

***Report of the
Asbestos Advisory Committee
to the Minister of Labour***

April 1991

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Asbestos

ARCHIVE

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*Cover illustration shows amosite (brown asbestos)
as seen through an electron microscope*

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30 April 1991

To the Minister of Labour
Parliament Buildings
Wellington

Minister,

I have much pleasure in presenting the report of the Asbestos Advisory Committee.

Members of the Committee and the associated working parties were aware of the importance attached by the Government to completing this report by 30 April 1991 because of keen public interest in the topic of asbestos.

This time constraint meant that the Committee was unable to give equal consideration to all of the terms of reference. Instead the Committee concentrated on those terms of reference it considered to be of greatest importance. Where time was unavailable to report issues or follow them up, the Committee stated its view of whose responsibility it should be to undertake further work.

I would like to acknowledge the work of the members of the Asbestos Advisory Committee and the working parties, many of whom gave much of their own time to make this report possible.

K L McLea
CONVENOR
ASBESTOS ADVISORY COMMITTEE

Summary of major findings

Significant exposure to any type of asbestos fibre presents a health hazard. This may lead to the development of scar tissue (asbestosis) or a tumour of the lung. The risk of developing lung cancer is greatly increased for those who smoke.

Occupationally-related mesothelioma is associated with exposure to crocidolite (blue asbestos) and amosite (brown asbestos) and rarely, if ever, results from exposure to chrysotile (white asbestos) alone.

All asbestos-related disease appears to follow a dose-response relationship. It is, however, difficult to equate fibre burden with exposure level. There is a threshold of fibre burden in the lung for the development of cancer.

In the light of current knowledge, the present Workplace Exposure Standard for asbestos is considered adequate for the protection of workers exposed to asbestos dust — provided it is enforced. The present system of medical surveillance, as stated in the Asbestos Regulations 1983, is endorsed and should be continued. The Department of Labour's Occupational Safety and Health Service (OSH) should ensure that medical surveillance for workers exposed to asbestos takes place.

Proposals are made for the establishment of a national asbestos medical register and two associated asbestos medical panels. OSH should be the organisation responsible for establishing, maintaining, and funding the national asbestos register and for establishing the asbestos medical panels.

The Occupational Safety and Health Service should review, update and publish as soon as possible a new list of approved respiratory protective equipment for those working with asbestos.

There should be an interim Workplace Exposure Standard for those working with synthetic mineral fibres. This should be reviewed by OSH in the light of continuing overseas studies and concern.

A national strategy for asbestos is described. The national strategy contains provisions for control of the importation and sale of asbestos, the risks associated with working with asbestos, and the removal and disposal of asbestos. The national strategy also contains provisions for the identification and recording of asbestos in buildings, assessment and management of the risks posed by asbestos and identification of less hazardous substitutes.

The national strategy contains provisions for information and education programmes for tradespersons and the public, and training for personnel involved with asbestos.

Proposals are made for developing a New Zealand asbestos code of practice which will provide guidance in the assessment, management, removal and disposal of asbestos. A standard is also proposed for establishing an asbestos building register for those buildings containing either asbestos or specified types of asbestos-containing material.

All raw fibrous forms of asbestos should be banned from being imported into New Zealand — subject to an exemption for essential uses.

All products manufactured after a specified date and known to contain asbestos should be labelled.

The Minister for the Environment is requested to consider that where asbestos is disposed of in landfills, the land be a designated site and the land title tagged to that effect. Procedures for landfill disposal of asbestos should also be reconsidered.

Standard environmental monitoring and identification techniques for asbestos should be upgraded in line with the procedures established in Australia.

The Occupational Safety and Health Service should co-ordinate and monitor education and training systems covering all aspects of asbestos and allocate appropriate resources for this purpose. Information on asbestos should be widely available and should advise that significant exposure to any type of asbestos fibre presents a health hazard. Information relating to compensation and rehabilitation should be the responsibility of the Accident Compensation Corporation.

The Occupational Safety and Health Service should prepare guidelines to provide practical assistance on matters relating to the manufacture of asbestos-containing materials, and servicing of brakes, clutches, etc.

Additional accident compensation cover should be provided for some of those presently excluded from the scheme. This principle should apply to the delayed effects of any disease arising from any employment within New Zealand. Any extension of cover should be restricted to situations where employment in New Zealand can be incriminated.

The claims acceptance criteria currently used by the ACC are considered appropriate but there are some apparent gaps in operational administration. Therefore, the systems used to apply the criteria should be reviewed.

The value of compensation entitlement for those suffering asbestos-related diseases should be no less than what is provided to other victims who are covered by the accident compensation scheme.

The extension of cover referred to above for occupational disease should apply to incapacity (or dependency) after a "future date."

Counselling services should be available for those suffering from an asbestos-related condition or any affected family members.

About this report

Formation of the Asbestos Advisory Committee

The Asbestos Advisory Committee was established in October 1990 as an ad hoc body to report to the Minister of Labour on issues relating to the health effects and use of asbestos in New Zealand, adequacy of controls and legislation and clarification of the legal entitlements available for affected workers. This followed increasing public concern about the past and present effects of asbestos on workers, former workers and their families. Most notably, the New Zealand Public Service Association requested the then government to undertake an independent review of the asbestos problem in New Zealand. A number of government agencies, which had been working on various issues, also had concerns which a comprehensive review could address.

Membership of the Committee

The membership of the Asbestos Advisory Committee was drawn from the Department of Labour's Occupational Safety and Health Service, the Accident Compensation Corporation, the Department of Health, the Department of Scientific and Industrial Research and the State Services Commission. Representatives of the New Zealand Council of Trade Unions and the New Zealand Employers' Federation were also members of the Asbestos Advisory Committee. The convenors of the three working parties established were subsequently co-opted as members of the Committee. A list of members is set out on page 11 of part 1.

Following the General Election held on 27 October 1990, the incoming Government confirmed that the work and composition of the Asbestos Advisory Committee — which had met for the first time on 25 October 1990 — would continue as planned.

The Committee's work plan

The Asbestos Advisory Committee met in Wellington on 25 October 1990, 29 November 1990, 28 February 1991, 11 April 1991 and 22 April 1991.

The Minister of Labour had requested a report by 30 April 1991. Because of this and other constraints the Committee relied heavily on the work done overseas (especially in the past decade), to review the legal, scientific, medical and compensation issues which asbestos poses. The Committee saw value in accepting the experience and findings of countries with the scientific expertise and economic resources which New Zealand lacks, but also saw a need to adapt those findings to New Zealand's circumstances.

Terms of reference

At the first meeting of the Committee, issues of concern were identified and draft terms of reference were drawn up and submitted for approval to the Minister of Labour, who agreed to the Committee's recommendation. The Committee agreed to change the order of the terms of reference to put the medical issues first because it is the health-related aspects of asbestos which prompted the inquiry and about which the public has the chief interest. The terms of reference are set out at the beginning of part 1.

Working parties

The Committee agreed that the best way to proceed was to set up three specialist working parties to work through the terms of reference in each of the following subject areas:

Medical and industrial issues; management and disposal of asbestos; and Aid and compensation issues.

Each working party was able to look at other matters as it saw fit. Their reports provided a basis for the Asbestos Advisory Committee's own report to the Minister of Labour.

One working party — that concerned with the management and disposal of asbestos — obtained permission from the Committee and the Minister of Labour to make two changes to its terms of reference.

The working parties were required to report to the Asbestos Advisory Committee by 30 March 1991.

Correspondence received

It was not expected that the Asbestos Advisory Committee would formally sit to receive public submissions. Instead it was seen that it would, with membership including both employer and trade union interests, assess the relevant parts of the vast array of material which had been published on the subject overseas and in New Zealand.

Correspondence was consequently not invited from the public and other interested parties. However, some individuals and organisations did write to the Committee directly, or through the Minister of Labour, and they are identified in appendix 1 of part 1. The Asbestos Advisory Committee either considered the material or noted it and referred it to the relevant working party. Material received in the latter part of the deliberations, which was not able to be considered in full by either the Committee or the working parties, has been referred to the relevant agencies for their information or action.

Structure of the report

The report is in four parts. The first part is the Asbestos Advisory Committee's report to the Minister of Labour, and the following three parts are the working parties' reports to the Asbestos Advisory Committee.

The Committee has made decisions based on the terms of reference and its considered view of the material and recommendations contained in the three working party reports.

Where differences of opinion have arisen between, or within, working parties, the Asbestos Advisory Committee has given its view, which takes precedence.

Those readers who have particular concerns or interests can follow up the Committee's report with more detailed references in the relevant working party reports.

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Report of the Asbestos Advisory Committee

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Members of the Asbestos Advisory Committee

Convenor

Dr K McLea Occupational Safety and Health Service
Department of Labour

Members

H Armstrong New Zealand Council of Trade Unions
H Beaumont Department of Scientific and Industrial Research
C Brydon Accident Compensation Corporation
J Collins Accident Compensation Corporation *Convenor*;
Aid and Compensation Issues Working Party
Dr D Farlow New Zealand Employers' Federation
M Little State Services Commission
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S Parkinson Department of Health
I Shepherd Occupational Safety and Health Service
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J Thompson Occupational Safety and Health Service
Department of Labour
Convenor, Management and Disposal of Asbestos Working Party

Secretary

J Hollingworth Occupational Safety and Health Service
Department of Labour

Introduction

History of use of asbestos

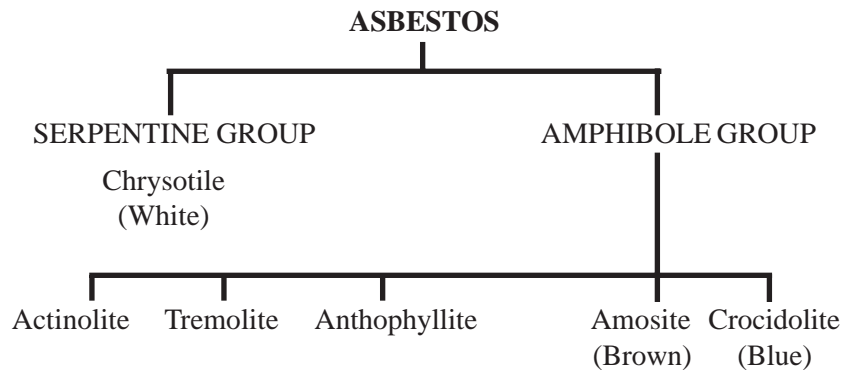
Asbestos has a long history of use. It was probably first used about 2500 years ago in Finland to strengthen clay pots. In classical times, the Greeks used it to weave shrouds for the bodies of the great who were to be burnt on funeral pyres.

Its widespread use in industry began about 1880 with the exploitation of large chrysotile deposits in Canada and Russia. Initially, its main use was in the textile industry to produce incombustible products.

Because of its relative cheapness, and unique properties, it has had a wide variety of uses, the commonest one of which was in asbestos cement products such as pipes, roofing sheets and wall boards, in insulation, and in friction products.

Types of asbestos

Asbestos is not a single chemical or geological entity, but a term used to describe naturally occurring fibrous hydrated silicates. There are six common varieties, as shown below.



The fibres of amosite and crocidolite are straight, needle-like structures which may split longitudinally to produce very fine fibrils.

By contrast, chrysotile fibres tend to be longer, softer and curlier. This is important from the viewpoint of lung dynamics as this property has the effect of increasing their diameter and making it less likely that they will reach the smaller airways.

History of health effects of asbestos

Although fibrosis of the lung was first recognised as being associated with asbestos exposure in 1899 in the United Kingdom by Montague Murray, he did not report on this until 1906. This association was largely ignored because of the greater problem of pulmonary tuberculosis.

However, in the 1920s, a greater interest developed in fibrosis of the lungs in asbestos workers. A comprehensive study on the health effects of asbestos was carried out in the United Kingdom by Merewether and Price between 1928 and 1930. This study led to the first ever asbestos regulations, the Asbestos Regulations of 1931, which came fully into force in 1933.

During the 1930s there was continued interest in asbestosis. Late in the decade

a few papers described cancer of the lungs in asbestos workers, although pulmonary tuberculosis remained a far greater killer and continued to attract the majority of the attention of the medical profession and others.

In 1947, the Chief Medical Inspector of Factories in the United Kingdom initiated a study to determine whether lung cancer was more common in asbestos workers. This led to a study by Doll, published in 1955, which showed that lung cancer was a specific hazard of certain asbestos workers. It also found that for those who had worked for at least 20 years in places where they were exposed to asbestos dust, the risk was 10 times that experienced by the general population. The role of smoking was not reported.

Little attention was paid to this discovery. This may have been due to the fact that the major dust problem at that time in the UK was coal dust, and that relatively few people were involved in the asbestos industry. Moreover, the major cause of lung cancer was recognised as being cigarette smoking.

In 1960, a paper by Wagner and others was published which showed for the first time an association between exposure to crocidolite (blue asbestos) and the development, many years later, of the rare tumour diffuse malignant mesothelioma. This led to great interest in asbestos-related health problems throughout the world, followed by a flood of scientific papers and great media interest.

A major problem was what should be the allowable concentration of asbestos fibres in the workplace. The existing workplace standard in the United Kingdom had been developed to control asbestosis.

There was no information about the levels of asbestos fibres to which those who developed mesothelioma had been exposed. An arbitrary decision was made that the standard for crocidolite should be one tenth the standard for other forms of asbestos.

The debate on this issue continues and is reflected in the terms of reference of this report.

Compensation

At present, workers suffering asbestos-related diseases in New Zealand may be compensated by one of the following three means:

The Accident Compensation Act 1982

A person who is incapacitated by an occupational disease due to the nature of his/her employment after 1 April 1974 is covered by the accident compensation scheme. In some situations, including many involving asbestos-related disease with its lengthy latency period, this may not result in a weekly earnings-related compensation payment as the person may no longer be classified as an earner when the incapacity commences, e.g. retirement from earning, lengthy unemployment. However, there is a potential to receive the following entitlements:

- Weekly entitlement up to \$1,179
- Lump-sum entitlement up to \$27,000
- Medical and other "reasonable" expenses
- Funeral expenses up to \$2,000
- Weekly entitlements and lump-sums for dependants

Common law action

This requires a person attempting to establish negligence on the part of another. Within the employment situation a common law action is sometimes linked with workers' compensation or employers' liability claims or entitlements but public-

ity indicates that some out-of-court settlements are taking place. Within New Zealand there are few recent cases, although a notable exemption is the claim of Mr Robin McKenzie against the New Zealand Electricity Department (NZED).

Mr McKenzie's claim is of interest because it is concerned with a claim for damages against the NZED and dealt with the preliminary question of whether he came within the coverage of the accident compensation scheme.

Mr McKenzie worked from 1950 to 1963 on power station sites where he was exposed to asbestos dust. From 1963 to 1981 he continued working for NZED, but in positions where he had no exposure to asbestos.

The resulting judicial decision was that Mr McKenzie has coverage under the Accident Compensation Act 1982 because — even though his exposure to asbestos predated the Act — his contract of employment ended after the first Accident Compensation Act came into force on 1 April 1974. This decision is presently under judicial review.

Social welfare entitlements

Those who have no entitlement under the accident compensation scheme, or who do not take a common law action may be eligible for a benefit from the Department of Social Welfare. Those who are not covered by the accident compensation scheme include:

Earners who changed employment before 1 April 1974 to a non-incriminating one and do not opt for a common law action; and

Non-earners who, therefore, cannot base a claim on occupational disease.

The benefits payable by the Department of Social Welfare are generally means-tested, so direct financial comparisons are inappropriate. However, as an example:

For a married person with two children, the rates effective from 1 April 1991 are:

Weekly entitlement up to a maximum of	\$229.88
Family Support	\$64.00
Accommodation allowance	variable

Asbestos use in New Zealand

In New Zealand, the use of asbestos has been restricted to chrysotile, amosite and crocidolite. Chrysotile has for many years been the most commonly used fibre and today accounts for some 95% of the world production. Importation into New Zealand of amosite and crocidolite in its raw fibrous state has been illegal since 1984. These varieties may, of course, be encountered in buildings in which they were used principally for insulation and as fire barriers.

Asbestos has also been used extensively in the railway, building, shipping, sawmilling, and motor vehicle industries, and the asbestos cement industry in Christchurch and Auckland.

Fitters, electricians, boilermakers and attendants, carpenters, brake repairers and others were commonly exposed.

There has been some mining of chrysotile asbestos at Takaka. The fibre appears to have been of low quality and was mixed with imported fibre. Production was believed to be some 40-60 tonnes per month and appears to have taken place from the mid-1950s until the early 1960s.

The workforce employed by New Zealand's two main asbestos manufacturing

plants is estimated to have totalled some 8,000. This is a rough estimate of the total number of employees who may have been exposed to asbestos while working in those factories. The two New Zealand plants have, to date, settled 11 claims, some of which also had cover under the accident compensation scheme.

The extent of asbestos-related disease in New Zealand

Up to 1989, 174 cases of mesothelioma had been notified to the New Zealand Cancer Registry.

Asbestosis and lung cancer have not been effectively notified and the extent of these conditions is unknown. A study carried out by Glass and others (1991) using the New Zealand Cancer Registry indicated that, overall, asbestos-related occupations were found to be associated with increased risk: of cancer in three sites: the lung, pleura and peritoneum. The risks of cancer of these three sites were highest among the groups of machinery fitters, plumbers, welders, boiler-makers, metal moulders, metal platers and electricians.

The Accident Compensation Corporation has received 80 claims relating to occupational asbestos exposure in the past 3 years. These claims can be broken down into three broad categories:

- (i) Asbestos exposure occurred before 1 April 1974 only (and, hence, there is no entitlement under the current provisions): 10
- (ii) Asbestos exposure and asbestos-related disease took place after 1 April 1974 (and, hence, entitlement): 31
- (iii) Asbestos exposure occurred after 1 April 1974 but no disease resulted (and, hence, there is no entitlement currently): 39

Asbestos legislation in New Zealand

Asbestos Regulations were first promulgated in 1978 and then amended in 1983. The Workplace Exposure Standard for asbestos has been kept constantly under review and has been revised twice since 1978 in order to provide greater protection for those who may be exposed to asbestos. The Workplace Exposure Standard is set out in the Asbestos Dust (Concentration of Fibres) Notice 1984.

Asbestos dust level measurements were carried out by the National Health Institute from the 1960s. In 1987 a special dust laboratory was established at the institute which provided the basis for an industrial hygiene service based on reliable air sampling and electron microscopy.

The Asbestos Regulations 1983 specify a number of other requirements including requirements for protective clothing and respiratory equipment, dust control measures, disposal requirements, medical examinations and "restricted work" which must be notified. "Restricted work" can only be carried out by either the holder of a "certificate of competency" or someone working under the direct supervision of a certificate holder. Currently 268 people hold these certificates.

Terms of reference

Medical and industrial issues

1. To review and report on the current state of knowledge about asbestos-related medical conditions.

In particular to:

- (a) Report on the relationship between fibre type and disease;*
 - (b) Evaluate the appropriateness of the present New Zealand Asbestos Workplace Exposure Standard to prevent asbestos-related disease;*
 - (c) Report on the medical facts relating to asbestos exposure, smoking and disease;*
 - (d) Investigate and make recommendations about standardised diagnostic procedures to be used in the diagnosis of asbestos-related disease;*
 - (e) Recommend medical surveillance procedures for those workers who have had (significant) exposure to asbestos;*
- 2. (a) To investigate the need for, and feasibility of, establishing and maintaining a register for workers who have been (significantly) exposed to asbestos, and to advise on the information that this should hold;*
- (b) If such a register is considered advisable, to make proposals about which organisation should be responsible for establishing, maintaining and funding it.*
- 3. To advise on procedures for tracing former employers and their employees, whose work has involved (significant) exposure to asbestos, and to recommend where the responsibility for such tracing should lie.*
- 4. To review the current system in respect of respiratory protective devices used by those working with asbestos, and to recommend how this should be improved.*
- 5. To review and report on the current medical knowledge about the respiratory effects of synthetic mineral fibres (SMFs).*

Management and disposal

- 6. To examine the need for a nationwide strategy for the management of asbestos in workplaces and homes and make appropriate recommendations.*
- 7. To investigate the need for a national register covering importation, location, quantities, use and its condition and make recommendations.*
- 8. To review the methods used to remove and dispose of asbestos, notification procedures and substitution methods and make recommendations.*
- 9. To review the need for education about asbestos and make recommendations regarding the presence, use and disposal of asbestos within workplaces and homes.*
- 10. To establish for asbestos and SMFs standard environmental monitoring and*

identification techniques [for use in the workplace] in light of the latest overseas and New Zealand technical developments and experience, and to establish standardisation of testing laboratories.*

[11. The management of SMFs in the workplace.]§

Aid and compensation issues

12. To examine aid and compensation issues arising from asbestos exposure.

* These words were deleted by the Asbestos Advisory Committee on the recommendation of the Management and Disposal of Asbestos Working Party. The amendment was approved by the Minister of Labour.

