-fatal work-related disease

ACC claims for work-related disease have increased overall since 2002. This increase has been driven by noise-induced hearing loss claims. Claims for all other disease categories have been decreasing since 2006. The reason for the reduction is unclear, but is likely due to a combination of confounding factors including changes in the way ACC manages claims, impacts of the 2008–09 global recession, and improvements in the way workplaces manage disease causing hazards.

ACC claims for work-related disease are highest in the agriculture, forestry and fishing, manufacturing, and construction sectors. A large number of medical fees claims do not specify an industry, so the data may not be representative of all sectors.

Diseases found in ACC data that are not represented in mortality or hospitalisation estimates include musculoskeletal disorders and noise-induced hearing loss.

Hospitalisations for work-related disease have increased since 1999. Hospitalisation data follows the same pattern as the work-related mortality data, with an increase in cancer cases and a decline in cardiovascular disease cases. Respiratory disease has remained at similar levels since 2002.

Disease prevention

Focus of projects to prevent disease

The data suggests that projects to prevent disease should focus on preventing:

- exposure to hazardous airborne substances in workplaces (clean air in workplaces)
- exposure to hazardous noise
- determinants of musculoskeletal disease.

The recently published report of the Independent Taskforce on Workplace Health and Safety recommends that compliance activity should focus on harm prevention. Given the extent of the Christchurch rebuild, mortality from past exposure to asbestos, and the prevalence of cancer and respiratory disease, activities aimed at preventing exposure to demolition and construction dust in Christchurch should be a priority for disease prevention.

Improvements to disease data

A significant problem with linking disease to work is the lack of a record of the occupation of disease sufferers, particularly in hospital and cancer data. Research methods that link an individual's records between government databases have increased in recent years. Linking individual health records to that person's tax or census records could provide a better record of occupation than is currently available within national health data. Note that projects of this nature would be carried out in a manner that protects the security of data and the privacy of individuals.

However, the problem of setting priorities for disease-prevention activities will not be solved by having better work-related disease estimates on their own. A parallel activity of having better data on workers' current exposure to disease-causing agents in the workplace is also required.

Priorities in developing better disease data for the Ministry and the proposed Worksafe New Zealand agency include:

- conducting a feasibility study into linking people's national health data to other databases that contain demographic data
- considering options for an exposure surveillance system with a focus on assessing disease-causing hazards among different occupational groups.

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Appendix A: Methodology

Estimating mortality

Estimates of work-related mortality are derived from North American and European research that estimated the proportion of different diseases that are work-related (Driscoll *et al,* 2004, Nurminen and Karjalainen, 2001, and Steenland *et al,* 2003. These proportions were then applied to the New Zealand data. This is known as the 'attributable fractions' method and provides a reasonably robust picture of work-related disease in New Zealand.

This method is the most cost-effective way of estimating work-related disease mortality. Epidemiological research can be used to estimate, confirm or recalculate functions. However, such research requires a large amount of time and other resources and a sufficiently large population to return statistically significant results.

For many diseases, less than 10 per cent of cases are work-related. Therefore, trends in these diseases may be due to the factors that cause the other 90 per cent of cases.

Estimating morbidity

Estimates of work-related morbidity are derived from Accident Compensation Corporation (ACC) medical fees and entitlement claims for work-related disease and the attributable fractions method applied to cancer and hospitalisation data.

ACC claims data is presented for two categories of claims:

- **medical fees claims** – where ACC has agreed to pay all or part of treatment fees for a work-related disease case
- **entitlement claims** – where ACC may have agreed to pay weekly compensation or purchase equipment such as a hearing aid for more serious cases.

ACC accepts claims for work-related gradual process, disease and infection. This report does not make any distinction between a gradual process condition, a disease, or an infection; they are all treated as components of work-related disease. All ACC data used in this report was supplied to the Ministry by Statistics New Zealand.

Further work to improve disease estimates

The attributable fractions method provides a high-level picture for the incidence of work-related disease, but it is not possible to break this data down further. Further analysis of national health data may be possible by linking health records with other data sets such as census data that contain a person's demographic information. Any work of this nature would be undertaken in a secure environment and reported in a way that protected the privacy of individuals.

Gathering data on the disease-causing agents that workers in different occupations are exposed to would help clarify any disease–occupation links and could be used to structure disease-prevention activities.