§ Added by the Asbestos Advisory Committee on the recommendation of the Management and Disposal of Asbestos Working Party. The amendment was approved by the

Responses to the terms of reference

1. TO REVIEW AND REPORT ON THE CURRENT STATE OF KNOWLEDGE ABOUT ASBESTOS-RELATED MEDICAL CONDITIONS.

IN PARTICULAR TO:

- (A) REPORT ON THE DISEASE RELATIONSHIP BETWEEN FIBRE TYPE AND DISEASE;
 - (B) EVALUATE THE APPROPRIATENESS OF THE PRESENT NEW ZEALAND ASBESTOS WORKPLACE EXPOSURE STANDARD TO PREVENT ASBESTOS-RELATED DISEASE;
 - (C) REPORT ON THE MEDICAL FACTS RELATING TO ASBESTOS EXPOSURE, SMOKING AND DISEASE;
 - (D) INVESTIGATE AND MAKE RECOMMENDATIONS ABOUT STANDARDISED DIAGNOSTIC PROCEDURES TO BE USED IN THE DIAGNOSIS OF ASBESTOS-RELATED DISEASE;
 - (E) RECOMMEND MEDICAL SURVEILLANCE PROCEDURES FOR THOSE WORKERS WHO HAVE HAD SIGNIFICANT EXPOSURE TO ASBESTOS.
-

(A) REPORT ON THE DISEASE RELATIONSHIP BETWEEN FIBRE TYPE AND DISEASE.

All asbestos fibre types may produce asbestosis and lung cancer. The greatest risk of mesothelioma is associated with exposure to crocidolite and with a lesser risk from exposure to amosite. It rarely, if ever, results from exposure to chrysotile.

All asbestos-related diseases appear to follow a dose-response relationship. It is, however, difficult to equate fibre burden with exposure level. It is the view of the Committee that there is a threshold of fibre burden in the lung for the development of cancer.

The Medical and Industrial Issues Working Party noted that in all epidemiological studies there are lower levels of exposure under which no excess of cancers is found. These results support the threshold hypothesis, which is the position accepted by the Committee.

In view of ongoing research into and increasing knowledge about the health effects of asbestos, the Committee considers it essential that the scientific literature be constantly monitored.

Recommendation 1

The Asbestos Advisory Committee recommends that the Department of Labour's Occupational Safety and Health Service (OSH) be responsible for the ongoing reviewing and monitoring of the scientific literature relating to asbestos and health-related effects.

(B) EVALUATE THE APPROPRIATENESS OF THE PRESENT NEW ZEALAND ASBESTOS WORKPLACE EXPOSURE STANDARD TO PREVENT ASBESTOS-RELATED DISEASE.

Recommendation 2

The Committee recommends that, in the light of present knowledge, the present Workplace Exposure Standard, as set out in the Asbestos Dust (Concentration of Fibres) Notice 1984, is appropriate.

The Committee considered that the present standard was adequate to protect the health of those working with asbestos or exposed to it, provided that it was enforced. In this respect, the Committee wished to emphasise the importance of enforcement of the existing legislation. Air sampling should be carried out by suitably trained personnel, and the filters used should be examined by

experienced scientists in an appropriately equipped laboratory.

The Workplace Exposure Standard should not be regarded as marking the boundary between safety and disease. Every effort should be made to reduce airborne concentrations to the lowest possible level.

The importance of good housekeeping practices should also be noted. Unless asbestos waste products are carefully disposed of during work, their later

(C) REPORT ON THE MEDICAL FACTS RELATING TO ASBESTOS EXPOSURE, SMOKING AND DISEASE

The view of the Committee is that both asbestos and tobacco smoke are causative factors in the development of lung cancer. The risk is greatly increased when a smoker is exposed to asbestos. No studies have shown any association between the risk of developing mesothelioma and cigarette smoking.

(D) INVESTIGATE AND MAKE RECOMMENDATIONS ABOUT STANDARDISED DIAGNOSTIC PROCEDURES TO BE USED IN THE DIAGNOSIS OF ASBESTOS-RELATED DISEASE.

The Committee's response to this part of term of reference 1 is discussed below.

(E) RECOMMEND MEDICAL SURVEILLANCE PROCEDURES FOR THOSE WORKERS WHO HAVE HAD SIGNIFICANT EXPOSURE TO ASBESTOS.

Recommendation 3

The Committee recommends that OSH be responsible for putting administrative procedures in place to ensure that medical surveillance for workers exposed to asbestos takes place. The medical examination procedures stated in the Asbestos Regulations 1983 provide an adequate surveillance regime.

Further recommendations which relate to medical surveillance are made below in relation to the establishment of an asbestos medical register.

2. (A) TO INVESTIGATE THE NEED FOR, AND FEASIBILITY OF ESTABLISHING AND MAINTAINING A REGISTER FOR WORKERS WHO HAVE BEEN SIGNIFICANTLY EXPOSED TO ASBESTOS, AND TO ADVISE ON THE INFORMATION THAT THIS SHOULD HOLD.

(B) IF SUCH A REGISTER IS CONSIDERED ADVISABLE, TO MAKE PROPOSALS ABOUT WHICH ORGANISATION SHOULD BE RESPONSIBLE FOR ESTABLISHING, MAINTAINING AND FUNDING IT.

Recommendation 4

The Committee recommends that an asbestos medical register be established for people who have been significantly exposed to asbestos. OSH should be the organisation responsible for establishing, maintaining and funding the medical register.

Note: "Significant exposure" is defined as the exposure that has the potential to cause asbestos-related disease. Such exposure takes into account:

- The work history of the exposed person;
- Any high, short-term exposures; and
- The length of time of exposure and the levels of asbestos dust to which the person was exposed.

The medical register should be in two parts:

- Part 1 - Those notified as having been exposed to asbestos;
- Part 2 - Those notified as having asbestos-related disease.

The system should allow movement of the name of a registered person from part 1 to part 2 of the register when indicated.

Notifications to part 1 of the medical register may be made by those who felt that they had been exposed to asbestos, or by people acting on their behalf (and following consultation) such as an employer or union official.

Notification to part 2 of the medical register would be done by medical practitioners.

Exposure

Those people notified to the asbestos medical register as having been exposed to asbestos would be sent a letter requesting them to contact their local branch office of the Occupational Safety and Health Service of the Department of Labour, so that their exposure could be evaluated. Following this action the individual would be advised whether or not they have been included in the register on the basis of their exposure to asbestos.

Disease

Those notified as having contracted an asbestos-related disease would have their condition reviewed by the National Asbestos Panel (see recommendation 6), and have the appropriate information entered on the asbestos medical register.

Recommendation 5 **The Committee recommends that the asbestos medical register be included as part of the wider occupational disease notification scheme currently under review by OSH.**

The Committee is aware that the Occupational Safety and Health Service is currently reviewing the issue of occupational disease notification, and suggests that the establishment of an asbestos medical register should take place irrespective of whether or not the information network under consideration is set up. If a network is established, the asbestos medical register could become part of it.

Recommendation 6 **The Committee recommends that a National Asbestos Panel and a National Asbestos Radiological Panel should be established. The Occupational Safety and Health Service should be the organisation responsible for establishing the panels.**

The **National Asbestos Panel** should include a chest physician, radiologist, and an occupational physician. This panel should review the records of all individuals in whom asbestos-related disease is suspected and advise on appropriate action.

The **National Asbestos Radiological Panel** should comprise three radiologists who would be available for consultation concerning chest x-rays in people who have been exposed to asbestos.

Recommendation 7 **The Committee recommends that when a diagnosis is made it is essential that there is a complete history — including a full occupational history — which provides details of exposure to asbestos.**

Following clinical examination, decisions should be made about further investigations such as chest x-rays and lung function tests which may be considered necessary by the examining physician after consideration of the state of health of the individual and the exposure to asbestos.

3. TO ADVISE ON PROCEDURES FOR TRACING FORMER EMPLOYERS AND THEIR EMPLOYEES, WHOSE WORK HAS INVOLVED SIGNIFICANT EXPOSURE TO ASBESTOS, AND TO RECOMMEND WHERE THE RESPONSIBILITY FOR SUCH TRACING SHOULD LIE.

Recommendation 8

The Committee recommends that procedures not be developed for tracing former employers and their employees whose work has involved significant exposure to asbestos, because their implementation would be impracticable.

This problem would be better addressed by using all methods available to obtain the required information, including nationwide publicity, to enable the establishment of the asbestos medical register. This should ensure that all people who have been significantly exposed to asbestos or who have an asbestos-related disease are placed on the asbestos medical register.

4. TO REVIEW THE CURRENT SYSTEM IN RESPECT OF RESPIRATORY PROTECTIVE DEVICES USED BY THOSE WORKING WITH ASBESTOS, AND TO RECOMMEND HOW THIS SHOULD BE IMPROVED.

Recommendation 9

The Committee recommends that the list of respiratory protective equipment approved for use by those working with asbestos be reviewed and updated by the Occupational Safety and Health Service.

The Department of Health last issued a list of respiratory protective equipment in 1984. Having reviewed the list, the Committee recommends that consideration be given to the adoption of relevant international standards for respiratory equipment. In particular, consideration should be given to adopting the Australian standards relating to respirators and filters (AS 1715 and AS 1716 respectively) and vacuum cleaner filters (AS 3544).

5. TO REVIEW AND REPORT ON THE CURRENT MEDICAL KNOWLEDGE ABOUT THE RESPIRATORY EFFECTS OF SYNTHETIC MINERAL FIBRES.

Recommendation 10

The Committee recommends that in the interim the Workplace Exposure Standard for synthetic mineral fibres (SMFs) be:

- 1. For general purpose fibres:**
5 fibres/ml of air (time-weighted average)
- 2. For superfine* and ceramic fibres:**
1 fibre/ml of air (time-weighted average)

Although these levels apply simultaneously, the more restrictive criterion applied would depend on the characteristics of the particular fibres involved.

The Department of Labour's Occupational Safety and Health Service should also review and advise on standard environmental monitoring and identification techniques to be used in New Zealand for SMFs.

** The composition of superfine SMFs is similar to other SMFs. Those fibres with a diameter of less than 3 microns and a length-to-diameter ratio of greater than 3:1 are regarded as superfine. For the purpose of this standard, SMFs with bulk mean diameters falling in the superfine range should be regarded as superfine materials.*

The Committee is of the view that it would be prudent to act on the assumption that exposure to SMFs may increase the risk of lung cancer among the workforce.

The Committee wishes to emphasise the importance of enforcement of the existing standard. Air sampling should be carried out by suitably trained personnel, and the filters examined by experienced scientists in an appropriately equipped laboratory.

The Workplace Exposure Standard should not be regarded as marking the boundary between safety and disease. Every effort should be made to reduce F airborne concentrations to the lowest possible level.

The importance of good housekeeping practices should also be noted. Unless SMF waste products are carefully disposed of during work, their later removal may significantly increase airborne concentrations.

Recommendation 11

The current New Zealand Workplace Exposure Standard for superfine and ceramic fibres should be reviewed by the Occupational Safety and Health Service in the light of continuing overseas studies and concern.

The Committee believes that the New Zealand Workplace Exposure Standard for superfine and ceramic fibres should be reviewed in light of current scientific knowledge. The Committee notes that a number of countries have differing workplace exposure standards applying to superfine and ceramic fibres.

6. TO EXAMINE THE NEED FOR NATIONWIDE STRATEGY FOR THE MANAGEMENT OF ASBESTOS IN WORKPLACES AND HOMES AND MAKE APPROPRIATE RECOMMENDATIONS.

Recommendation 12

The Committee recommends that a national strategy for managing asbestos be developed and adopted in New Zealand. Such a strategy should include the following key elements:

- 1. Control of the importation of asbestos and products containing asbestos.**
- 2. Control of the sale of asbestos and products containing asbestos.**
- 3. Control of the risks* associated with working with asbestos.**
- 4. Identification and recording of asbestos *in situ* in buildings**
- 5. Assessment and management of the risks posed by asbestos *in situ*.**
- 6. Identification and assessment of less hazardous substitutes.**
- 7. Control of the removal and disposal of asbestos where this is likely to cause a hazard to health.**
- 8. Training of personnel involved with asbestos activities.**
- 9. Provision of information and education programmes for trades people and the public.**

For those elements of the national strategy that are or will be mandatory, there should be provision for adequate means of compliance.

Suitable additional asbestos advisory documents and legislation should be developed to cover the New Zealand situation in order to assist in the implementation of the proposed national strategy.

* "Risk" is the probability that a potential harm may become actual (in comparison with "hazard" which is the potential for harm). By way of example, asbestos which has been incorporated into a stable matrix can be found in many work environments; asbestos is a hazard. Provided the matrix remains stable and no airborne dust is produced it presents no health risk.

7. TO INVESTIGATE THE NEED FOR A NATIONAL REGISTER COVERING IMPORTATION, LOCATION, QUANTITIES, USE AND ITS CONDITION AND MAKE RECOMMENDATIONS.

Recommendation 13 **The Committee does not recommend the establishment of such a national register. However, the Customs Act 1966 should be amended to provide for a ban covering the importation of all asbestos in its raw fibrous state, subject to an exemption for essential use.**

Practical difficulties were foreseen in accurately identifying and locating all imported products containing asbestos, particularly where it may be present in minor amounts or as an incidental constituent. Raw fibrous asbestos can be managed through import control, and asbestos products through a labelling process. Labelling asbestos products would alert end users to the fact that they are handling products containing asbestos. This would allow them to take appropriate precautions.

Recommendation 14 **The Committee recommends that all products imported or manufactured after a specified date, and known to contain asbestos, should be labelled accordingly.**

Recommendation 15 **The Committee recommends that the Occupational Safety and Health Service prepares guidelines to provide practical assistance on matters relating to the manufacture of asbestos-containing materials, and servicing of brakes, clutches, etc.**

No detailed information on these matters is readily available in New Zealand. Such information would be of value to protect the health of those persons engaged in such work.

In preparing these documents consideration should be given to adopting relevant aspects of the *Draft Victorian Asbestos Code of Practice* (referred to as the *Draft Victorian Code*).

8. TO REVIEW THE METHODS USED TO REMOVE AND DISPOSE OF ASBESTOS, NOTIFICATION PROCEDURES AND SUBSTITUTION METHODS AND MAKE RECOMMENDATIONS.

Recommendation 16 **The Committee recommends that a suitable asbestos code of practice and guidance notes be drawn up by OSH in consultation with other agencies to cover the removal and disposal of asbestos in New Zealand.**

If the legal situation discussed in the following recommendation can be addressed, then “identification of asbestos in buildings” should become part of the code of practice and could improve notification procedures.

In developing the New Zealand code of practice, consideration should be given to the *Worksafe Australia Asbestos Code of Practice and Guidance Notes (August 1988)* (referred to as the *Worksafe Australia Code*) and the *Draft Victorian Code*. In particular, special attention should be paid to the licensing or approval of removal contractors. A licensing or approval process would assist in ensuring that removal contractors are well-informed about the hazards of asbestos and are knowledgeable about safe removal disposal procedures. This would reduce the health risks to those carrying out removal work and those who may be affected by the work activity.

Recommendation 17 **The committee recommends that a standard* be developed to provide for owners of buildings (with the exception of private dwellings) which have asbestos, or particular types of asbestos-containing materials, *in situ*. Owners would be required to identify asbestos, which is of most concern**

from a health standpoint, and to record information about the location and state of the asbestos or the asbestos containing materials in a standardised form of register.

The purpose of the asbestos building register is to provide information to occupiers, employees and maintenance workers on the location of asbestos or asbestos-containing materials within buildings. Such a register would be of benefit to building owners/occupiers, as it would provide a means of averting potential costly situations arising from unplanned disturbance of asbestos. It should be noted that the identification process itself may expose people to asbestos unless precautions are taken.

The Committee notes that there is no legislation administered by the Occupational Safety and Health Service of the Department of Labour or the Department of Health which would allow such a standard to be established. This situation would need to be addressed before the development of a standard could proceed. The appropriate agency for administering such legislation would also need to be addressed, and development would require full consultation with interested parties.

Information about the types of asbestos-containing material which would be kept in the register, would be set out in a schedule in the standard. It would identify those types of asbestos-containing materials used in New Zealand which are of most concern from a health standpoint. The *Guide to the Control of Asbestos Hazards in Buildings and Structures*, published by Worksafe Australia, should be consulted as a guide to the types of materials in this category. It specifies the materials requiring identification as being sprayed-on fireproofing, soundproofing and thermal insulation, acoustic plaster, and types of insulation.

The asbestos building register would be required to be kept up to date by the building owner and made available, on request, for inspection by officials of OSH and area health boards.

The availability of the register should be made known to all occupiers of the building.

** A standard could include a code of practice, regulations, a statute, and a New Zealand standard.*

Where any repair, installation, alteration or demolition of the building or its fittings is to be carried out it will be the responsibility of the building owner/occupier requesting such work to ensure that a copy of the current register is shown to the contractor and/or employees undertaking the work.

All employees of the property owner/occupier, who work in the building, would have the right to inspect the register on request. Its existence should be drawn to the attention of new employees.

A timetable should be set for completion of the identification process in each building because of a lack of expertise in New Zealand. Priorities for identification should be set according to the age of buildings.

Recommendation 18

Disposal

The Committee recommends that the Minister for the Environment be requested to consider that where asbestos is disposed of in landfills, the land be a designated site and the land title tagged to that effect. Procedures for landfill disposal of asbestos should also be reconsidered.

The Asbestos Regulations 1983 presently requires that asbestos material disposed of by tipping be covered by 25 cm of earth. This is considered inadequate except as a short-term measure. Consideration should be given to requiring a final cover of at least 1 metre.

9. TO REVIEW THE NEED FOR EDUCATION ABOUT ASBESTOS AND MAKE RECOMMENDATIONS REGARDING THE PRESENCE, USE AND DISPOSAL OF ASBESTOS WITHIN A WORKPLACE OR A HOME.

Recommendation 19

The Committee recommends that OSH should co-ordinate and monitor education and training systems and allocate appropriate resources for this purpose. Information on asbestos should be made widely available emphasising the health risks associated with all types of asbestos.

The Committee is of the view that information covering the following aspects of asbestos should be made widely available:

- (a) The presence, use and disposal of asbestos;
- (b) Health hazards (including the relationship between smoking, asbestos and lung cancer);
- (c) Suitable respiratory protection;
- (d) The asbestos medical register, if approved, and its associated procedures;
- (e) Access to accident compensation and rehabilitation services; and
- (f) Access to social welfare services.

In particular (a) - (d) above should be used in the education and training of people required to work with asbestos. Those who may already have an asbestos-related condition should have ready access to information on (e) and (f).

This information should also be available to members of the public and home owners.

The Committee considers that the Occupational Safety and Health Service is the appropriate organisation to co-ordinate and monitor this process and that adequate resources should be allocated to do this.

The Accident Compensation Corporation should have the responsibility for providing and developing information packages on (e) and the Department of Social Welfare on (f).

Education and training authorities should include appropriate information in their courses about the hazards of asbestos and precautions to be taken during handling and use. This should also be included in employer training programmes.

OSH should establish national standards for the training and certification of people involved with asbestos. Training should encompass the various types of industry that may be required to work with or be exposed to asbestos. Such training needs to be structured to suit an individual's needs in respect of the level of exposure.

All removal contractors should undertake training relevant to the control, planning and removal techniques; methods of disposal; and medical aspects of asbestos removal work.

Asbestos removal workers should undertake training on removal techniques, use of respiratory equipment, construction of decontamination areas and health issues.

People who work on or with manufactured products that contain asbestos will require training about protective equipment, the hazards of working with asbestos, and health issues.

Those who work in an environment in which asbestos *in situ* may be present, but are not actually working on or with asbestos will require information and/ or

training of a general nature, which should be provided by the employer on the job.

10. TO ESTABLISH FOR ASBESTOS AND SYNTHETIC MINERAL FIBRES (SMFs) STANDARD ENVIRONMENTAL MONITORING AND IDENTIFICATION TECHNIQUES IN LIGHT OF THE LATEST OVERSEAS AND NEW ZEALAND TECHNICAL DEVELOPMENTS AND EXPERIENCE, AND TO ESTABLISH STANDARDISATION OF TESTING LABORATORIES.

Recommendation 20 **The Committee recommends that the standard environmental monitoring and identification techniques for asbestos be upgraded in line with the procedures established in Australia.**

A suitable direction for such upgrading can be found in the *Worksafe Australia Code*, in particular the *Guidance Notes on Membrane Filter Method for Estimating Airborne Asbestos Dust*, and the national Australian Testing Authority (NATA) document *Guidelines for the Identification of Asbestos*.

Recommendation 10 is concerned with the identification and monitoring of SMFs.

In order to obtain consistency of approach, valid comparisons and accuracy in the analytical techniques used in laboratories, all laboratories undertaking identification and determination of fibre concentrations should be either a TELARC registered laboratory or equivalent (this includes NATA registered laboratories).

Asbestos database

A significant database of results of asbestos analysis derived from bulk samples is held by the DSIR environmental dust laboratory at Gracefield, Lower Hutt.

Recommendation 21 **The DSIR database should be upgraded, publicised and made accessible to interested parties, thereby avoiding unnecessary duplication of sampling and analysis. However, issues of commercial sensitivity and client confidentiality would need to be resolved.**

11. THE MANAGEMENT OF SMFs IN THE WORKPLACE.

Recommendation 22 **The Committee recommends that the management of SMFs be deferred for further study by the Occupational Safety and Health Service of the Department of Labour.**

The Committee did not have enough information before it to draw any conclusions with regard to the management of SMFs.

12. TO EXAMINE AID AND COMPENSATION ISSUES ARISING FROM ASBESTOS EXPOSURE.

Committee on Reform of Social Assistance

We are unaware of what effect the work of the Prime Minister's committee on "reform of social assistance" will have on our proposals. It is acknowledged that the decisions on the recommendations from both committees will finally be a matter for the Government.

Interpreting statistical information

The Committee cautions against directly applying overseas data on the incidence of asbestos-related disease to the New Zealand situation. When interpreting New Zealand information four factors should be borne in mind:

- Difficulty or delay in diagnosis of asbestos-related diseases by the medical profession;
- Difficulty in linking the latent disease with an earlier exposure;
- Lack of awareness generally regarding possible accident compensation entitlement for occupational disease; and
- The current legislative criteria preclude the Accident Compensation Corporation accepting certain claims, e.g. if incriminated employment ceased before 1 April 1974.

The other factor in endeavouring to establish a true picture is the issue of smoking, asbestos and lung cancer.

Compensation cover

The Committee believes that there is a need to provide additional cover for those whose incriminated employment ceased before 1 April 1974. The principal options are:

- (a) Cover designed specifically for those suffering asbestos-related diseases and, particularly, for those who suffer as a result of an occupational disease arising from any employment within New Zealand;
- (b) Cover extended under special provisions of the Accident Compensation Act for those who suffer the delayed effects of asbestos exposure arising from any employment within New Zealand and their dependants; and
- (c) Cover extended under section 28 of the Accident Compensation Act for those who suffer the delayed effects of any disease arising from any employment within New Zealand and their dependants.

The Committee's terms of reference refer specifically to asbestos. The Committee has no brief to go beyond asbestos as such and, therefore, has no hesitation recommending (b). However, to be consistent and equitable, option (c) is a more logical solution. Although the Committee has no concrete evidence to support the contention, it is the Committee's view that the adoption of (c) is unlikely to be a big financial commitment beyond (b).

Recommendation 23

The Committee recommends that cover under the accident compensation scheme should be extended to those suffering the delayed effects of any occupational disease arising from employment in New Zealand who are presently excluded from coverage by virtue of the fact that their incriminated employment ceased prior to 1 April 1974.

Criteria for compensation payments

The Committee considers that all related criteria should remain unchanged.

The Committee notes that the lump-sum compensation entitlement has been significantly eroded over the years. This disadvantages those who have an occupational disease with incriminated employment prior to 1 April 1974 (the commencement date of the present ACC scheme) and incapacity after 1 April 1974 and who are not eligible for earnings related entitlement.

Recommendation 24

The Committee recommends that any entitlement received under this extended cover be restricted to situations where employment in New Zealand can be incriminated, subject to the same claims acceptance criteria currently used by the Accident Compensation Corporation. The value of compensation entitlement in such cases should be the same as currently provided to other victims under accident compensation.

The Committee further recommends that ACC review the systems used to process claims in such cases to ensure efficiency and consistency.

Effective date for extension of compensation payment

Recommendation 25

The Committee recommends that the extension of cover for occupational disease referred to in recommendation 23 apply to incapacity (or dependency) after a “future date”.

In considering the effective date the Aid and Compensation Working Party considered the above option as well as back-dating the compensation entitlement to 1 April 1974, but concluded that the back-dating was not appropriate. The Committee concurs with this.

The Aid and Compensation Working Party noted that this denied entitlement during the intervening period apart from the initiation of a common law action. In order to address this, the working party saw a need to review entitlement under the Workers’ Compensation Act 1956 and to restrict common law actions to the intervening period only. After giving this matter further consideration, the Committee considers that there is little merit in reviewing entitlement under the Workers Compensation Act 1956 because it is largely redundant legislation. However, the Committee accepts that there is a need to restrict common law action to “losses” occurring for periods up to the “effective date” only.

Counselling services

The Committee sees the value of counselling services for those with asbestos-related conditions and/or those affected family members. However, the Committee is unable to comment on the Aid and Compensation Working Party’s recommendation to make available the “full range of rehabilitation services” to those suffering from asbestos-related diseases and/or their affected family members because it raises questions/implications which are wider than the terms of reference.

There are few precedents within the public sector for support services for victims and/or their families. Generally, support has come from the so-called voluntary sector or by networking on the part of those affected. Those suffering asbestos-related diseases, and their dependants, are not alone in this situation. However, although the financial support provided under either accident compensation or social welfare is generally victim- orientated, both agencies can provide assistance by way of home help and attendant-care funding.

Recommendation 26

The Committee recommends that, where required, those with asbestos related conditions and/or their affected family members, be referred to appropriate counselling services by either the National Asbestos Panel or their general practitioner.

Summary of recommendations

1. The Department of Labour's Occupational Safety and Health Service (OSH) should be responsible for the ongoing reviewing and monitoring of the scientific literature relating to asbestos and health-related effects.
2. In the light of present knowledge, the present legal Workplace Exposure Standard, as set out in the Asbestos Dust (Concentration of Fibres) Notice 1984, is appropriate.
3. The Occupational Safety and Health Service of the Department of Labour should be responsible for putting administrative procedures in place to ensure that medical surveillance for workers exposed to asbestos takes place. The medical examination procedures stated in the Asbestos Regulations 1983 provides an adequate surveillance regime.
4. An asbestos medical register should be established for people who have been significantly exposed to asbestos. The Occupational Safety and Health Service should be the organisation responsible for establishing, maintaining and funding the register.
5. The asbestos medical register be included as part of the wider occupational disease notification scheme currently under review by OSH.
6. A National Asbestos Panel and a National Asbestos Radiological Panel should be established. The Occupational Safety and Health Service should be the organisation responsible for establishing the panels.
7. When a diagnosis is made, it is essential that there is a complete history including a full occupational history which provides details of exposure to asbestos.
8. Procedures should not be developed for tracing former employers and their employees whose work has involved significant exposure to asbestos — because their implementation would be impracticable.
9. The list of respiratory protective equipment approved for use by those working with asbestos should be reviewed and updated by OSH.
10. In the interim, the Workplace Exposure Standard for synthetic mineral fibres (SMFs) should be:
 1. *For general purpose fibres:*
5 fibres/ml of air (time weighted average)
 2. *For superfine* and ceramic fibres:*
1 fibre/ml of air (time weighted average)

Although these levels apply simultaneously, the more restrictive criterion applied would depend on the characteristics of the particular fibres involved.

** The composition of superfine SMFs is similar to other SMFs. Those fibres with a diameter of less than 3 microns and a length to diameter ratio of greater than 3:1 are regarded as superfine. For the purpose of this standard, SMFs with bulk mean diameters falling in the superfine range should be regarded as superfine materials.*

OSH should also review and advise on standard environmental monitoring and identification techniques to be used in New Zealand for SMFs.

11. The current New Zealand Workplace Exposure Standard for superfine and ceramic fibres should be reviewed by OSH in the light of continuing overseas studies and concern.

12. A national strategy for managing asbestos should be developed /adapted for New Zealand. Such a strategy should include the following key elements:

- 1. Control of the importation of asbestos and products containing asbestos.**
- 2. Control of the sale of asbestos and products containing asbestos.**
- 3. Control of the risks associated with working with asbestos.**
- 4. Identification and recording of asbestos *in situ* in buildings.**
- 5. Assessment and management of the risks posed by asbestos on site.**
- 6. Identification and assessment of less hazardous substitutes.**
- 7. Control of the removal and disposal of asbestos.**
- 8. Training of personnel involved with asbestos activities.**
- 9. Provision of information and education programmes for trades people and the public.**

13. No asbestos product register should be set up. However, the Customs Act 1966 should be amended to provide for a ban covering the importation of all asbestos in its raw friable state subject to an exemption for essential use.

14. All products manufactured after a specified date, and known to contain asbestos, should be labelled accordingly.

15. OSH should prepare guidelines to provide practical assistance on matters relating to the manufacture of asbestos containing materials, and servicing of brakes, clutches, etc.

16. A suitable asbestos code of practice and guidance notes be drawn up by OSH to cover the New Zealand situation with respect to assessment and management of asbestos, and its removal and disposal.

17. A standard* should be developed to provide for owners of buildings (with the exception of private dwellings) which have *in situ* asbestos, or particular types of asbestos-containing materials. Owners will be required to identify *in situ* asbestos — which is of most concern from a health standpoint — and to record information about the location and state of the asbestos or the asbestos containing materials in a standardised form of register.

** A standard could include a code of practice, regulations, a statute, and a New Zealand standard.*

18. The Minister for the Environment should be requested to consider that where asbestos is disposed of in landfills, the land be a designated site and the land title tagged to that effect. Procedures for landfill disposal of asbestos should also be reconsidered.

19. OSH should co-ordinate and monitor education and training systems and allocate appropriate resources for this purpose. Information on asbestos should be made widely available emphasising the health risks associated with all types of asbestos.

20. The standard environmental monitoring and identification techniques in New Zealand be upgraded in line with the procedures established in Australia.

21. The DSIR database should be upgraded, publicised and made accessible to interested parties, thereby avoiding unnecessary duplication of sampling and analysis. Issues of commercial sensitivity and client confidentiality would need to be resolved.

22. The question of the management of synthetic mineral fibres should be deferred for further study by OSH.

23. Cover under the accident compensation scheme should be extended to those suffering the delayed effects of any occupational disease arising from employment in New Zealand who are presently excluded from coverage by virtue of the fact that their incriminated employment ceased prior to 1 April 1974.

24. Any entitlement received under this extended cover should be restricted to situations where employment in New Zealand can be incriminated subject to the same claims acceptance criteria as currently used by ACC. The value of compensation entitlement in such cases should be the same as currently provided to other victims under accident compensation.

Further, the ACC should review the systems used to process claims in such cases to ensure efficiency and consistency.

25. The extension of cover for occupational disease referred to in recommendation 23 should apply to incapacity (or dependency) after a “future date”.

26. Where required, those with asbestos-related conditions and/or those affected family members should be referred to appropriate counselling service by either the National Asbestos Panel or their general practitioner.

Appendix I: Correspondence received

Written correspondence was received from each of the following individuals and organisations:

E Anderson

Auckland Area Health Board

Dr Trevor A Bierre

CMR Consultants

Crow Refractory Installations NZ Ltd.

Electricity Corporation of NZ

Electricorp Production (*Including correspondence of 22 February 1991, which was referred to the Occupational Safety and Health Service of the Department of Labour for further action.*)

Fletcher Challenge Ltd.

W Grayson and Associates Ltd. W Harding

Piet Radford

South Pacific Furnaces

South Taranaki District Council

Appendix II: Further comment by committee members

Following the final meeting of the Asbestos Advisory Committee on 22 April 1991, members were given the opportunity to comment on Recommendation 17 because time did not allow the issue to be worked through satisfactorily at the time. The following comments were received from the representative of the New Zealand Council of Trade Unions:

Occupational asbestos exposure has resulted in the deaths of New Zealand workers; the national strategy set out in this report sets out to reduce further incidents of exposure. As part of this process building owners should be required to identify asbestos on site, noting its location, the condition it is in, and to develop a management plan which is aimed to prevent exposure to asbestos to occupants and others required to do maintenance work on site. Therefore, Recommendation 17 is supported, and it is necessary to make the responsibilities set out in this recommendation mandatory on building owners. Implementation of the management plan also needs legislative backing to make it a mandatory requirement on building owners.

Following the final meeting of the Asbestos Advisory Committee on 22 April 1991, qualifying statements were received from the representative of the New Zealand Council of Trade Unions and the representative of the New Zealand Employers' Federation.

New Zealand Council of Trade Unions

Refers to recommendation 25

Along with all other members of the advisory committee, the CTU believes that asbestos victims should be compensated for their losses. A mechanism for coverage for the 17 years between 1974-1991 (the effective date recommended by the Committee) needs to be developed. In number, there may be only 10 claims lodged for this period, but for those and any other claims, an equitable solution must be found that gives them equivalent compensation to others covered by accident compensation.

New Zealand Employers' Federation

Refers to recommendation 13.

I support the recommendation in principle, but believe that consideration should be given to allowing exemptions for authorised use of chrysotile (white) asbestos in controlled circumstances, as well as for "essential" use.

Part 2

**Report of the
Working Party
on the
Medical and
Industrial
Issues of
Asbestos**

Contents, part 2

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Members of the Working Party on Medical and Industrial Issues

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NZ College of Community Medicine

Members

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Associate Professor W I Glass

Department of Preventive Medicine

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Dr J K Howard

Accident Compensation Corporation

Dr D Farlow

New Zealand Employers' Federation

Dr P Martin

Chest Clinic

Wellington Hospital

Dr K McLea

Occupational Safety and Health Service

Department of Labour

Dr P White

Auckland Radiology Group

Ms S Wilkinson

NZ Engineers' Union

Secretary

Miss M Robertson

Department of Health

Summary

Significant exposure to any type of asbestos fibre presents a health hazard. This may lead to an interstitial fibrosis of the lung (asbestosis) or a tumour. Occupationally-related diffuse malignant mesothelioma is associated with exposure to crocidolite (blue asbestos) and amosite (brown asbestos) and rarely, if ever, results from exposure to chrysotile (white asbestos) alone. The risk of developing lung cancer is greatly increased for those who smoke.

All asbestos-related disease appears to follow a dose-response relationship. There is a threshold of fibre burden in the lung for the development of cancer.

The present Workplace Exposure Standard for asbestos is considered adequate for the protection of workers exposed to asbestos dust. The present system of medical surveillance, as stated in the Asbestos Regulations 1983, is endorsed and should be continued.

Proposals are made for the establishment of a National Asbestos Register and two asbestos medical panels. The Occupational Safety and Health Service of the Department of Labour (OSH) should be the organisation responsible for establishing, maintaining, and funding the National Asbestos Register and the asbestos medical panels.

It is recommended that OSH should review, update and publish, as soon as possible, a new list of approved respiratory protective equipment for those working with asbestos.

A Workplace Exposure Standard is recommended which, in the light of present knowledge, is considered to provide adequate protection for those working with synthetic mineral fibres.

Definitions

In the context of this report, the following words are used with the ascribed meanings:

Alveolus The terminal air sac of the lung.

Asbestos Naturally occurring fibrous hydrated silicates.

Asbestosis A diffuse interstitial fibrosis of the lung resulting from exposure to asbestos.

Bronchus An air passage in the lung.

Cancer of the lung A malignant tumour of the bronchus.

Hazard The potential of a substance, material or process adversely to affect human health.

Mesothelioma A malignant tumour usually arising from the lining of the chest cavity or the abdomen. Occasionally it may arise from the membrane surrounding the heart.

Pleura The membrane lining the chest cavity and the lungs.

Pleural effusion A collection of fluid in the pleural cavity.

Pleural plaque A non-malignant, localised mass of tissue arising from the pleura.

Pleural thickening A more diffuse non-malignant, mass of tissue arising from the pleura.

Risk The mathematical chances of someone developing an adverse consequence from exposure to a particular substance, material or process, over a known period of time.

Increased risk That the risk of developing an adverse consequence in the group to which the term is applied is higher than in the general population.

Significant risk The exposure that has the potential to cause asbestos-related disease. Such exposure takes into account:

- The work history of the exposed person;
- Any high, short-term exposures;
- The length of time of exposure; and
- The levels of asbestos dust to which the person was exposed.

Terms of reference

1. To review and report on the current state of knowledge about asbestos-related medical conditions.

In particular to:

a) Report on the disease relationship between fibre type and disease;

b) Evaluate the appropriateness of the present New Zealand asbestos Workplace Exposure Standard to prevent asbestos-related disease;

c) Report on the medical facts relating to asbestos exposure, smoking and disease;

(d) Investigate and make recommendations about standardised diagnostic procedures to be used in the diagnosis of asbestos-related disease;

e) Recommend medical surveillance procedures for those workers who have had significant exposure to asbestos.

2. (a) To investigate the need for, and feasibility of establishing and maintaining a register for workers who have been significantly exposed to asbestos, and to advise on the information that this should hold.

(b).If such a register is considered advisable, to make proposals about which organisation should be responsible for establishing, maintaining and funding it.

3. To advise on procedures for tracing former employers and their employees, whose work has involved significant exposure to asbestos, and to recommend where the responsibility for such tracing should lie.

4. To review the current system in respect of respiratory protective devices used by those working with asbestos, and to recommend how this should be improved.

5. To review and report on the current medical knowledge about the respiratory effects of synthetic mineral fibres.

6. If found necessary, the terms of reference may be expanded following the approval of the Asbestos Advisory Committee.

Preface

ARCHIVE

In its work, the working party faced two major problems. It was given wide terms of reference and three months in which to consider them.

In attempting to carry out its assignment, the working party has considered a large number of papers (published before 1 March 1991) which its members thought were relevant to its work in reviewing the current state of knowledge about asbestos. Papers which the members of the working party considered are shown in the Bibliographies.

As the working party was required to submit its findings to the Asbestos Advisory Committee, it has tried in its report to avoid technical language and detail. Where that was impossible, definitions have been given.

The working party was aware that concerns have been expressed about asbestos in public buildings such as schools, and in water pipes. In the time available, the working party was not able to consider these topics.

The membership of the working party is shown on p 4. It met on 21 December 1990, and 7 February, 21 March, and 28 March 1991.

Setting the scene

Asbestos has a long history of use. It was probably first used about 2500 years ago in Finland to strengthen clay pots. In classical times, the Greeks used it to weave shrouds for the bodies of the great who were to be burnt on funeral pyres.

Its widespread use in industry began about 1880 with the exploitation of large chrysotile deposits in Canada and the USSR. Initially, its main use was in the textile industry to produce incombustible products and improved materials for gland packings.

Because of its relative cheapness and unique properties, it has had a wide variety of uses, the commonest one of which was in asbestos cement products such as pipes, roofing sheets and wall boards, in insulation, and in friction products.

History of use

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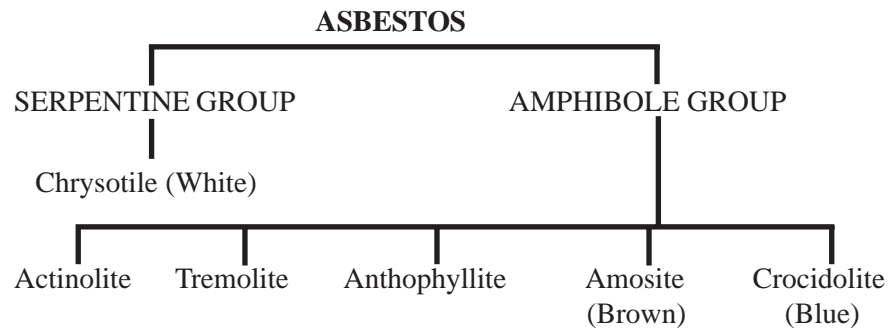
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Types of asbestos

Asbestos is not a single chemical or geological entity, but a term used to describe naturally occurring fibrous hydrated silicates. There are six common varieties (see fig. 1)¹.

Figure 1: Types of asbestos



Amosite and crocidolite (the amphiboles) are chain silicates. Their fibres are straight, needle-like structures which may split longitudinally to produce very fine fibrils.

By contrast, chrysotile fibres tend to be longer, softer and curlier. This is important from the viewpoint of lung dynamics as this property has the effect of increasing their diameter and making it less likely that they will reach the smaller airways.