Appendix B: Estimated annual burden of work-related disease mortality in New Zealand, 1999 and 2010

Mortality from work-related disease	Attributable fraction (%)		1999					2010				
			Annual total deaths		Annual deaths attributable to occupational exposures			Annual total deaths		Annual deaths attributable to occupational exposures		
	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN	TOTAL	MEN	WOMEN	MEN	WOMEN	TOTAL
Malignant neoplasms												
Liver, specified as primary	0.045	0.063	62	13	3	1	4	103	14	5	1	6
Nasal cavities, middle ear and accessory	0.24	0.067	4	5	1	0	1	6	2	1	0	2
Larynx	0.093	0.005	23	8	2	0	2	20	5	2	0	2
Trachea bronchus and lung	0.123	0.026	873	569	107	15	122	893	757	110	20	130
Pleura including mesothelioma	0.9	0.25	48	10	43	3	46	80	16	72	4	76
Other malignant neoplasm of skin	0.131	0.038	53	22	7	1	8	76	54	10	2	12
Bladder	0.142	0.071	114	54	16	4	20	126	49	18	3	21
Kidney and other unspecified urinary	0.047	0.008	95	70	4	1	5	137	68	6	1	7
Leukaemia	0.185	0.025	144	102	27	3	29	158	106	29	3	32
Oral cavity	0.012	0.003	32	34	0	0	0	51	17	1	0	1
Pharynx	0.02	0.005	32	6	1	0	1	35	6	1	0	1
Oesophagus	0.064	0.002	113	59	7	0	7	141	82	9	0	9
Stomach	0.103	0.054	206	127	21	7	28	158	94	16	5	21
Colon	0.056	0	352	398	20	0	20	382	449	21	0	21
Rectum, rectosigmoid junction and anus	0.031	0.001	225	158	7	0	7	236	139	7	0	7
Gallbladder	0.002	0.004	4	23	0	0	0	12	30	0	0	0
Pancreas	0.134	0.035	149	149	20	5	25	219	214	29	7	37
Bone and articular cartilage	0.006	0.006	7	8	0	0	0	6	4	0	0	0
Melanoma of skin	0.043	0.004	144	83	6	0	7	197	123	8	0	9
Female breast	0	0.017	0	642	0	11	11	0	640	0	11	11
Cervix uteri	0	0.059	0	70	0	4	4	0	50	0	3	3
Uterus	0	0.011	0	73	0	1	1	0	17	0	0	0
Ovary and other uterine adnexa	0	0.021	0	169	0	4	4	0	215	0	5	5
Prostate	0.06	0	552	0	33	0	33	589	0	35	0	35
Brain	0.106	0.013	116	70	12	1	13	132	92	14	1	15
Hodgkin's disease	0.039	0	9	3	0	0	0	8	7	0	0	0
Non-Hodgkin's lymphoma	0.135	0.031	179	144	24	4	29	135	128	18	4	22

Mortality from work-related disease (continued)	Attributable fraction (%)		1999					2010				
			Annual total deaths		Annual deaths attributable to occupational exposures			Annual total deaths		Annual deaths attributable to occupational exposures		
	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN	TOTAL	MEN	WOMEN	MEN	WOMEN	TOTAL
Mental disorders												
Senile and pre-senile organic psychotic conditions	0.1	0.018	243	535	24	10	34	272	584	27	11	38
Nervous system disorders												
Alzheimer's disease	0.034	0.018	6	5	0	0	0	162	313	6	6	11
Parkinson's disease	0.16	0.049	93	69	15	3	18	153	91	24	4	29
Diseases of circulatory system (Cardiovascular)												
Ischaemic heart disease	0.189	0.091	1,126	363	213	33	246	789	238	149	22	171
Cerebrovascular disease	0.121	0.078	204	188	25	15	39	171	156	21	12	33
Diseases of respiratory system												
Chronic obstructive pulmonary disease (COPD)	0.14	0.038	884	720	124	27	151	809	698	113	27	140
Asthma	0.178	0.184	96	118	17	22	39	16	31	3	6	9
Asbestosis	1	1	10	0	10	0	10	14	0	14	0	14
Pneumoconiosis due to other inorganic dust	1	1	1	0	1	0	1	0	0	0	0	0
Pneumonia	0.014	0.003	217	396	3	1	4	176	263	2	1	3
Diseases of digestive and genitourinary system												
Nephritis, nephritic syndrome and nephrosis	0.176	0.023	42	42	7	1	8	9	12	2	0	2
Ulcer of stomach and duodenum	0.29	0.29	7	6	2	2	4	12	3	3	1	4

Appendix C: Estimated annual burden of work-related disease hospitalisations in New Zealand, 2002 and 2010