History of health effects of asbestos

The information in this section is largely derived from a paper by Murray ².

Although fibrosis of the lung was first recognised as being associated with asbestos exposure in 1899 in the United Kingdom by Montague Murray, he did not report on this until 1906. This association was largely ignored because of the greater problem of pulmonary tuberculosis.

However, in the 1920s, a greater interest developed in fibrosis of the lungs amongst asbestos workers. A comprehensive study on the health effects of asbestos was carried out in the United Kingdom by Merewether and Price between 1928 and 1930. This study led to the first ever asbestos regulations, the Asbestos Regulations of 1931, which came fully into force in 1933³.

During the 1930s there was continued interest in asbestosis. In the late 1930s a few papers described cancer of the lungs in asbestos workers. It is perhaps relevant to note the greater importance of pulmonary tuberculosis as a cause of morbidity and mortality at that time.

In 1947, the Chief Medical Inspector of Factories in the UK initiated a study to determine whether lung cancer was more common in asbestos workers⁴. This led to a study by Doll published in 1955⁵ which showed that lung cancer was a specific hazard of certain asbestos workers, and that for those who had worked for at least 20 years in places where they were exposed to asbestos dust, the risk was 10 times that experienced by the general population. The role of smoking was not reported.

Little attention was paid to this discovery. This may have been due to the fact that the major dust problem at that time in the UK was coal dust, and that relatively few people were involved in the asbestos industry. Moreover, the major cause of lung cancer was recognised as being cigarette smoking.

In 1960, a paper by Wagner *et al* was published which showed for the first time an association between exposure to crocidolite (blue asbestos)⁶ and the development, many years later, of the rare tumour — diffuse malignant mesothelioma. This led to great interest in asbestos-related health problems throughout the world, followed by a flood of scientific papers and great media interest.

A major problem was what should be the allowable concentration of asbestos fibres in the workplace. The existing workplace standard in the UK had been developed to control asbestosis¹.

There was no information about the levels of asbestos fibres to which those who developed mesothelioma had been exposed. An arbitrary decision was made that the standard for crocidolite should be one tenth the standard for other forms of asbestos.

The debate on this issue continues and this is reflected in the terms of reference of this working party.

Asbestos use in New Zealand

In New Zealand, the use of asbestos has been restricted to chrysotile, amosite and crocidolite.

Chrysotile has for many years been the most commonly used fibre and today accounts for some 95% of the world production. Importation of amosite and crocidolite in its raw fibrous state has not been permitted into New Zealand since 1984. These varieties may of course be encountered in buildings in which they were used principally for insulation and as fire barriers.

Asbestos has also been used extensively in the railway workshop industry, the building industry and the shipping industry, the sawmilling industry, and in the asbestos cement industry in Christchurch and Auckland.

Fitters, electricians, boilermen, carpenters, brake repairers and others were commonly exposed.

Mesothelioma as a consequence of exposure to asbestos in New Zealand was discussed in a letter to the editor of the New Zealand Medical Journal by Glass⁷. Up to 1989, 174 cases had been notified to the Cancer Registry.

Asbestosis and lung cancer have not been effectively notified and the extent of this condition is unknown. However a case control study⁷ indicated that overall, asbestos-related occupations were found to be associated with elevated risks of cancer in three sites, the lung, pleura and peritoneum and that the risks of cancer of these three sites were highest among the group of machinery fitters, plumbers, welders, boiler makers, metal moulders, metal platers and electricians.

Asbestos dust level measurements were carried out at the National Health Institute from the 1960s. In 1987 a special dust laboratory was established at the institute which provided the basis for an industrial hygiene service based on reliable air sampling and electron microscopy.

Asbestos regulations were first promulgated in 1978 and were amended in 1983. The Workplace Exposure Standard for asbestos has been kept constantly under review and has been revised twice since 1978 in order to provide greater protection for those who may be exposed to asbestos.

Asbestos-related diseases

Characteristics of asbestos

The question of fibre type and disease is discussed in the section beginning on p 13.

It should, however, be noted that the variable physico-chemical features of asbestos complicate attempts to evaluate the effects of different fibres on health⁹.

In general terms, the chances of developing asbestos-related disease depend on four main factors. These are:

1. The type and size of asbestos fibre inhaled;
2. The number of fibres inhaled;
3. The length of time in which that inhalation continued;
4. Personal factors, such as the physiological constitution of the individual and smoking habits.

The reaction of the body to asbestos

Exposure to varying amounts of asbestos is almost universal in so called “developed” societies. Apart from occupational exposures, however, the amounts will generally be very small. Postmortem examinations, nonetheless, reveal the presence of asbestos fibres in the lungs of the great majority of people. The body may react to the presence of asbestos in different ways. These different reactions appear generally to be dose related.

- (1) Asbestos may be present in body tissues, such as the lungs, without causing any disease or alteration of function.
- (2) Asbestos may cause localised tissue reactions which rarely have any effect on function and for which there is no evidence at present that they may progress to actual disease. Such reactions may be seen in:

Skin — so called asbestos “warts”

Pleura (the lining membrane of the lung)

- benign pleural effusions
- pleural plaques
- localised pleural thickening

It should be noted, however, that occasionally pleural thickening may be sufficiently extensive to reduce lung function by mechanical interference with ventilation.

- (3) Inhaled asbestos may induce tissue damage in the lungs resulting eventually in the development of progressive fibrosis called asbestosis.
- (4) Bronchogenic (lung) carcinoma is associated with exposure to asbestos. It has also been suggested that the risk is greatly increased in those exposed persons who are also cigarette smokers. There is also evidence that lung cancer only develops in association with pre-existing inflammation and subsequent fibrosis (asbestosis), but this remains a matter of debate.
- (5) Asbestos may also induce malignant changes in pleura and peritoneum (the lining tissue of the abdomen and intestines) causing diffuse malignant mesothelioma.
- (6) In addition, it has been suggested that asbestos exposure may also produce malignant change in other parts of the body, particularly the larynx: The evidence, however, appears equivocal and the matter is still under further debate.

Asbestos present in body with no disease

Most people today are exposed to asbestos during their life. The question of “fibre dose” in relation to the development of cancer of the lung is discussed later.

However, following the finding of asbestos fibres in the lungs of people who have died from non-asbestos-related diseases, it is generally accepted that asbestos fibres can be present in the body and that disease does not necessarily result¹⁰.

Asbestos warts

In those who are handling asbestos without gloves, some fibres may penetrate the skin and cause a skin reaction rather like a wart or corn.

Pleural changes

Benign pleural effusions occur in a small percentage of asbestos workers, usually less than 20 years after the initial exposure to high levels of asbestos⁹. In most instances the effusion resolves spontaneously.

Pleural plaques are a common manifestation of exposure to asbestos. They occur as localised nodular lesions, most often on the parietal pleura⁹. Their relatively discrete nature and location does not result in the changes of lung function in people in whom they are found. Calcification may occur with time, but does not necessarily imply an enlargement of the lesion⁹.

At present there is no evidence that pleural plaques on their own carry an increased risk of the development of cancer of the lung or mesothelioma.

Pleural thickening is a relatively common manifestation in which there is a pleural reaction. Extensive pleural thickening may lead to a reduction in lung function by interfering with ventilation.

Pleural changes may indicate past exposure to asbestos and do NOT imply subsequent development of asbestosis, lung cancer, or mesothelioma.

Asbestosis

Asbestosis is a disease of the lung, in which there is the development of diffuse interstitial fibrosis throughout the lung tissue and may be associated with the pleural changes described above. It only occurs in those who have been exposed to considerable concentrations of asbestos over a long period of time⁹.

Lung cancer

During the 20th century the incidence of lung cancer has increased dramatically in most countries, and it is now the most common cause of cancer death in many communities. In New Zealand it is the most common cause of cancer death in men and the second most common in women. Most of this increase can be attributed to smoking habits.

Lung cancer is rare among asbestos workers who do not smoke. However, in subjects who are exposed to asbestos and who also smoke there is a very large increase in lung cancer incidence. In addition to smoking habits, the degree of association varies with the type of asbestos fibre morphology, concentration and type of exposure. Asbestos textile workers have a higher relative risk than those exposed to asbestos in other ways⁹.

Mesothelioma

This malignant tumour arises many years after exposure to asbestos. The average latency period between the first exposure and the diagnosis of mesothelioma is 35 to 40 years, with most deaths occurring in people over 60 years of age⁹.

In the vast majority of people there is a past history of exposure to crocidolite (blue asbestos) or amosite (brown asbestos).

Cancer of the gastrointestinal tract and larynx

It has been suggested that asbestos workers may have an increased risk of developing cancer in the gastrointestinal tract, larynx, kidney, ovary, and most recently the eye¹¹. An increased risk of lymphoma has also been suggested¹².

A recent review by Doll and Peto¹² generally discounts the original concerns about gastrointestinal cancer and those in other sites.

Although Doll and Peto believe that asbestos causes cancer of the larynx they found the absolute risk to be much lower than that for lung cancer¹². Another review has argued that the risk of cancer of the larynx among asbestos workers is insignificant¹³. It has been suggested that lifestyle factors, use of alcohol, and smoking are more important⁹.

Fibre type, dose and disease

Fibre characteristics

When considering the potential health hazard of asbestos, it is important to recall that asbestos is not a single chemical or geological substance. As discussed in the earlier section, Setting the scene, there are two main types of asbestos — serpentine (chrysotile) and the amphiboles (crocidolite and amosite).

Chrysotile is a magnesium silicate, white in colour. The fibres are relatively easily separated from the parent ore and form bundles which are soft and curly. The best quality fibres may be up to 5 cm long, which make it useful for weaving. However, any form of mechanical treatment tends to break them, resulting in thinner and shorter fibres which may be in the respirable range. The magnesium which is present in the outer layer of the fibre may leach out in the body fluids, resulting in an unstable structure. This may lead to the disintegration of the fibre in the body.

Crocidolite is an iron-sodium silicate, blue in colour. The fibres are straight and rigid and may split longitudinally so producing fine fibrils. Because of their outer lining they are relatively resistant to acids and to body fluids. This means that they may survive unchanged in the body for at least 40 years.

Amosite is an iron magnesium silicate, grey brown in colour. The fibres are harsh and tend to be longer than the other types of asbestos, making it excellent for heat insulation. As with crocidolite, the fibres may survive unchanged in the body for many years.

Inhalation of asbestos fibres

The information in this section is largely derived from the work of Timbrell¹⁴.

The eventual fate of asbestos fibres which are inhaled depends very largely on their physical characteristics. The larger fibres are filtered out in the nose and throat.

Smaller fibres pass into the bronchi. Because of the way the inspired air spins in vortices as it passes into the lungs, many inspired fibres are thrown outwards and caught on the sticky mucous lining of the airways. These fibres are then carried upwards in the mucus and in due course expectorated or swallowed.

The fibres that escape this defence mechanism must be light enough to remain in suspension and short enough not to get caught in the smaller airways. The majority of the inspired longer curlier chrysotile fibres are therefore eliminated by this mechanism and do not reach the alveolus.

Although this filtering mechanism favours the chances of the smaller fibres (less than 10 microns in length) reaching the lung tissue, it is possible for larger fibres, particularly if they pass obliquely or longitudinally through the airways to reach the alveolus.

When dust or an asbestos fibre reaches an alveolus, it is normally removed by a scavenger cell to the tissue surrounding the alveolus. If the asbestos fibre is too big, the cell may rupture and the fibre may initiate a tissue reaction leading to the formation of scar tissue or many years later to a tumour.

The biological activity of fibres increases with fibre length. The threshold for potential tumour causation is probably about 3 microns and peaks at 10 microns. It then declines, probably because the longer fibres are prevented from penetrating deeply into the lung tissue.

Fibre type and disease

In discussing this complex subject, it is convenient to take as the starting point, consideration of the three major asbestos-related diseases and examine the evidence relating to their causation.

Asbestosis

There is little evidence to suggest that the risk of developing asbestosis is affected by exposure to different fibre types. It is probable that the type of work done is more relevant, as in some industries using asbestos there is inherently more dust. In the textile industry for example there is more likely to be a higher concentration of asbestos fibres in the workplace air than in an industry such as making asbestos cement.

The evidence suggests that the risk of developing asbestosis is closely linked to the intensity and duration of exposure¹⁵. The working party noted that because of the limited information relating to asbestos exposure in the past, it is impossible to establish this risk with any accuracy. This subject is further considered in the section on workplace standards.

Lung cancer

Exposure to airborne asbestos fibres leads in some circumstances to lung cancer. Due to the relatively long latent period between exposure and the onset of clinically manifest disease those people with lung cancer in the present are reflecting their degree of exposure in the past. Frequently the concentration of fibre to which they have been exposed is unknown, but was probably higher than the concentrations to be found at work today.

The important issue thus arises as to whether a carcinogenic threshold exists for asbestos. This is particularly important when considering the practical situation of short-lived exposure to asbestos in buildings.

There are two schools of thought¹⁶. According to the “one hit” hypothesis, one molecule of carcinogen, or one fibre, by damage to the biological material, can change the cell into a cancerous cell. This one cell then multiplies and eventually produces cancer.

On the other hand, the “threshold” hypothesis recognises the possibility of repair and the existence of a complex defence mechanism in the body which copes with individually deviated cells, such as cancer cells spontaneously appearing throughout the lifetime. Cancer can only develop, if and when the defence mechanism is overcome by large numbers of such cells created by a large number of “hits”: that is when the “threshold” of tolerance is overstepped.

In all epidemiological studies there are lower levels of exposure under which no excess of cancers is found¹⁵. These results support the threshold hypothesis which is the position accepted by the working party.

Most authorities agree that the evidence is compelling from both animal studies and human epidemiology that fibres shorter than 5 microns do not cause fibrosis or cancer²³. It seems generally to be agreed that both fibrogenicity and carcinogenicity are mediated through damage and repair mechanisms.

The model of damage and repair as the basis for asbestos carcinogenicity suggests that exposure below a level causing an imbalance in the body mechanisms would induce neither fibrosis or cancer^{22,23}.

Asbestos is not a complete carcinogen and appears to act as a cancer promoter on already initiated cells²³. If this is related to fibrogenic change as many authorities suggest, then a threshold should also exist below which no excess risk of lung cancer appears.

Although it is fashionable to propose a linear relationship between dose and response in respect of asbestos-related lung cancer, there is good evidence for a threshold response, and a carcinogenic dose, which may in fact be higher than the fibrogenic dose. Since Weil¹⁷ proposed this view in 1979, there has been a growing number of studies which suggest a threshold and which have demonstrated that lung cancer rates have not been raised in low exposure situations.

Further, two recent studies^{18,19} have found positive evidence that the lung cancer risk was only increased in the presence of radiological or pathological evidence of asbestosis.

Malignant mesothelioma

It was in 1960, that the first cases of mesothelioma were reported as occurring in those mining crocidolite in South Africa⁶. Since then, a large number of studies have confirmed that occupational mesothelioma is associated with exposure to crocidolite and with a lesser risk from exposure to amosite. It rarely, if ever, results from exposure to chrysotile alone¹⁶.

The reasons for this relate both to the physical properties of the fibres and to their chemical constitution.

The ability of fibres to penetrate the defences of the respiratory tract was discussed above. If a fibre has succeeded in penetrating the lung tissue, it appears that its potential to cause tissue damage relates to two factors — the fibre type and the size.

As mentioned in the above discussion of the relationship between fibre types and disease, the magnesium present in chrysotile fibres may slowly leach out in the body fluids, thus allowing the body more easily to destroy and remove the fibre. The different constitution of the amphibole fibres (crocidolite and amosite) means that they are more resistant to the action of body fluids, and therefore have a greater potential for tissue damage.

The size of the fibre is also of importance. The results of animal studies suggest that mesotheliomas are caused by fibres longer than 5 microns.

Unpublished work, presented at the International Conference of Occupational Health in Montreal 1990 suggests that, in humans, the greatest risk of mesothelioma is associated with exposure to crocidolite fibres equal to or greater than 10 microns in length, and that there is a clear dose relationship in the initiation of tumours.

Asbestos exposure and smoking

The exact relationship between the effects of asbestos exposure and cigarette smoking remains a matter of debate. There is agreement, however, that smoking appears to modify the effects of asbestos and greatly increase the risk of lung cancer.

It should be noted that asbestos itself is carcinogenic and a clear risk exists for anyone working with asbestos. Because of the equivocal and apparently contradictory nature of some of the evidence, it has been stated that it remains uncertain whether any type of asbestos, acting alone, can cause lung cancer in non-smokers²¹. Such judgements appear to be based on a misunderstanding of the evidence, particularly in regard to the fact that although the non-smoker has a greater relative risk compared with non-exposed non-smokers, the overall relative risk for the smoker is very much higher²¹.

Existing published epidemiological studies of exposed populations have described a variety of work and exposure situations. These include mining and milling, manufacturing and end-users, particularly insulation workers. There are problems in making direct comparisons as there are differences in methodology and also in relative risks due to different work activities and fibre type exposures. In addition, some of the studies were small and it is not possible to draw quantitative conclusions from them. Nonetheless, nearly all show some degree of effect modification varying from additive to approaching multiplicative^{21,24}.

Table 1 provides estimates of relative risk for lung cancer derived from several studies²⁵ and table 2 those derived from four specified studies^{26,27,28,29}. It will be seen that there are variations, but all agree on a greatly increased risk of lung cancer for smokers exposed to asbestos. The high relative risk for non-smokers, however, needs to be emphasised.

A recent paper has explored this subject, particularly relating to compensation in New Zealand. The findings of this work are consistent with previous studies and confirm the need to recognise the risk of exposure to asbestos as a cause of lung cancer.

*Table 1: Risk of lung cancer in asbestos workers*²⁵

	<i>Asbestos exposure</i>		
	<i>Light</i>	<i>Moderate</i>	<i>Heavy</i>
Non-smokers	1.0	2.0	6.9
Moderate smokers	6.3	7.5	12.9
Heavy smokers	11.8	13.3	25.0

Table 2: Relative risks and interactions in four studies of asbestos workers and lung cancer^{26,27,28,29}

	<i>Relative risk</i>			
	<i>Ref 26</i>	<i>Ref 27</i>	<i>Ref 28</i>	<i>Ref 29</i>
Non-exposed non-smoker	1.0	1.0	1.0	1.0
Asbestos exposure alone	5.2	3.0	17.5	10.0
Smoking alone	10.6	4.9	7.0	11.7
Smoking and asbestos exposure combined	52.2	8.2	32.7	25.7

The working party noted that in table 2, reference 26 provides evidence for a multiplicative model, references 27 and 28 represent an additive interaction and reference 29 shows an intermediate response.

The view of the committee is that both asbestos and tobacco smoke are causative factors in the development of lung cancer. The risk is greatly increased when a smoker is exposed to asbestos. No studies have shown any association between the risk of developing mesothelioma and cigarette smoking.

The asbestos register

The working party recognised the value of having an asbestos register and the need for two medical panels to be associated with it. These would be:

- a) A National Asbestos Panel; and
- b) A National Asbestos Radiological Panel.

The reasons for this are:

1. It provides a factual basis for the formulation of an effective asbestos policy.
2. It improves the diagnosis of asbestos-related disease.
3. It assists in the prompt settlement of asbestos-related claims.
4. It assists in workplace environmental control of asbestos by raising the level of awareness about the hazards presented by asbestos.
5. It assists in education about the health risks of working with, or exposure to, asbestos and the increased risk to smokers from exposure to asbestos.
6. It assists research into asbestos-related diseases.
7. It assists the raising of medical awareness about asbestos-related diseases.
8. It assists in tracing former workers exposed to asbestos.

Notification of occupational disease

The working party is aware that another group is considering the issue of occupational disease notification, and suggests that the establishment of an asbestos register should be part of the wider information network under consideration.

Location and staff of centre

The working party suggests that this register should be held as part of a National Occupational Health Information System. Its operation should be the responsibility of the Occupational Safety and Health Service of the Department of Labour (OSH) with one person responsible for the asbestos section of the register. This person should have easy access to a panel of experts -the National Asbestos Panel. This panel should include a chest physician, an occupational physician, and a radiologist. (For further discussion on this panel see the following section on diagnostic procedures.)

Entry to asbestos register

The working party suggests that the register should be in two parts:

- Part 1 — Those notified as having been exposed to asbestos;
- Part 2 — Those notified as having asbestos-related disease.

The system should allow movement of the name of a registered person from Part 1 to Part 2 of the register when indicated.

Notifications to Part 1 of the register may be made by those who felt that they had been exposed to asbestos, or by people acting on their behalf such as an employer or union official.

Notifications to Part 2 of the register would be done by attending medical practitioners.

Procedure following notification

Exposure

Those notified to the Asbestos Register as having been exposed to asbestos would be sent a letter requesting them to contact the regional office of OSH so that their exposure could be evaluated. Following this action the individual will be advised concerning their inclusion/exclusion on the register on the basis of their exposure to asbestos.

Disease

Those notified as having asbestos-related disease would have their condition reviewed by the panel of experts mentioned above, and the appropriate information entered on the register.

Surveillance

Surveillance may be of value because it enables:

1. The documentation of exposure, and changes on X-ray and/or lung function testing for compensation purposes; and
2. The opportunity to discuss with workers their fears relating to past exposure and to demonstrate ongoing concern.

The Asbestos Regulations 1983 require medical examinations every three years for designated workers (see appendix II).

For those not covered by the regulations, where medical surveillance is considered appropriate, the frequency of medical examinations may vary.

In the early years following exposure to asbestos, these could well be carried out less frequently than every three years because the long lag period between exposure and onset of disease means that it is highly unlikely that any abnormality would be detected.

Conversely, after some 15 years following exposure, or when there is objective evidence of asbestos exposure such as pleural plaques, examinations should be carried out more frequently.

A surveillance medical examination should include a full review of the medical history including the occupational history, a physical examination and other procedures as considered appropriate by the examining physician after consideration of the state of health of the individual and the exposure to asbestos.

Publicity

The establishment of this register should be well publicised, particularly the fact that individuals could, in the first instance, notify themselves.

Effectiveness of procedure

The working party believes that the procedure and associated publicity would be more effective in determining who has been exposed to asbestos in the past than attempting to trace former employees who may have been exposed to asbestos.

Diagnostic procedures

Experienced personnel

The working party agreed that it was essential for there to be recognised medical specialists who should be consulted about asbestos-related health problems. It therefore recommends the establishment of two national asbestos panels.

The National Asbestos Panel should include a chest physician, a radiologist, and an occupational physician.

This panel would review the records of all individuals in whom asbestos-related disease was suspected and advise on appropriate action.

The members would also be available to provide information to the person in charge of the Asbestos Register on request.

The National Asbestos Radiological Panel should comprise three radiologists.

Individual members of the panel would be available for consultation by other radiologists who requested a further opinion about a chest X-ray in someone who had been exposed to asbestos.

The panel would also be available to review the X-rays of individuals whose condition was being considered by the National Asbestos Panel.

The working party recommends that the appointments to these panels should be on the advice of the relevant specialist colleges.

Medical procedures under the Asbestos Regulations 1983

The working party reviewed the legal requirements for medical examinations required by the Asbestos Regulations 1983, considers them adequate and recommends no changes.

Medical procedures for those not covered by the regulations

The working party recognised that patients may present to the general practitioner with chest symptoms or concerns following exposure to asbestos.

In dealing with such patients it is necessary for the doctor in taking the history to ensure that there is a full occupational history including details of exposure to asbestos. Following clinical examination and chest X-ray a decision should be made as to whether the patient's symptoms/condition are a) not asbestos-related or, b) may be asbestos-related. In the latter situation, notification should be made to the asbestos register.

The diagnosis of asbestos-related disease requires the input of a multidisciplinary team. This includes a general practitioner, respiratory physician, radiologist, occupational physician, and an occupational hygienist.

Radiological examinations are a good diagnostic tool in establishing the diagnosis of asbestos-related diseases. It should be noted that a PA chest film alone is of limited diagnostic specificity and sensitivity and that lateral and 70° oblique X-ray films are frequently required for more accurate assessment of asbestos-related disease.

Where clinically indicated, and for compensation purposes, high resolution computed tomography (C.T.) scanning greatly enhances the diagnostic sensitivity and specificity of asbestos-related diseases.

The workplace standard

The working party noted that the purpose of the workplace standard was to establish a minimum standard of asbestos exposure for the protection of people at work.

The working party noted that in order to be certain that the workplace standard was not exceeded, there must be appropriately trained people to take environmental air samples, and a laboratory with suitable equipment and personnel in which transmission electron microscopy and X-ray diffraction can be carried out.

The working party noted that the present workplace exposure standard for asbestos was based on the measurement of asbestos fibres collected by using a personal sampler with a membrane filter. At present the gazetted standard is³⁰:

Actinolite, anthophyllite, chrysotile and tremolite

(1) An average concentration over any four-hour period of 1 fibre per millilitre of air; or

(2) A maximum concentration over any 10-minute period of 6 fibres per millilitre of air.

Crocidolite and amosite

A concentration over any four-hour period of 0.1 fibres per millilitre of air.

The working party reviewed the available evidence relating to past exposure levels of asbestos and the development of asbestosis, mesothelioma, and lung cancer in people who had worked with asbestos.

Asbestosis

As noted in the earlier discussion of the relationship between exposure to fibre type and disease, the evidence suggests that the risk of developing asbestosis is closely linked to the intensity and duration of exposure. The working party noted that because of the limited information relating to asbestos exposure in the past, it is impossible to establish this risk with any accuracy.

The working party noted that it had been suggested by the Ontario Royal Commission that the threshold for clinical asbestosis was 25 f/cc years (this is the same as 25 f/ml years)¹⁵.

The expression f/cc year means that an individual has been exposed in a working environment for 40-hours-a-week for one year to a time weighted concentration of asbestos fibres of one fibre per cubic centimetre of air. It is therefore suggested that a worker would not be at risk of developing asbestosis unless she/he worked in this environment for 25 years.

The working party consider that this standard provides adequate protection against the development of asbestosis in New Zealand.

Mesothelioma

The working party noted that the present standard for crocidolite and amosite was the smallest amount which the laboratory could reliably detect with current technology. In practice therefore, it meant that workpeople could not work where crocidolite was present in the air without respiratory protective equipment. The working party therefore considered the existing standard adequate.

It is important that respiratory protective equipment is used wherever crocidolite or amosite is present in the air.

Lung cancer

The working party noted the importance of smoking as a cause of lung cancer, and that the effects of asbestos and smoking as causes of lung cancer appeared to be close to multiplicative.

In respect of exposure to chrysotile, the working party noted that it had been stated that at exposures of less than 100 asbestos fibres/ml. year (equivalent to 2 fibres/ml) the relative cancer risk is ones³¹.

As the present asbestos standard for chrysotile is 1 fibre/ml, it would appear that in the future it will not be possible to differentiate the relative cancer risk from chrysotile exposure from that of the general population'.

Adequacy of present standard

The working party considered that the present standard was adequate to protect the health of those working with asbestos or exposed to it, provided that it was enforced. In this respect, the working party wished to emphasise the importance of enforcement of the existing legislation. Air sampling must be carried out by suitably trained personnel, and the filters examined by experienced scientists in an appropriately equipped laboratory.

The workplace exposure standard should not be regarded as marking the boundary between safety and disease. Every effort should be made to reduce air borne concentrations to the lowest possible level. The importance of good housekeeping practices should also be noted. Unless asbestos waste products are carefully disposed of during work, their later removal may significantly increase airborne concentrations.

Respiratory protective equipment

The working party noted that in 1984, the Department of Health issued a list of respiratory protective equipment approved for use by those working with asbestos. This is attached as appendix III.

The working party considers that in the interests of the worker, this list should be reviewed by OSH and reissued as a matter of priority. In doing this, the working party recommends that consideration be given to utilising testing results from overseas, especially from Worksafe in Australia.

It suggests that one person in OSH be given the responsibility for this.

Synthetic mineral fibres

The production and use of synthetic mineral fibres (SMF) — previously known as man-made mineral fibres — has increased considerably in the last 30-40 years.

Fibre types

The term “synthetic mineral fibre” (SMF) includes a range of fibres used in a variety of industries.

Rockwool and fibreglass are used in thermal and acoustic insulation.

Ceramic fibres are used in high temperature insulation such as furnaces.

Continuous filament is used as a reinforcement in various materials such as cement, textiles and paper products.

Special purpose fibres are manufactured for specific purposes such as in the aerospace industry. These are often of a very small diameter and known as superfine fibres.

Fibre characteristics

SMFs are amorphous in character — which is in contrast to naturally occurring fibres (such as asbestos), which are crystalline in structure. They, therefore, do not split longitudinally into fibrils of smaller diameter, but may break transversely into smaller segments.

Respiratory effects following the inhalation of SMFs

The physical similarity between synthetic mineral fibres and asbestos has raised the question whether their inhalation might result in adverse health effects. This concern has stimulated considerable research in the last 15 years and is reflected in the terms of reference of this working party.

The working party was asked to review and report on the current medical knowledge about the respiratory effects of SMFs. These are considered in three groups.

Irritation

The working party noted that those exposed to excessive amounts of dust at work, were more likely to develop symptoms of respiratory irritation than those who worked in an environment in which no dust was produced.

If workers inhaled SMFs at work, these could well cause respiratory irritation which would result in the development of cough and sputum.

Fibrotic lung disease

The working party noted that there was no epidemiological or animal evidence to suggest that fibrotic lung disease might result from exposure to SMFs.

Lung cancer

The working party noted the findings from two large epidemiological studies of over 40,000 production and maintenance workers who had been exposed to SMFs^{32,33}.

Workers who produced fibrous wool using rock or slag were reported in the United States study to have a 30% increase in respiratory cancer 20 years or more after first exposure³². In the European study, a 40% increase was reported³³.

Workers who produced fibrous wool from glass were reported as having a much smaller increase in respiratory cancer — about a 10% increase in each study.

There was no excess of respiratory cancer reported among the small group of workers who produced glass filament.

Doll, in a review of these studies concluded that there had been an occupational hazard of lung cancer among workers who produced rock/slag wool and that there may have been a hazard among workers producing glass wool³⁴.

In assessing these reports, the working party noted that in 1982, McDonald had reviewed the epidemiological evidence available at that time, and concluded that given the reported low levels of exposure, a greater excess of lung cancer would not be observed “even if we were dealing with asbestos”³⁵.

Doll, when he reviewed the available data in 1986 agreed⁵⁴, and suggested that perhaps the exposure estimates were too low.

Animal experiments have indicated that on a fibre-to-fibre basis, SMFs are less carcinogenic than asbestos³⁶. The explanation for this appears to be that on average SMFs are less durable than asbestos³⁷ and, as mentioned above, tend to break across the fibre rather than longitudinally.

It has been suggested that the explanation for the excess of cancer reported among the workers producing SMFs from rock/slag wool might be due to contaminants in the feed stock, furnace fumes or past exposure to asbestos³⁷.

In the absence of any detailed dose-response relationships, the lung cancer risks associated with various types of exposure cannot be estimated. However, current exposures to mean levels of 0.2 respirable fibres or less per ml of air seem unlikely to cause any detectable excess in lung cancer rates³⁴

A workplace standard for synthetic mineral fibres

The working party concluded that it would be prudent to act on the assumption that exposure to SMFs may increase the risk of lung cancer among the workforce. It considered that on the basis of present knowledge, the following workplace exposure standard, when implemented, would provide adequate protection for workers.

(1) For general purpose fibres: -

5 fibres/ml of air (time-weighted average)

(2) For superfine* and ceramic fibres:

1 fibre/ml of air (time-weighted average)

Although these levels apply simultaneously, the more restrictive criterion applied would depend on the characteristics of the particular fibres involved.

** The composition of superfine SMFs is similar to other SMFs. Those fibres with a diameter of less than 3 microns and a length-to-diameter ratio of greater than 3:1 are regarded as superfine. For the purpose of this standard, SMFs with bulk mean diameters falling in the superfine range should be regarded as superfine materials.*

Conclusions and recommendations

All asbestos fibre types may produce asbestosis and lung cancer. The greatest risk of mesothelioma is associated with exposure to crocidolite and with a lesser risk from exposure to amosite. It rarely, if ever, results from exposure to chrysotile.

All asbestos-related disease appears to follow a dose-response relationship. It is the view of the committee that there is a threshold of fibre burden in the lung for the development of cancer.

In the light of present knowledge, the present New Zealand asbestos Workplace Exposure Standard is appropriate to prevent asbestos-related disease.

Asbestos and tobacco smoke are both causative factors in the development of lung cancer. The risk is greatly increased when a smoker is exposed to asbestos dust.

An asbestos register should be established for workers who have been significantly exposed to asbestos.

A National Asbestos Panel and a National Asbestos Radiological Panel should be established.

The National Asbestos Panel should include a chest physician, radiologist, and an occupational physician. This panel should review the records of all individuals in whom asbestos-related disease is suspected and advise on appropriate action.

The National Asbestos Radiological Panel should comprise three radiologists who would be available for consultation concerning chest X-rays in people who have been exposed to asbestos.

The Occupational Safety and Health Service of The Department of Labour (OSH) should be the organisation responsible for establishing, maintaining, and funding both the register and the panels.

The diagnosis of asbestos-related disease requires the input of a multidisciplinary team. This includes a general practitioner, respiratory physician, radiologist, occupational physician, and occupational hygienist.

In establishing the diagnosis it is essential that there is a complete history including a full occupational history which provides details of exposure to asbestos. Following clinical examination, decisions should be made concerning the further investigations such as chest X-rays and lung function tests which may be considered necessary by the examining physician after consideration of the state of health of the individual and the exposure to asbestos.

The medical examination procedures stated in the Asbestos Regulations 1983 provide adequate surveillance for workers exposed to asbestos.

It is not considered practicable to develop procedures for tracing former employers and their employees whose work has involved significant exposure to asbestos. This problem would be better addressed by giving nationwide publicity to the establishment of the asbestos register. This should ensure that all people who have or are exposed to asbestos dust can be placed on the asbestos register.

The working party noted that in 1984 the Department of Health issued a list of respiratory protective equipment approved for use by those working with asbestos. This list should be reviewed and updated by the Occupational Safety and Health Service of the Department of Labour (OSH).

It would be prudent to act on the assumption that exposure to synthetic mineral fibres (SMFs) may increase the risk of lung cancer among the workforce. It is recommended that the Workplace Exposure Standard for synthetic mineral fibres be:

1. For general purpose fibres:

5 fibres/ml of air (time weighted average)

2. For superfine and ceramic fibres:

1 fibre/ml of air (time weighted average)

Although these levels apply simultaneously, the more restrictive criterion applied would depend on the characteristics of the particular fibres involved.

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Appendix II: Asbestos Regulation 32

32. Medical examinations

(1) Where -

(a) An employee, or employees of any class, undertake restricted work; or

(b) The Medical Officer of Health believes on reasonable grounds that the health of any employee, or employees of any class, undertaking work involving asbestos may be affected adversely by asbestos dust,

The Medical Officer of Health may by notice in writing served on the employer declare that this regulation applies to the employee or employees concerned.

(2) Where this regulation applies to any employee or employees

(a) The employer shall, forthwith after the notice under subclause (1) of this regulation is served on him, inform in writing every employee to whom the notice applies of the terms of the notice and of the fact that it applies to that employee; and

(b) The employer shall, forthwith on the commencement of employment by any other employee to whom the notice applies, inform that employee in writing of the terms of the notice and of the fact that it applies to that employee.

(3) Where this regulation applies to any employee, the employer shall at his

own expense arrange a medical examination (including where the medical practitioner concerned suspects that the employee may be suffering from an asbestos-related disease, the reference of every X-ray film to specialists for the time being approved for the purpose by the Director-General of Health, and the commissioning and consideration of reports from the specialists on every such film) of the employee—

(a) In the case of every employee who is employed by him at the time when the notice under subclause (1) of this regulation is served on the employer, within 1 month after the date of service of that notice on the employer; and

(b) In the case of every employee who commences his employment after the date of service of the notice under subclause (1) of this regulation on the employer, within 1 month after the date on which he commences employment—

and thereafter at periodic intervals not exceeding 3 years, while he continues to undertake work involving asbestos.

(4) On the termination of the employment of any employee to whom this regulation applies who—

(a) Has been employed by the same employer for at least 5 years in work in respect of which medical examinations are required under this regulation; and

(b) Has not had a medical examination under this regulation within the period of 2 years immediately preceding the termination of his employment—

the employer shall at his own expense arrange a medical examination of that employee.

(5) For the purposes of this regulation, a medical examination shall comprise—

(a) An investigation of the occupational history of the person examined; and

(b) A chest X-ray; and

(c) A clinical examination; and

(d) Such lung function tests as the medical practitioner conducting the examination considers to be necessary for the purpose of ascertaining whether the health of the person examined has been or is likely to be affected by asbestos.

(6) Every medical practitioner who examines an employee under this regulation shall provide the employer with a written certificate, in a form to be provided by the Director-General of Health or approved by the Medical Officer of Health; and shall provide the employee with a copy of the certificate; and shall provide the Medical Officer of Health with—

(a) A copy of the certificate; and

(b) If the employee consents, a report on the examination; and

(c) A report on every X-ray taken for the purposes of the examination; and

(d) Unless the Medical Officer of Health is satisfied that the employer has suitable facilities for storing X-ray films (in which case the film of any X-ray taken for the purposes of the examination may be held on behalf of the Medical Officer of Health by the employer) the film of every X-ray taken for the purposes of the examination.

(6A) A Medical Officer of Health who is satisfied that the employer of any person who has (while employed by some other person) had an X-ray taken for the purposes of a medical examination under this regulation has suitable facilities for storing X-ray films may provide the employer with the film of the X-ray.

(6B) Every person who takes an X-ray for the purposes of a medical examination under this regulation shall provide the film of the X-ray to the medical practitioner concerned.

(7) Subject to subclauses (8A) and (9) of this regulation, every employer who receives a certificate or an X-ray film or both, under subclause (6) or subclause (6A) of this regulation shall retain the certificate (or a copy of it approved by the Director-General of Health for the purpose) or film, or both, under his control for not less than 40 years, or forward it to the Medical Officer of Health.

(8) Where an employee who has been medically examined under this regulation leaves his employment and subsequently commences work in respect of which medical examinations are required under this regulation with any other employer, he shall supply the name and address of his former employer to his new employer; and the new employer shall forthwith notify the former employer in writing of the employee's new employment.

(8A) Where an employee who has been medically examined under this regulation terminates his employment, the employer shall forthwith forward to the Medical Officer of Health all medical certificates and X-ray films held by him under this regulation in respect of the employee, films held by him under this regulation in respect of the employee.

(9) When an employer is notified in writing under subclause (8) of this regulation of a change of employment, he shall forthwith forward to the new employer all medical reports and X-ray films held by him under this regulation in respect of the employee.

(10) Nothing in this regulation shall be construed as requiring any person to submit to a medical examination without his consent

Appendix III: Approved respiratory protective equipment

Extract from the list published by the Department of Health

There are two basic types of respiratory protective equipment in general use for protection against asbestos dust, namely negative pressure and positive pressure.

These in turn can be split into sub-groups and these are:

I Ori-nasal respirators, including 'disposable' types fitted with a replaceable filter and have the lowest initial cost, are the easiest unit to service and provide the wearer with freedom of movement.

II Full face respirator type — Most of these are twin cartridge and, although dearer, provide more protection and allow the wearer freedom of movement.

III Air purifying respirators or air supplied — Individually power supplied.

IV High efficiency purifying respirators — These are individually powered but give more protection.

V External air supply or self-contained — While limiting movement to some extent, they provide the most protection and should be used when working with very high fibre levels.

NB: THIS LIST SHOWS THE RESPIRATORY PROTECTIVE DEVICES APPROVED BY THE DEPARTMENT OF HEALTH IN RESPECT OF THE HYGIENE STANDARD OPERATIVE FROM 1 APRIL 1984

PRE-FILTERS A NUMBER OF CARTRIDGE OR CANISTER

RESPIRATORS CAN HAVE PRE-FILTERS FITTED. THESE ARE DESIGNED TO REMOVE LARGER PARTICLES AND THEREFORE ASSIST IN EXTENDING THE LIFE OF THE CARTRIDGE OR CANISTER. PRE FILTERS ARE NOT SUBJECT TO SPECIFIC APPROVAL, BUT CAN BE USED PROVIDING THEY ARE FITTED TO AN APPROVED CARTRIDGE OR CANISTER.

ASBESTOS LEVELS ASSOCIATED WITH A RANGE OF TYPICAL MATERIALS AND ACTIVITIES

Respirable dust testing carried out by the National Health Institute during the past 6 years allow some generalised comments on dust levels normally found in common industrial situations. The figures below are for guidance only and it must be realised that abnormal conditions may lead to higher or lower levels than those indicated. In the list below means 'less than', means more than'. All figures are expressed as respirable fibre per millilitre of air (f/ml).