NON-FATAL WORK-RELATED DISEASE (MORBIDITY)	Attributable fraction (%)		2002					2010				
			Annual total hospitalisations		Annual hospitalisations attributable to occupational exposures			Annual total hospitalisations		Annual hospitalisations attributable to occupational exposures		
	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN	TOTAL	MEN	WOMEN	MEN	WOMEN	TOTAL
Malignant neoplasms												
Liver, specified as primary	0.045	0.063	111	47	5	3	8	226	37	10	2	13
Nasal cavities, middle ear and accessory	0.24	0.067	29	20	7	1	8	27	12	6	1	7
Larynx	0.093	0.005	149	14	14	0	14	155	26	14	0	15
Trachea bronchus and lung	0.123	0.026	1,555	1,204	191	31	223	1,639	1,397	202	36	238
Pleura including mesothelioma	0.9	0.25	137	39	123	10	133	235	60	212	15	227
Other malignant neoplasm of skin	0.131	0.038	4,677	3,120	613	119	731	6,124	4,122	802	157	959
Bladder	0.142	0.071	1,364	463	194	33	227	1,224	486	174	35	208
Kidney and other unspecified urinary	0.047	0.008	358	198	17	2	18	452	303	21	2	24
Leukaemia	0.185	0.025	982	749	182	19	200	1,465	803	271	20	291
Oral cavity	0.012	0.003	190	127	2	0	3	244	137	3	0	3
Pharynx	0.02	0.005	157	57	3	0	3	201	41	4	0	4
Oesophagus	0.064	0.002	327	174	21	0	21	542	222	35	0	35
Stomach	0.103	0.054	487	311	50	17	67	510	298	53	16	69
Colon	0.056	0	1,059	1,209	59	0	59	1,218	1,486	68	0	68
Rectum, rectosigmoid junction and anus	0.031	0.001	823	574	26	1	26	935	674	29	1	30
Gallbladder	0.002	0.004	23	42	0	0	0	35	57	0	0	0
Pancreas	0.134	0.035	253	242	34	8	42	412	336	55	12	67
Bone and articular cartilage	0.006	0.006	59	26	0	0	1	50	44	0	0	1
Melanoma of skin	0.043	0.004	627	521	27	2	29	807	663	35	3	37
Female breast	0	0.017	0	2,517	0	43	43	0	2,922	0	50	50
Cervix uteri	0	0.059	0	375	0	22	22	0	372	0	22	22
Uterus	0	0.011	0	104	0	1	1	0	96	0	1	1
Ovary and other uterine adnexa	0	0.021	0	525	0	11	11	0	588	0	12	12
Prostate	0.06	0	1,971	0	118	0	118	2,018	0	121	0	121
Brain	0.106	0.013	353	190	37	2	40	380	286	40	4	44
Hodgkin's disease	0.039	0	81	90	3	0	3	95	73	4	0	4
Non-Hodgkin's lymphoma	0.135	0.031	902	857	122	27	148	1,316	912	178	28	206

NON-FATAL WORK-RELATED DISEASE (MORBIDITY) Continued	Attributable fraction (%)		2002					2010				
			Annual total hospitalisations		Annual hospitalisations attributable to occupational exposures			Annual total hospitalisations		Annual hospitalisations attributable to occupational exposures		
	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN	TOTAL	MEN	WOMEN	MEN	WOMEN	TOTAL
Mental disorders												
Senile and pre-senile organic psychotic conditions	0.1	0.018	525	750	53	14	66	817	998	82	18	100
Nervous system disorders												
Alzheimer's disease	0.034	0.018	142	221	5	4	9	296	372	10	7	17
Parkinson's disease	0.16	0.049	328	240	52	12	64	361	268	58	13	71
Diseases of circulatory system (Cardoivascular)												
Ischaemic heart disease	0.189	0.091	9,868	4,327	1,865	394	2,259	8,849	3,715	1,672	338	2,011
Cerebrovascular disease	0.121	0.078	1,677	1,390	203	108	311	1,873	1,482	227	116	342
Diseases of respiratory system												
Chronic Obstructive Pulmonary Disease (COPD)	0.14	0.038	4,986	4,713	698	179	877	6,101	6,129	854	233	1,087
Asthma	0.178	0.184	816	1,861	145	342	488	907	2,013	161	370	532
Asbestosis	1	1	9	0	9	0	9	7	0	7	0	7
Pneumoconiosis due to other inorganic dust	1	1	1	0	1	0	1	0	0	0	0	0
Pneumonia	0.014	0.003	4,278	3,693	60	11	71	5,460	4,766	76	14	91
Diseases of digestive and genitourinary system												
Nephritis, nephritic syndrome and nephrosis	0.176	0.023	273	205	48	5	53	298	221	52	5	58
Ulcer of stomach and duodenum	0.29	0.29	552	340	160	99	259	468	315	136	91	227