	Typical value	Extremes likely to be encountered
Removal of moulded laggings	< 2	0-10
Chrysotile millboard, cutting, etc	1-2	0-20
Handling asbestos cloth	<1	0-2
Handling asbestos string	< 2	0-2
Removal of woven laggings	< 2	0-10
Sprayed amosite, removal wet	5-20	up to 100**
Sprayed amosite, removal dry	-	up to 300
Sprayed crocidolite, removal wet	5-20	up to 100**
Sprayed chrysotile, removal wet	5-20	up to 100**
Sprayed chrysotile, removal dry	-	probably 100
Stripping asbestos-covered wire, etc	< 2	-
Cutting/sawing amosite bearing insulation (Marinite, etc)	0-2*	100
B. Asbestos cement products		
Cutting, etc, dry (power tools)	0-2*	up to 20
Cutting, etc, wet (power tools)	< 1	up to 10
Construction work (outside)	< 1	up to 10
Cutting AIC with hand tools	< 1	1

C. Ambient air below sprayed insulation

Chrysotile, amosite usually	0.1	0.1
Crocidolite	usually 0.1	occasionally 0.2- 1

D. Friction products

Cutting, finishing, radius grinding, etc.	normally 1	0-10
Changing filter bags	10	100
Handling friction materials (pads, etc.)	< 0.5	2
Dry sweeping	0-2	-

E. Handling raw asbestos

Chrysotile, amosite	2 with care*	-
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F. General

Handling talc (may contain minor tremolite)	< 2	
Cutting gaskets	< 2	
Cutting greenstone (associated with tremolite)	< 2	
Handling/quarrying serpentine (with minor chrysotile)	< 2	possibly up to 100 if conditions very dusty

* Assumes some form of extraction equipment.

** To achieve low levels extraction equipment in the room and good work practices will be required unless the insulation is well cemented.

Current asbestos hygiene standards

Regulation 31 of the Asbestos Regulations 1983 states:

1. *The Director-General of Health may from time to time, by notice published in the "Gazette", designate the concentration of asbestos fibres in the air that shall be deemed to be asbestos dust within the meaning of these regulations.*
2. *The Director-General of Health may, under subclause (1) of this regulation, designate different concentrations for different types of asbestos.*

At the time of preparing this list (April 1981) the relevant Gazette notice stated:

"For the purposes of the Asbestos Regulations 1983, asbestos dust shall be any concentration of asbestos fibres in the air exceeding those specified in respect of the different types of asbestos in the Schedule to this notice."

SCHEDULE

Types of Asbestos

Actinolite, anthophyllite, chrysotile, tremiolite

- (a) *An average concentration over any 4-hour period of 1 fibre per millilitre of air, and*
- (b) *A maximum concentration over any 10-minute period of 6 fibres per millilitre of air.*

Crocidolite and amosite

A concentration over any 4-hour period of 0.1 fibres per millilitre of air.

Respirators Approved by the Director-General of Health

CLASS 1: ORI-NASAL NEGATIVE PRESSURE RESPIRATORS (INCLUDING DISPOSABLE TYPES) APPROVED FOR USE IN ASBESTOS CONCENTRATIONS OF UP TO 10 TIMES THE CURRENT HYGIENE STANDARD (10 FIBRES PER ML FOR CHRYSOTILE (1 FIBRE PER ML FOR CROCIDOLITE OR AMOSITE)

NB: THE USE OF THE CLASS OF RESPIRATOR WITH PRODUCTS CONTAINING AMOSITE OR CROCIDOLITE IS RESTRICTED TO HAND WORK ONLY ON MATERIALS SUCH AS ASBESTOS CEMENT, WHERE THE ASBESTOS IS FIRMLY BOUND IN SOLID MATRIX. THESE RESPIRATORS SHOULD NOT BE USED WHERE WORK IS CARRIED OUT ON INSULATION MATERIALS CONTAINING AMOSITE OR CROCIDOLITE.

1. 3M New Zealand Limited

3M Company respirator (disposable) model 8710

3M Company respirator (disposable) model 8800

3M Company respirator (disposable) model 9900

3M Company respirator (disposable) model 9910 2

2. Wormald Stero Safety Limited

CIG single respirator XG202 with XG215 filter

CIG double respirator XG203 with 2x XG215 filters

3 Siebe Gorman; a division of James North and Sons (NZ) Limited

Filtasafe single cartridge dust respirator fitted with type FCI or FC2 fine dust filter.

Filtasafe twin cartridge dust respirator fitted with type FCI or FC2 fine dust filter.

4. Workwear Ltd

RP161 dust respirator fitted with single RP004 (red) filter and fine exhalation valves carrying the mark SP1022.

RP162 dust respirator fitted with twin RP004 (red).

RP014 fine dust filters.

5. Protector Safety Products (NZ) Limited

Protector R1000 dust respirator, fitted with a RC54 filter cartridge.

Protector R2000 dust respirator fitted with twin RC54 or RC74 filter cartridges.

Protector R2000 dust respirator fitted with twin RC75 multi-purpose cartridges.

RPM 81 HM (half mask) with RCHEF 81.

6. Dominion Construction Company Limited

Dust Foe 88 respirator fitted with fine dust filter and making thereon of part No 460357.

7. New Zealand Safety Limited

Drager Combitox Half Mask fitted with 905ST filter Norton single cartridge half mask respirator model.

7400-30 fitted with:

7400-31L dust cartridge containing replaceable filter 7400400 or

7500-31 dust cartridge containing replaceable filter 7500-6; or
 7500-7 dust filter cartridge; or
 7500-8 highly toxic particulate filter or where a combined gas/vapour and dust problem occurs then the appropriate Norton chemical cartridge:
 7500-1 organic vapours
 7500-2 acid gases
 7500-3 combined acid gases and organic vapours
 7500-4 ammonia fitted with the 7500-6 dust filter and the 7500-14 filter cover.
 Norton double cartridge half mask respirator model 7500-30 fitted with:
 2 x 7500-31 dust cartridge containing replaceable filter
 2 x 7500-6: or
 2 x 7500-7 dust filter cartridge: or
 2 x 7500-8 highly toxic particulate filter, or where a combined gas/vapour and dust problem occurs then the appropriate Norton chemical cartridge:
 2 x 7500-1 organic vapours
 2 x 7500-2 acid gases
 2 x 7500-3 combined acid gases and organic vapours
 2 x 7500-4 ammonia fitted with:
 2 x 7500-6 dust filters; and
 2 x 7500-14 filter covers.

CLASS II: FULL FACE NEGATIVE PRESSURE RESPIRATORS WITH HIGH EFFICIENCY FILTERS, FOR USE IN ASBESTOS CONCENTRATIONS UP TO 50 TIMES THE CURRENT HYGIENE STANDARD (50 FIBRES PER ML (5 FIBRES/ML CROCIDOLITE AND AMOSITE).

1. Dominion Construction Co Ltd

Auer BD 78P Compressed air breathing apparatus when used as a negative pressure (demand) mode.
 Auer 3SR Face Mask with cartridge holder part No. 220419.05 with MSA type H ultra filter cartridge No. 95302.07.
 MSA type 3S high efficiency respirator (part No. 2055716) fitted with filter cartridge (part No. 1010910). (Whole unit also sold as chin ripe part No 220232.)

2. Siebe-Gorman; a division of James North and Sons (NZ) Limited
 Vistarama full face respirator with FCII filter cartridges.

3. New Zealand Safety Limited

Drager Panorama Nova full face Inask with 90ST filter (with Internal Cartridge 745 ST).
 KM ESTO full face mask with 90ST filter (with Internal Cartridge 745 ST)
 A100/X CABA set (Negative Pressure Self-contained)
 C8300/D Negative Pressure Airline set
 A300/1 D Negative Pressure Airline set
 Norton double cartridge full face respirator model 7600-8 fitted with:
 2 x 7500-7 dust filter cartridges; or
 2 x 7500-31 filter cartridges; or

2 x 7500-8 highly toxic particulate filter; or where a combined gas/vapour and dust problem occurs then the appropriate Norton chemical cartridge:

2 x 7500-1 organic vapours

2 x 7500-2 acid gases

2 x 7500-3 combined acid gases and organic vapours

2 x 7500-4 ammonia

fitted with 2 x 7500-6 dust filter and 2 x 7500-14 filter covers.

4. Protector Safety Products (NZ) Ltd

RFF 30 (Lunguard) full face mask fitted with either:

RC4 OA 500cc particulate canister; or

R C4 2 A 500cc multi-purpose canister

RFF 32 (Lunguard) full face mask with a connecting hose to:

RC40A 500cc particulate canister; or

RC42A 500cc multi-purpose canister; or

RC1042A 1000cc multi-purpose canister.

R FF4 0 Full facepiece negative pressure.

CLASS III: POSITIVE PRESSURE AIR PURIFYING OR AIR SUPPLIED RESPIRATORS

IIIA: For use in asbestos concentration up to 10 times the current hygiene standard (10 fibres per ml) but not for use with crocidolite or amosite).

(There are currently no respirators approved in this category).

IIIB: For use in asbestos concentration up to 50 times the current hygiene standard (50 fibres per ml (5 fibres per ml crocidolite and amosite)).

I. Wormald Safety Limited

RACAL Airstream AH4 Helmet

RACAL Airstream Dustmaster 11 Helmet

2. 3M New Zealand Ltd

AIRHAT SYSTEM

W 344 Comprising of:

W 2995 Helmet

W 3003 Filter

W 3008 Test Plate

W 2954 Battery Pack

AIRHAT SYSTEM

W 326

Together with helmet, filter, and battery pack

IIIC: For use in asbestos concentration up to 100 times the current hygiene standard (100 fibres per ml (10 fibres per ml crocidolite and amosite)).

1. 3M NZ Ltd

3M W298 — Positive pressure half-face piece with tube and belt assembly. This system must be used with one of the following:

(1) full face shield

(2) goggles (with or without other devices such as ear muffs, hard hat etc.).

2. Martindale Electric Company (NZ) Limited

Martindale Mark IV positive pressure powered respirator fitted with fine dust filter. .

Martindale Clean Air Helmet fitted with high efficiency filters.

CLASS IV: POSITIVE PRESSURE HIGH EFFICIENCY AIRPURIFYING OR AIR SUPPLIED RESPIRATORS FOR USE IN ASBESTOS CONCENTRATIONS UP TO 400 TIMES THE CURRENT HYGIENE STANDARD (400 FIBRES PER ML (40 FIBRES/ML CROCIDOLITE AND AMOSITE)).

1. 3M (NZ) Ltd

W5005 Hood (Whitecap Helmet):

W5006 Abrasive Blasting Helmet:

W2860 Hardcap System:

— together with the W2031 HE Positive pressure filter unit (when used with positive pressure recycled air).

2. Protector Safety Ltd

RPM 81 HMH (powered respirator with half mask and hood)

RPM 81 FF (powered respirator with full face mask) with RCHEF 81 Dust Filter.

3. Babcock Engineering Ltd

Babcock Breathing Air Set (when used with compressors which are recycling air containing asbestos).

4. Siebe Gorman, a division of James North and Sons (NZ) Limited

Siebe Gorman power mask mark III.

5. Dominion Construction Co Ltd

MSA Powered Air Purifying Respirator with MSA Type 3S

Face mask complete with 2 x ultrafilter type H, belt and battery charger (part No 463355) (filters — part No 463284).

6. Wormald Safety Limited

RACAL Airstream Breatheasy III Unit in conjunction with an approved compatible fullface mask.

CLASS V: POSITIVE PRESSURE EXTERNAL AIR SUPPLY OR SELF-CONTAINED BREATHING APPARATUS FOR USE IN ASBESTOS CONCENTRATIONS OVER 400 TIMES THE CURRENT HYGIENE STANDARD (OVER 400 FIBRES PER ML (OVER 40 FIBRES/ML CROCIDOLITE AND AMOSITE)).

1. Protector Safety Products (NZ) Limited

Protector RFF34 (Lunguard) positive powered respirator (with the RXCheba PVC hood as an optional extra).

Protector 9811.02 Survivair Airline Respirator (with the RX-Cheba PVC hood as an optional extra).

Protector Air Supplied Hood No RHC48 PVC.

Protector RHD 60 air supplied hood operated with a purified air supply.

NB: The above 4 items will need a filtered air supply and the RWF 12 regulator is approved for this purpose.

Protector 9832.02 (Surviv(iirr) self-contained breathing apparatus.

Air Supplied Hood RHA - 62.

RFF 44 full facepiece, positive pressure — suitable for use when attached to a suitable air supply.

2. 3M (NZ) Ltd

W5005 Hood (Whitecap Helmet):

W5006 Abrasive Blasting Helmet:

W2860 Hardcap:

- all together with the W203 1.

HE positive pressure filter unit (unless used with a suitable external clean air supply).

3. Babcock Engineering Ltd

Babcock Breathing Air Set — (when used with a clean air supply).

Domnick Hunter DHB2A positive pressure breathing air set.

4. New Zealand Safety Limited

A2Q21D CABA set (Positive Pressure)

NZ Safety Constant Flow Respirator with M71 ESTO — full face panoramic mask: mark I and mark II models.

5. Dominion Construction Co Ltd

Auer BD78P — Compressed air breathing apparatus in the positive pressure mode.

Note: All approvals for external air supplied sets are subject to air supply pressure being of at least 30 lb/in = (170 kPa).

Appendix IV: Letter of disassociation

A letter of disassociation was received from Professor Glass on 26 April 1991.

The letter arrived too late for either members of the Medical and Industrial Issues Working Party or the Asbestos Advisory Committee to consider. The text is reproduced below:

I regret I do not feel comfortable with sections 5, 7, and 8 [the sections titled “Fibre type, dose and disease”. “The asbestos register”, and “Diagnostic procedures”].

Section 5 [“Fibre type, dose and disease”] is poorly referenced and makes bold unsubstantiated statements about the mechanisms of the disease process.

Sections 7 and 8 [referring to the medical register and diagnostic procedures]

I do not believe the composition of the working party was such that it has the competence to give such detail about how a register could be organised.

Further there is a lack of clarity about the relationship of section 8, Diagnostic procedures to section 7 which reinforces my belief that the working party do not understand the practicalities involved.

Yours sincerely,

W I Glass

Associate Professor in Occupational Health

Part 3:
Report of the
Working Party
on the
Management
and Disposal of
Asbestos

ARCHIVE

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Introduction

In the time available the working party decided to concentrate most of its efforts on a study of overseas developments and their relevance to New Zealand.

We evaluated codes of practice, regulations and research data from the United States, the United Kingdom and Australia. The relevance to New Zealand was assessed and comparisons made with current legislation and practice.

From this study, it became apparent that New Zealand has not kept pace with research and developments in relation to:

1. The identification of asbestos and materials containing asbestos present in buildings, structures, plant and equipment.
2. The assessment of risk/potential risk posed by asbestos *in situ*.
3. The responsibilities of property owners and those having control of premises, plant and equipment for the development and implementation of procedures/systems for the management of risks.

The New Zealand Asbestos Regulations 1983 basically apply to people who are actively working with asbestos as opposed to persons who may be exposed to asbestos in other environments.

Extent of asbestos use in New Zealand

With the exception of asbestos cement products, the manufacture of products containing asbestos in this country has been minimal compared to the United States, the United Kingdom, Australia and some other industrialised nations.

We did not attempt to quantify the amount, or identify the location, of asbestos in New Zealand due to the lack of data. It is known that from World War II until the mid-1970s extensive use was made of asbestos in this country.

Asbestos is widespread in buildings, structures, vehicles and equipment where it is found in the form of fireproofing; insulation (both acoustic and thermal); wall and roof claddings, e.g. asbestos cement sheeting; brake linings, clutch facings, gaskets and lagging.

An inquiry about the use of asbestos was recently conducted by the Victorian Occupational Safety and Health Commission. Its report, *Asbestos: An Inquiry, Usage in Victoria, Substitutes and Alternatives*, published in October 1990, indicated (see sections 4.1 and 4.2, pp 27-28):

It is known that asbestos products are widely present in office buildings, factories, shops and domestic dwellings constructed between 1960 and the mid -1970s. However, there is no reliable mechanism to survey the presence of these products nor the policies for their removal.

Fixed usage in this report means usage of asbestos or asbestos-containing products which are already in place and may have been for substantial periods of time. They may be found in various buildings, structures and facilities ranging from a small isolated office to a multi-storey public building.

Common fixed usage of asbestos was as insulation (from fire, heat and noise), cement materials (pipe and building materials), vinyl floor tiles, spackling, rubbers and plastics, paints and sealants or mastics.

Several factors coincided to bring about a dramatic increase in post-war enthusiasm for and usage of asbestos materials in the construction industry; suitability, low cost of asbestos and asbestos-containing products; the

weight to efficiency ratio of asbestos materials as against the traditional material such as reinforced concrete; and in Australia the very effective promotional programmes by manufacturers....

Strong marketing from the asbestos product manufacturers combined with the cheapness of the products led to their increased use as alternatives to reinforced concrete as a fire retardant on steel beams. Increase in the construction of multi-storey buildings encouraged such usage.

Up to about 1977, the construction of nearly all multi-storey buildings and most major construction sites involved the use of large quantities of asbestos materials... Asbestos products usually exceed the expected life span of buildings (40 years)... Clearly, this has implications for any removal programme.”

The situation in New Zealand would not be dissimilar to that of Australia. Some public and private sector agencies in New Zealand have already removed asbestos products and materials from their buildings and employed substitutes in manufacturing processes.

Key elements of a national strategy

In addressing our terms of reference we adopted, with some modifications to suit New Zealand circumstances, the general principles formulated by the Australian National Occupational Health and Safety Commission, as summarised in the *Worksafe Australia Asbestos Code of Practice and Guidance Notes* (August 1988) — hereafter referred to as the *Worksafe Australia Code*.

General principles

These are as follows:

- (a) The ultimate goal is for New Zealand workplaces and homes to be free of asbestos.
- (b) All occupiers should assess their premises to determine the risk posed by the presence of asbestos. A management plan should be developed to manage the asbestos risk after appropriate consultation with all interested parties.
- (c) Asbestos removal may not be immediately necessary but should be completed before a structure or part of a structure is demolished.
- (d) Removal of asbestos should be subject to priority setting, determined by the condition and location of the asbestos.
- (e) Asbestos presents a risk only when it is airborne. The risk to health increases as the number of fibres inhaled increases.
- (f) Wherever practicable, substitutes should be found for asbestos products. Such substitute products should be thoroughly evaluated before use to ensure that they do not constitute a hazard. Ultimately, all asbestos products should be eliminated.
- (g) Asbestos which has been incorporated into a stable matrix can be found in many working environments. Provided the matrix remains stable, and no act is carried out which produces instability or asbestos dust, it presents no health risk.
- (h) The presence of asbestos *in situ* should be identified.

- (i) No person should be exposed to risk of inhalation of asbestos in the course of employment without being provided with full information about the occupational health and safety consequences of exposure and appropriate control strategies.
- (j) At present it is not possible to assess whether there is a level of exposure in humans below which an increased risk of cancer would not occur. Accordingly, exposure should always be limited to the minimum feasible level.
- (k) Asbestos removalists and maintenance workers in an asbestos environment need suitable protection.
- (l) The recognised occupational exposure standard is adopted by the competent New Zealand authority/authorities in the light of overseas developments and experience. The method used to measure exposure is set by the competent New Zealand authority/authorities.
- (m) Products for sale which contain asbestos should be labelled accordingly.
- (n) The spraying of asbestos should be prohibited. All future use of asbestos for insulation should be prohibited.

We consider that these general principles should form the basis of a national strategy to be adopted by New Zealand.

We believe the present legislation does not adequately address the identification and management of risks to health posed by asbestos.

The lack of a national strategy for dealing with asbestos *in situ* in buildings, workplaces and private homes has resulted in widespread misunderstanding of risk and control methods, and lack of action necessary for the prevention of asbestos-related diseases.

It is recommended that New Zealand adopt an integrated national strategy for the management of asbestos incorporating the general principles stated above.

It is also recommended that the *Worksafe Australia Asbestos Code of Practice and Guidance Notes (August 1988)* should be adopted as a basis for a national strategy. Such a strategy, incorporating legislative revision and a national code of practice, should be implemented for workplaces, schools and places of public assembly.

Asbestos in homes

We believe the issue of asbestos in homes can be best addressed through the provision of information, education and technical advice. Where any contractor is employed to remove, treat or carry out alterations to asbestos or asbestos-containing products in homes then a “workplace” situation exists and the relevant controls based on a risk assessment should have effect.

The strategy

We recommend that the key elements of the national strategy be as follows:

- 1. Control of the importation of asbestos and products containing asbestos.**
- 2. Control of the sale of asbestos and products containing asbestos.**
- 3. Control of hazards associated with activities and processes involving asbestos, and the manufacture of products containing asbestos.**

4. **Identification and recording of asbestos and materials containing asbestos *in situ* (e.g. in buildings, structures, plant and equipment), including location, quantities, type, use and condition.**
5. **Assessment and management of risks posed by asbestos, and materials containing asbestos, *in situ* and standardisation of identification and measuring techniques.**
6. **Identification and assessment of less hazardous substitutes for asbestos.**
7. **Control of the removal and disposal of asbestos, and material containing asbestos, including notification procedures.**
8. **Training of personnel including asbestos workers, removalists and enforcement agency staff and licensing of asbestos removalists.**
9. **Promulgation of information and provision of education for trades people and the public about the health risks of asbestos and precautions necessary.**
10. **Provision of effective means to ensure the strategy is implemented.**
Note: Two members dissented from this strategy item — see appendix II.
11. **Provision of adequate enforcement and substantial penalties for non-compliance.**

Note: Two members dissented from this strategy item — see appendix II.

Outline of a national strategy

Control of importation

We considered the need for a national register covering importation, location, quantities, use and condition of asbestos.

Value was seen in having a register identifying imported asbestos and products containing asbestos. Various means of preventing and controlling the importation of asbestos were examined. Current New Zealand controls are imposed under section 48 of the Customs Act 1966.

Problems were foreseen in accurately identifying all imported products containing asbestos, particularly where it may be present in minor amounts or as an incidental constituent. Labelling is the preferred option. Importers should be responsible for identification and labelling. Certification procedures could not be relied on in some product areas, e.g. electrical goods:

The extension of the present prohibition order on amosite (brown asbestos) and crocidolite (blue asbestos) was discussed. As part of the ultimate goal of removing all asbestos in New Zealand, we consider it is now appropriate to prohibit the importation of all friable asbestos into New Zealand. It is recognised that industry may have a need to import asbestos for some existing operations. Provision could be made for such operators to seek an exemption.

It is recommended that an asbestos import register not be set up unless a solution can be found to the practical difficulties cited above.

It is further recommended that the Customs Act 1966 be amended to ban

the importation of all friable asbestos. Provision should be made in the Customs Act 1966 to allow operators of existing industrial operations to seek an exemption.

Control of sale

Consumers are entitled to know whether products contain asbestos, the potential risk to health and precautions required. They should also have the choice of using substitutes if available. Adequate labelling of such products would provide this choice. Liability for labelling should rest with those engaged in the manufacture, supply, and sale of products containing asbestos. Provisions similar to the *Draft Victorian Asbestos Code of Practice* (hereafter referred to as the *Draft Victorian Code*) part I, section 5.3 (p 6), and the *Worksafe Australia Code* section 4.4 (p 10), provide useful guidance on this aspect.

It is recommended that all products manufactured after a specified date, and known to contain asbestos, should be labelled accordingly.

Control of hazards in manufacture and repair work

The Asbestos Regulations 1983 already provide fairly comprehensive coverage of the hazards associated with manufacturing, assembly and repair work involving asbestos.

Useful information about precautions relating to the manufacture of asbestos-containing products, repair and assembly of asbestos-containing materials, and servicing of brakes, clutches, etc. in garages is contained in the *Draft Victorian Code* part 2 (pp 20-31).

We recommend the adoption of guidelines, similar to those contained in the *Draft Victorian Code* part 2 (pp 20-31), in New Zealand.

Identification and recording of asbestos *in situ*

An important first step in dealing with potential risks posed by asbestos is to identify where the material is located. Until this is done, no corrective action can be taken to determine and manage any risk which may exist. We believe that the owners of property containing asbestos have a responsibility to identify, and assess the degree of risk, if any, and adopt a management plan for dealing with any risks.

Setting up a national register of workplaces, as set out in the *Worksafe Australia Code*, is considered bureaucratic and cumbersome. We considered the labelling requirement in the *Worksafe Australia Code*, section 12, to be impractical. There is strong support, however, for a register in a standardised format to be maintained by building owners (except for home owners) which would record details of asbestos located in those premises. A standardised register should be used as the source of information regarding the presence of asbestos in any undertaking. Such a register should form part of any deed of sale should the property be disposed of.

Such registers should be available on request to maintenance personnel, the Department of Labour's Occupational Safety and Health Service (hereafter referred to as OSH) and other interested parties.

It is recommended that all property owners whose properties are workplaces (dwelling houses would be excluded from this requirement) keep a standardised form of register.

Provisions similar to those contained in the *Worksafe Australia Code's* sections 3.5 (p 7) and 5.3 (p 14) should be adopted as appropriate.

In addition, it is recommended that the question of dealing with asbestos in dwellings held by large-scale organisations, such as the Housing Corporation, be examined separately.

Assessment and management of risk

Where employees may be exposed to asbestos, the employer or occupier of the premises should assess the risk resulting from exposure of the employees taking into account:

- (a) The nature, age, layout and condition of asbestos-containing material in the workplace;
- (b) Whether the work carried out by any employee is likely to cause disturbance of asbestos;
- (c) Any factors considered relevant by the employer, the employees or a health and safety representative.

An appropriate programme for managing identified risks should then be prepared based on the *Worksafe Australia Code's* section 7 on "hazard control" (p 17).

The *Worksafe Australia Code* did not fully address the management and assessment of risk. We see advantages in adopting a quantitative method for risk assessment. An example is contained in the Australian publication: *Controlling Asbestos Hazards: Interim National Guide to Identification, Evaluation and Control of Asbestos Hazards*, published by the National Consultative Committee on Occupational Health and Safety (undated).

The working party also saw merit in the *Draft Victorian Code's* section 13 (pp 13-15) on risk evaluation.

In our opinion, however, the *Worksafe Australia Code* may deal inadequately with risks presented by asbestos-containing products. While accepting the intent of the code, we believe the following amendments should be made to expand on other potential risks:

- (a) Asbestos-containing products may deteriorate with age, chemical damage, abrasion, through weathering or from moss, or algal colonisation. These may lead to a breakdown of the matrix and release of asbestos fibre.
- (b) The underlining beneath the statement: "these types of material do not present a significant health risk" in the *Worksafe Australia Code's* section 5 (p 13) on asbestos cement products. should be removed.

It is recommended that implementation of an asbestos risk assessment and management programme should be required in workplaces where asbestos is identified to ensure that all practicable steps are taken to prevent unnecessary exposure of persons to asbestos hazards.

It is further recommended that the identification process, and the preparation of a management plan for dealing with risks posed by asbestos, should be required to be completed within a finite period.

The provisions of the *Worksafe Australia Code's* figure 1 (p 6) contain useful guidance on the relevant principles of an asbestos management plan and should be adopted.

Laboratory accreditation

In order to obtain consistency of approach, valid comparisons and accuracy in the analytical techniques used in laboratories, it was agreed that all laboratories undertaking identification and determination of fibre concentrations be registered TELARC laboratories (or equivalent). The equivalence provision will allow the National Australian Testing Authority (NATA) to continue to be used by New Zealand enterprises.

It was agreed that TELARC signatory personnel should take full responsibility for the analysis.

Identification techniques for asbestos

For the same reasons advanced above, it was agreed that the methodology for identification techniques be standardised. The National Australian Testing Authority's *Guidelines for the Identification of Asbestos* should be adopted for this purpose. The aim is to have tests which are repeatable so as to allow cross-referencing.

Environmental monitoring

We assessed the UK Health and Safety Executive's *Guidance Note E11 10* and the *Worksafe Australia Code* and agreed that they were essentially the same.

We believe that the environmental monitoring techniques for asbestos removal to be implemented in New Zealand should be the same as set out in the Australian Worksafe Code's recommendations for air sampling for paraoccupational situations (where people are working beside asbestos removal or other operations):

... this method is intended to be used for the field sampling of airborne asbestos dust in paraoccupational situations. These include sampling in the following situations:

- *outside asbestos stripping and encapsulating areas*
- *inside decontamination rooms*
- *for clearance monitoring after asbestos stripping and encapsulating*
- *inside buildings or ships which contain asbestos" (p 109).*

An airborne-asbestos monitoring programme is necessary for asbestos removal to determine whether the precautions and work procedures are carried out in a satisfactory manner and to prevent the exposure of workers to harmful environments. Wherever practicable, a minimum of 480 litres sampling volume should be adhered to, i.e. 2 litres per minute flowrate, for four hours.

With respect to clearance monitoring or ambient air testing, we are of the opinion that sampling should be accompanied by simulated work activity or by some other representative activity which would disturb surface dust. An appropriate number of samples should be taken to ensure that the results accurately represent the conditions throughout the affected area. Final clearance monitoring should only be undertaken, or supervised, by an independent third party approved by OSH or by a TELARC laboratory.

It is recognised that clearance monitoring during simulated work activity is at variance with the *Worksafe Australia Code*. However, our proposal is a stricter requirement which gives a truer indication of the state of the work environment.

Note: In our opinion the membrane filter technique for measuring fibres in air is the preferred method. However, it is not comparable with the more definitive method, SEM energy dispersive X-ray analysis, which is being increasingly advocated overseas. While the latter is recognised as the

preferred method, for practical and economic purposes the membrane filter method is considered acceptable, even though it is being taken to its limits.

It is recommended that New Zealand adopt the provisions of the *Worksafe Australia Code* in respect of environmental monitoring with the modifications as noted above.

In addition, it is recommended that for clearance purposes in areas where asbestos work has been undertaken, a thorough visual inspection precede any monitoring. Any visual evidence of settled dust will indicate inadequate cleanliness and should be addressed before monitoring is undertaken.

Site clearance levels

We are of the opinion that the site clearance level set in the United Kingdom of 0.01 fibres is an ideal level but it is acknowledged that there will be circumstances during the removal process where this may not be achieved. However, there is a discrepancy between the Australian and the United Kingdom documents on the procedure for conducting sampling. We have sought clarification from the Australian authorities as to why no level was mentioned in the *Worksafe Australia Code*. This was apparently done to allow individual states to set their own levels and methods.

For clearance, and ambient monitoring procedures, it is considered essential that people undertaking this task should be adequately trained in sampling techniques and have an adequate understanding of the analytical methods involved.

“Asbestos dust”

We consider that the term “airborne dust” used in the *Worksafe Australia Code* section 3, General principles, item 6 (p 5) is inconsistent in terms of the New Zealand approach. It would be more consistent to use the term “asbestos dust” as this is already defined in the New Zealand Asbestos Regulations 1983.

It is recommended that for consistency of approach New Zealand continue to use the term “asbestos dust”.

Asbestos database

A significant database of results of asbestos analysis derived from bulk samples is held by the DSIR environmental dust laboratory at Gracefield, Lower Hutt.

It is recommended that the DSIR database be upgraded, publicised and made accessible to interested parties, thereby avoiding unnecessary duplication of sampling and analysis. Issues of commercial sensitivity and client confidentiality would need to be resolved, however.

Substitutes for asbestos

Synthetic mineral fibres (SMFs) form a high proportion of the available substitute materials for replacement of asbestos. SMFs pose risks. There is a need for a national strategy to deal with them, as with asbestos, and for education about them.

Synthetic mineral fibres

We reviewed two Worksafe Australia documents on SMFs:

- *Technical Report on Synthetic Mineral Fibres and Guidance Note on the Membrane Filter Method for the Estimation of Airborne Synthetic Mineral Fibres* (1989); and
- *National Standard and National Code of Practice for the Safe Use of Synthetic Mineral Fibres* (May 1990).

Also AS3640 *Workplace Atmospheres — Methods for Sampling and Gravimetric Determination of Inspirable Dust*, which is identical to the United Kingdom document *UK HSE General Methods MDHS14 and MDHS559 Man-Made Mineral Fibres*.

It is recommended that the issue of SMFs, being substitutes for asbestos, be deferred for further study of their safety, viability and availability.

It is recommended that the current New Zealand exposure level for superfine fibreglass and ceramic fibre of one fibre/ml should be reviewed in the light of continuing overseas studies and concern. Consideration should be given to reducing the Workplace Exposure Standard to 0.5 fibres per millilitre of air (f/ml) in line with the *Worksafe Australia Standard for Synthetic Mineral Fibres* (May 1990).

Subject to the views of the Medical and Industrial Issues Working Party, with respect to the inspirable dust standard for SMFs, we are of the opinion that the present level of 5mg/m³ is adequate but should be kept under review.

Removal and disposal of asbestos

Removal

A review of material available to the working party indicates that much work has been carried out in the United Kingdom and Australia on appropriate techniques for the safe removal and disposal of asbestos and material containing asbestos. In both countries, excellent guidelines and codes of practice, giving practical advice in plain language, have been developed to reinforce and assist in giving practical effect to legislative requirements.

A comparison of the United Kingdom's Local Authorities Accident Prevention and Safety Service's *Asbestos Safe Removal and Treatment Code of Practice and Training Manual* (hereafter referred to as the *LAAPSS Code*), the *Victorian Draft Asbestos Code*, the *Victorian Draft Regulations* and the *Worksafe Australia Code*, with current New Zealand practices inclined the working party towards recommending adoption of the Australian approach which focuses particularly on the management of risk. However, the *LAAPSS Code* contains excellent flow charts on procedures which we believe could also be adopted in this country.

There are significant differences between the Australian and United Kingdom publications and current New Zealand practices.

The United Kingdom and Australian procedures cover the management of asbestos from discovery to complete removal and disposal in a comprehensive manner. The responsibilities of all parties involved in these processes are clearly identified.

The United Kingdom and Australian codes advocate consultation with workers and other affected persons. This is based, in part, on legislative requirements that do not exist in New Zealand. We believe that consultation and information-sharing convey many advantages and, accordingly, their use is advocated.

Removal contractors require authorisation. In Australia this takes the form of authorised "removalists" and in the United Kingdom licensing is required. We believe that "removal contractors" in New Zealand should be either licensed or authorised in a more comprehensive way than is currently contemplated by the *Asbestos Regulations 1983*. It is noted that exceptions are allowed from the licensing requirement in the *Draft Victorian Code* part 6, section 44 (p 49).

It is recommended that New Zealand should adopt provisions similar to those contained in the *Worksafe Australia Code* and *Draft Victorian Code*

relating to the licensing and authorisation of removal contractors.

Daily air monitoring on a random basis, of buildings partially occupied, by a person independent of the contractor who is undertaking the removal work is considered desirable. However, it was agreed that the responsibility for visual inspection should lie with the contractor.

We recommend that the *Worksafe Australia Code's* section 5.1.2 (p 66) be amended to provide for repair staff, who may be required incidentally to handle or work with asbestos-contaminated equipment, to be made aware of their asbestos roles; and for the adequacy of decontamination facilities for the repair staff engaged in the removal of asbestos.

It is important that any removal work only be carried out following agreement between the contractor and the client on the precise nature of the work to be undertaken. To ensure this occurs, provisions covering planning, programming and execution of work should be adopted.

It is recommended that New Zealand models its approach on the *Worksafe Australia Code* but makes modifications to the Guidelines contained therein by incorporating some of the better provisions of the *LAAPSS Code*, e.g. flow charts. Provisions covering planning, programming and execution should be adopted.

It is recommended that New Zealand adopt the Australian Standards relating to respirators (AS1716), filters (AS1715) and vacuum cleaners (AS3544).

Disposal of asbestos waste

The necessity of disposal, which stems from the removal of asbestos, presents certain risks if not handled correctly.

We note there are differing responses by local authorities to the disposal of asbestos, and materials containing asbestos: landfills and associated issues. Some local authorities have disposal sites available to receive asbestos, others do not.

Where asbestos and asbestos products are disposed of in landfills a potential danger exists if any subsequent building activity should take place on the site. This may arise from lack of identification of contaminated areas if authorised sites are not available and if there is no provision for recording on land titles that land has been used for such purposes.

It is recommended that where asbestos is disposed of by burial, the land title be tagged to this effect.

We consider the present requirement of the Asbestos Regulations 1983, that asbestos material disposed of by tipping be covered by 25 cm of earth, to be inadequate except as a short-term measure.

The working party recommends that a final cover of at least 1 metre deep, for asbestos waste, be required.

We consider that the *LAAPSS Code* provisions relating to removal and disposal are sound in relation to the marking of vehicles transporting asbestos materials. Such vehicles in New Zealand should be marked and labelled in accordance with the hazardous substances class 9 requirements.

Notification procedures

The present system is cumbersome because it is necessary for employers to notify restricted work with asbestos under the Asbestos Regulations 1983 and the Construction Regulations 1961. There is also a requirement in the asbestos regulations for the employer to notify both the Departments of Labour and

Health of the intent to carry out restricted work. It is also necessary in terms of the legislation for at least one person on each job to hold two separate certificates of competency: one as a safety supervisor: the other for restricted work with asbestos. A single certificate should be established to cover both requirements.

It is recommended that notification of restricted work with asbestos to the competent authorities be confined to the Construction Regulations 1961 as notifiable construction work.

Training of personnel, including asbestos workers and enforcement agency staff, and the licensing of removalists

Wider training requirements were discussed and the LAAPSS curriculum was considered. It is felt that those involved in asbestos work should receive on-the-job training and formal off-the-job instruction. There was concern that different standards could be operating in the industry.

Training should encompass the various levels of industry that may be required to work with, work on, or be exposed to asbestos. Such training needs to be structured to suit an individual's needs in respect of the level of exposure.

All employers who apply to be approved removalists should, as part of the approval procedure, undertake training relevant to the control, planning and removal techniques, methods of disposal; and medical aspects of asbestos removal work.

Asbestos removal workers should undertake training on removal techniques, use of respiratory equipment, construction of decontamination areas and health issues.

People who work on or with manufactured products that contain asbestos will require training about protective equipment, the hazards of working on or with asbestos and health issues.

People who work in an environment in which asbestos *in situ* may be present — but not actually working on or with asbestos — will require information and/or training of a general nature, which should be provided by the employer on the job.

It is recommended that a national training standard be adopted for each of the respective levels.

All persons actively working with asbestos should be examined to measure their competence against the standard.

Training should be provided by a recognised training agency/agencies that have been approved by the Department of Labour's Occupational Safety and Health Service.

All such training should be a requirement of the asbestos regulations.

It was considered important that existing asbestos "certificate of competence" holders be required, after a finite period following any necessary amendments to the Asbestos Regulations 1983, to attend training courses and obtain the new qualification. OSH inspectors should undergo similar training.

Provision of information/education

We had access to existing information material and draft pamphlets to be produced by OSH. We considered that, for general education purposes, all asbestos forms should be treated as one category. Separate treatment causes confusion and leads to false assumptions that some asbestos forms, e.g. chrysotile (white asbestos), are not a health hazard.

Information covering the presence, use and disposal of asbestos should be made widely available in a variety of ways. This should take the form of pamphlets, videos and technical bulletins. This information should then be used in the education and training of tradespeople and others required to handle asbestos or products containing asbestos.

Such information should also be available to members of the public and home owners. We consider that OSH is an appropriate body to co-ordinate and monitor this process and should receive, and contribute, adequate resources to ensure that education and training authorities, and institutions include appropriate information in their courses. Details about the hazards of asbestos, and precautions to be taken during its use, should be made available to all trade groups.

It is recommended that:

- (a) **For general education purposes, no distinction should be made between asbestiforms in terms of their health risk.**
- (b) **Information on asbestos should be made widely available through various media.**
- (c) **OSH should play a co-ordinating and monitoring role in ensuring education and training authorities include appropriate information in trade training and similar courses.**
- (d) **OSH should receive adequate resources for training purposes and allocate priorities accordingly.**

Implementation of strategy

While the working party recommends the adoption of the *Worksafe Australia Code*, with the modifications mentioned in this report, it recognises the need for effective legislative backing.

It is suggested that this can be achieved either:

- through setting out the general principles and requirements in an enactment such as the proposed Occupational Safety and Health Bill; or
- by amendment to the Asbestos Regulations 1983.

In identifying the *Worksafe Australia Code* as the appropriate document for adoption in New Zealand to handle asbestos *in situ*, we note that it does not cover the manufacture, repair or assembly of asbestos-containing products and materials. Some useful provisions relating to these aspects are, however, set out in the *Draft Victorian Code*, as mentioned earlier in this report.

The working party further recommends that the New Zealand Asbestos Regulations 1983 be amended to provide for property owners' responsibilities, including identification of asbestos *in situ*, risk assessment, plans for risk management, protection for persons exposed to asbestos, revised disposal requirements and keeping of records.

Note: Two members of the working party dissented from this section and the above recommendation — see appendix II.

Enforcement

It appears that area health boards will still have involvement in the public health and housing areas when reforms, aimed at ensuring that OSH undertakes the primary responsibility for occupational safety and health issues, have been completed. OSH is expected to do more clearance inspections of workplaces because area health boards will (consequent to the transfer of functions to OSH) have fewer resources devoted to health and safety issues in workplaces.

However, area health boards have a fundamental responsibility to keep people out of the treatment and rehabilitation system and will need to liaise and audit on health-related issues both in workplaces and elsewhere.

In the interim we believe there will be a strong need for good communication to be maintained between the construction and factory inspectorates of OSH and area health boards.

There is also a clear need for consistency in the implementation of legislative requirements.

It is assumed that the proposed Occupational Safety and Health Bill will clearly spell out the responsibilities of all agencies in this matter.

It is recommended that, pending any legislative change, good communication and liaison be maintained between OSH and the area health boards.

It is recommended that a suitably amended *Worksafe Australia Code* should be adopted as a New Zealand code of practice.

Appendix I: Terms of reference

(1) To examine the need for a nationwide strategy for the management of asbestos in workplaces and homes and make appropriate recommendations;

(2) To review the methods used to remove and dispose of asbestos, notification procedures and substitution methods and make recommendations;

(3) To investigate the need for a national register covering importation, location, quantities, use and its condition and make recommendations;

(4) To review the need for education about asbestos and make recommendations regarding the presence, use and disposal of asbestos within workplaces and homes;

(5) To establish for asbestos and synthetic mineral fibres (SMFs) standard environmental monitoring and identification techniques [for use in the workplace] in light of the latest overseas and New Zealand technical developments and experience, and to establish standardisation of testing laboratories.*

(6) If found necessary, the terms of reference may be expanded following approval of the Asbestos Advisory Committee.

[(7)The management of SMFs in the workplace.]§

* These words were deleted by the Asbestos Advisory Committee on the recommendation of the Management and Disposal of Asbestos Working Party.

§ The seventh term of reference was added by the Asbestos Advisory Committee on the recommendation of the Management and Disposal of Asbestos Working Party.

Appendix II: Dissenting views

Two members of the Management and Disposal of Asbestos Working Party expressed dissent on various points. Their dissenting statements are reproduced below:

(a) Mr J J Bryant

I wish to dissent from Items 10 and 11 of Recommendation 3 on Page [87] of the Draft Report on the Management and Control of Asbestos; Item 10, [Implementation of Strategy] on Page 167 of the Draft Report; and Recommendation 28 on Page 167 of the Draft Report.

My principal objection is based on the proposal to make it mandatory upon all building owners to carry out surveys, risk assessments, and preparation of management plans. In my judgement, and from work carried out as a trial using the guidelines set out in the “Worksafe Australia Code of Practice and Guidance Notes” the costs involved in the preparation and assessment of these plans, and the impossible implementation of some, are very significant and totally out of proportion to the assessed risk in most cases, and a major imposition on owners and employers.

Obligations already exist for the occupier/employer to provide a safe place of employment in the Factories and Commercial Premises Act and the Construction Act. I believe, therefore, that the “Worksafe Australia Code of Practice and Guidance Notes” referred to throughout the Report, should be used as it was intended — as a guide and not a mandatory regulation. We draw your attention to the title page which states:

*“GUIDE to the control of Asbestos Hazards in Buildings and Structures”
“CODE of Practice, for the Safe Removal of Asbestos”*

“GUIDANCE NOTE on the membrane filter method for estimating airborne asbestos cement”

Further, as stated in the Worksafe Code, within Australia a Code of Practice is — quote, “an instrument of an advisory character” unless otherwise provided for.

J J BRYANT

Employers’ Representatives to the Working Party

(b) Mr A Prowse

I wish to dissent from Items 10 and 11 of Recommendation 3 on Page [8] of the Draft Report on the Management and Control of Asbestos, Item 10, [Implementation of Strategy] on Page [16] of the Draft Report; and Recommendation 28 on Page [16] of the Draft Report.

My objection is based on the proposal to make it mandatory for all Building Owners/Occupiers/Employers to carry out surveys, make risk assessment, and prepare a management plan to control the risk to health by the presence of any form of asbestos. Such a requirement would impose costs, which are out of all proportion to any assessed risk in the greatest majority of cases.

From work carried out as a trial on a small factory in Victoria, using the guidelines as set out in the “Work Safe Australia Code of Practice and Guidance Notes” the findings and the assessed risk would be a major imposition and cost to most undertakings in New Zealand.

The results of a major study in West Australia, and from previous work in other parts of the world, any risk to health from asbestos cement products “in situ” is negligible and that environmental monitoring, results are at least one order of magnitude below the normally accepted methods of detection.

There already exists a statutory requirement in both the “Factories and Commercial Premises Act” and the “Construction Act” to provide a safe place of employment. The present “Asbestos Regulations” Clause 7, also has a prohibition on the exposure of employees and other persons lawfully in the vicinity to asbestos dust as defined.

The proposal to adopt, with suitable amendments, the “Worksafe Australia Code of Practice and Guidance Notes” can then be used as it was intended — a guide to achieving these statutory requirements.

It is pointed out that the Australian document is divided into 3 very distinct sections:

“GUIDE to Control of Asbestos Hazards in Buildings and Structures.

“CODE OF PRACTICE for the Safe Removal of Asbestos”

“GUIDANCE NOTES on the membrane filter method for estimating airborne asbestos dust.”

A C PROWSE

Industrial Hygienist

Part 4
Report of the
Working Party
on Asbestos
Aid and
Compensation
Issues

Contents, part 4

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Members of the Working Party on Asbestos Aid and Compensation Issues

Convenor

John Collins Accident Compensation Corporation

Members

Peter Duncan Solicitor

Michael Littlewood Fletcher Challenge Ltd.

Summary of conclusions and recommendations

This section identifies most of the conclusions contained in the following report. Clearly it is inappropriate to treat these in isolation, but in detailing them here the general flavour of the report may be ascertained.

1. Committee on Reform of Social Assistance

“We are unaware of the impact of this Committee’s work on our proposals. However, we acknowledge that the decisions on the recommendations from both Committees will finally be a matter for the Government” (refer p 12).

2. Interpreting statistical information

“... we caution against directly applying overseas data to the New Zealand situation ...” (refer p 15). In relation to interpreting the New Zealand information, we note four factors that impact on obtaining a real picture. (Refer p 16)

3. Compensation entitlement

We consider a range of options including the *status quo* in the section, compensation options for the future. We believe that there is a need to provide additional compensatory opportunity for asbestotics. We conclude that the principle should apply to the delayed effects of any disease (not just the effects of asbestos) arising from any employment within New Zealand. (Refer p 20)

4. Medical screening

“Because of the quite specific situation with the latency of the effects of asbestos, we recommend that a formal administrative system be established to provide screening for those who have been occupationally exposed ...”

Our report goes on to suggest various options for responsibility and comments on funding issues. (Refer p 21)

5. Counselling services

We recommend that the agency or option identified under ‘4’ above, also “be the channel for referring victims and their families to the appropriate counselling services ...” We comment on funding and note that there is merit in amending the Accident Compensation Act “to enable the full range of rehabilitation services to be available to victims and/or their affected family members” given that cover exists for the victim. (Refer pp 21-22)

6. Relevant publicity

We believe that there is a need for a co-ordinated approach to communicating information regarding asbestos to various parties. We comment on some of the issues and parties to be targeted. (Refer p 22)

7. Criteria for compensation entitlement

We make the following observations in the concluding section. Other factors:

- That any extension of entitlement should be restricted to situations where a New Zealand employment can be incriminated. (Refer p 22)
- That the existing acceptance criteria used by the Accident Compensation Corporation is appropriate but we express concern at an apparently inadequate and inconsistent application of entitlement in some cases. (Refer pp 22-23)
- That the value of compensation entitlement for asbestotics should be no less than what is provided to other victims under accident compensation.

(Refer p 23)

- That the value of lump sum compensation entitlement under the Accident Compensation Act has been significantly eroded over the years. (Refer pp 23-24)
- That the effective date for any extension of compensation entitlement be for incapacity (or dependency) on or after “a future date”. (Refer p 25)
- That, if the broad thrust of this paper is accepted, the level of entitlements under the Workers Compensation Act be reviewed and that common law actions be limited to “losses” between the commencement of incapacity and the effective date. (Refer p 25)

The issue

The substantive terms of reference set by the Asbestos Advisory Committee for this working party were:

To examine aid and compensation issues arising from asbestos exposure.

Although this statement appears to be relatively straightforward, there are in fact a number of aspects intricately inter-related in the issue. In particular, the working party identified the following aspects:

- (a) **Aid and compensation:** covers not only the purely compensation elements but also raises the question of aid by way of support, networking and counselling of asbestos victims and, where applicable, their families. Traditionally the emphasis has been on compensatory aspects for the victims alone.
- (b) **Asbestos-related diseases:** include asbestosis, mesothelioma, carcinoma of the lung (“lung-cancer”) and other asbestos-related cancers. Each of these diseases is characterised by a period of latency: that is, the existence of a time interval, usually of many years, between first exposure to asbestos and the clinical manifestation of the disease. There are also other asbestos-related conditions, e.g., pleural changes, which generally do not produce clinically disabling effects.

Our primary concern lies with those whose exposure results in the diseases and consequent incapacity and disability.

- (c) **Non-occupational exposure:** The current debate regarding compensation aspects has centred on occupational situations. The working party is mindful of the suggested potential risk faced by others. By way of examples from some overseas studies:

Family members and carers:

Children in schools; and

Passengers on public transport system, e.g. railways.

At this point then it is sufficient to say that there is a risk, albeit relatively insignificant, of persons suffering asbestos-related diseases where there is no direct “occupational” link.

- (d) **Other diseases:** In the next section, Historical background, we traverse the legislative provisions applicable to asbestos-related diseases. It is important to bear in mind that there are other diseases and conditions that require consideration for equity reasons. There is an inherent danger in adopting special rules purely for those who have an asbestos-related disease.

- (e) **Incidence:** Accurate information is difficult to obtain due primarily to the latency period involved with asbestos-related disease and the inherent difficulty in building a complete picture many years later.

Historical background

In order to gain an adequate appreciation of the existing legislative provisions relating to compensation for an asbestotic (sufferer from asbestos-related disease) it is necessary to traverse the history within New Zealand over the last 30 years and, to a lesser extent, the current situation in some overseas jurisdictions.

Workers' Compensation Act 1956

Section 19 of the Workers' Compensation Act 1956 is appended as appendix 1. Compensation was recoverable for an industrial disease if the following conditions could be met:

- (a) That the disease is due to the nature of an employment in which the worker was employed within two years or, in the cases set out in s.19(2)(a), 20 years and in s.19(2)(aa) 10 years before the date of death or commencement of incapacity for work.
- (b) That incapacity or death resulted from the disease.
- (c) That — unless the death has been preceded, whether immediately or not, by any period of incapacity in respect of which the employer is liable — the incapacity commenced or death happened not more than two years (or, in the cases set out in s. 19(2)(a), 20 years, and in s.19(2)(aa) 10 years) after the worker has ceased to be employed by the employer from whom the compensation is claimed.

Five points are worth noting here:

- (i) That incapacity for work and not just incapacity was the criterion;
- (ii) That there was no compensation payable in respect of death or incapacity for work which occurred after the worker had left the relevant employment beyond the specified period unless the death was preceded (not necessarily immediately) by a period of incapacity for which the employer was liable;
- (iii) That the contraction of a disease over a lengthy period did not negate entitlement;
- (iv) That the prescribed periods referred to in (a) above were amended twice during the 1960s. As the note at the end of Section 19 of the Workers' Compensation Act 1956 (appendix I) indicates, the 20-year period in subsection 2(a) was originally five years; and in 1967 the period of 10 years was introduced for hydatid disease; and
- (v) That while occupational disease, quite properly, has always been covered under workers' compensation legislation, there are some technical difficulties in fitting this into a scheme which is primarily structured to accommodate "accidents", e.g. date of accident and time limitations.

The Law Commission report on the accident compensation scheme (1988) noted that "the Workers' Compensation Act 1956 is still technically in force stating rights for individuals injured at work before 1 April 1974". In our view, even if a case were to be brought (against a presumably "uninsured employer"),

point ‘(ii)’ immediately above would effectively debar entitlement for the vast majority of employees because the disease would not have manifested itself within the two-year period. Even if such a case could be brought, the level of weekly compensation has not been altered since 1972 and, therefore, would not be worth pursuing.

Woodhouse Report 1967

In September 1966 a royal commission of inquiry was established to report on compensation for personal injury in New Zealand. What is commonly known as the Woodhouse Report was presented in December 1967. The most pertinent section is paragraph 290 and we quote (a) to (c) in full:

290. Sickness and Disease

(a) It is possible to argue that if incapacity arising from accidental injury is to be the subject of comprehensive community insurance then interruption of work for reasons of sickness or unemployment, or other causes which cannot be guarded against should equally be included.

(b) We are able to understand the logic of the argument, but the proposal we now put forward is far-reaching and is designed to remedy a situation which at present is the subject of attention by unrelated processes which produce inconsistent and inadequate results. Moreover, there is a need for more statistical information in the area of sickness and disease before firm decisions could be taken as to the cost of a scheme which would embrace incapacities arising from these cases.

(c) Nevertheless, certain industrial diseases are included within the scope of the present Workers’ Compensation Act. For this practical reason we think they should remain within the protection to be afforded under the new scheme, but for work-connected injuries only, and upon the conditions at present laid down by the Workers’ Compensation Act.

Gair Report 1970

The Report of the Select Committee on Compensation for Personal Injury in New Zealand in response to the Woodhouse Report was tabled in October 1970. In considering “industrial disease” the select committee recommended that

Under the Earners’ Scheme, the contracting of an industrial disease or the incurring of a comparable disability should count as an accident. For both schemes, border-line areas should be defined as recommended by the Royal Commission in paragraphs 289 and 290 (c) and (d) of its report.

Note: Paragraph 290(c) is quoted above. Paragraph 290(d) relates specifically to deafness and paragraph 289 sets out the general principle relating to contingencies to be covered — therefore, neither of these have been included in this paper.

Accident Compensation Act 1972

The views expressed in the Woodhouse Report relating to industrial diseases were accepted and were carried over into the Accident Compensation Act 1972 to come into effect on 1 April 1974. Section 67 of this Act (see appendix II) is practically a direct take from section 19 of the Workers’ Compensation Act 1956 (see appendix I). However, there are two extensions worth noting:

(a) In line with the overall thrust of the Accident Compensation legislation, cover was broadened from employees to earners: and

(b) The opportunity to introduce prescribed periods for other diseases by way of Order in Council. This provision is contained in s.67() and referred to in s.67(2)(c). No Orders in Council were passed in relation to this even though, for example, the risks with asbestos were then becoming recognised on the international scene.

Accident Compensation Act 1982

There were no legislative amendments affecting section 67 of the 1972 Act until the consolidation and amendment Act of 1982, which came into force on 1 April 1983. In this consolidation Act the “occupational disease” provisions moved to section 28. A copy of section 28 is contained in appendix 111. For our purposes the only substantive change was that all time limits and references to prescribed periods were removed. The only qualification is that the person has been employed in the offending employment on or after 1 April 1974.

This legislative provision is still current.

We took the opportunity to review the Hansard record relating to this Act to ascertain what points, if any, might have arisen relevant to asbestos, latency periods, etc. Neither the Introduction on 16 September nor the Report of the Labour and Education Committee on 24 November nor the Second Reading Debate make any comment of interest to us other than a reference in the Introduction to “omitting time limits” (i.e. the prescribed periods in the Workers’ Compensation Act and Accident Compensation Act 1972).

Accident Compensation Corporation policy

It is necessary to trace the history of the policy relating to occupational disease. The full text of section 67 of the Accident Compensation Act 1972 is attached as appendix II.

The crucial words in this section, upon which determination of cover depends, are as follows:

Where an earner’s total or partial incapacity for work or an earner’s death results from any disease, and the disease is due to the nature of any employment in which the earner was employed ... cover shall exist ...

Note: For the purposes of this exercise the differences in the wording between the 1972 and 1982 Acts are immaterial.

The above words were adopted from section 19 of the Workers’ Compensation Act 1956. Similar, but not always, identical words are to be found in provisions in the workers’ compensation legislation of other jurisdictions, notably the United Kingdom and Australian states. The words “due to the nature of the/any employment” have been the subject of judicial interpretation in these jurisdictions and in New Zealand on a number of occasions.

Initially, the then Accident Compensation Commission relied heavily on two decisions of the Australian High Court, *The Commonwealth v. Bourne* (1960) 104 CLR 32 and *The Commonwealth v. Thompson* (1960) 104 CLR 48, in preference to the earlier New Zealand decision of Archer J in *Lynch v. Attorney-General* [1959] NZLR 445. This led to the issuing by the Commission in March 1976 of a “Summary of Commission Policy and Interpretations” relating to section 67. This policy statement contained a five-step test, which was subsequently incorporated in an internal *Technical Information Circular* No. T194 and in a *Medical Newsletter* issued to registered medical practitioners.

The Accident Compensation Appeal Authority on a number of occasions considered the proper interpretation of section 67, and in several of its early decisions the authority specifically adopted the Commission’s test.

A copy of the five-step test is attached as appendix IV but, in summary, the first four tests dealt with the inherent risk factor. The fifth test and (with the benefit of hindsight) probably the most important test was the last one:

This tendency, property or characteristic does not have to be present throughout the whole of the employee's work, but may exist only at a particular time or in a particular place.

By applying the fifth test it was possible to admit claims from "employees" (read "earners") where a particular element or aspect of the employment caused the disease. It was not necessary for the employment itself to have an inherent tendency to cause the particular disease. In recognition of the importance of this fifth test the existing five test policy was replaced by the following policy:

A disease is due to the nature of a person's employment where it can be shown either:

- *that there was a causal connection between the particular work and the disease; or*
- *that the general class of work in which the person is engaged has by its nature a recognised tendency to cause the disease and, accordingly, people in that class of work are exposed to a special risk of contracting the disease.*

The Corporation's policy and procedures relating to occupational diseases are set out in its *Claims Manual* Part 3. Apart from the statement regarding occupational diseases in general there are some specific comments relating to asbestos exposure. Appendix V contains copies of the relevant extracts.

The December 1990 High Court decision in *McKenzie v. Attorney General* (Judgment 3 December 1990 A.No. 257/90) regarding the meaning of "employment" is of significance and is covered later in this section. (See "The McKenzie decision".)

Law Commission Report 1988

In 1987 the Law Commission was asked to review the Accident Compensation Act 1982 and the way in which the scheme was operating. It presented its report (to which we have already referred) and traversed the difficulties in dealing with industrial diseases and other accidents which have their origin before 1 April 1974.

The *Law Commission Report* explains this more than adequately and so we quote the relevant paragraphs in full:

Temporal Scope

167. One matter which has been raised with us in a number of contexts is the temporal scope of the scheme. The present law in general terms applies if "the accident" which caused the injury "occurred" on or after 1 April 1974. Consider three situations:

- (1) an accident earlier than 1 April 1974 has no apparent effect until after that date: this can be so of some spinal injuries;*
- (2) emotional harm arising from sexual abuse of a child occurring before 1 April 1974 does not appear until later;*
- (3) an occupational disease (covered by the legislation as an extension of the injury concept), which has its origins before 1 April 1974, does not manifest itself until later.*

168. The present Act does deal in part with the last of these cases. The date of the commencement of the incapacity arising from an occupational disease

is taken as the date of the happening of the accident (1982 Act, S28(2) and (3)). But the Act applies only if the disease is due to the nature of any employment in which the person was employed on or after 1 April 1974. Accordingly, it does not apply if the person affected with the illness left the relevant type of employment before 1 April 1974. We think that condition draws an unfair line which has nothing to do with the cause and development of the disease. The problem is particularly acute with a disease like asbestosis where the latency period is about 15 years and where the prospects of bringing a successful claim on the basis of the pre-1974 laws are very remote. Accordingly, we recommend that the requirement of relevant employment after 1 April 1974 be removed. It will be enough if the incapacity begins after that date.

169. That proposal can be seen as being based on a broader concept — that it is the incapacity which is at the heart of the scheme and that any provision determining the temporal scope of the scheme should apply to the first appearance of the incapacity rather than to the accident or other events which gave rise to the incapacity. That broader concept leads us to the conclusion that the scheme should apply to all incapacities (otherwise within the scope of the legislation) which began after 1 April 1974 and have not already been the subject of remedial attention.

Further detail is provided in the “Summary of Report”:

15. Latent disease

Recently it has become apparent that some industrial diseases have a latency period of 15 years and even longer. One is asbestosis.

Accident compensation is concerned with industrial diseases having origins in an employment which continued after 1 April 1974. Responsibility for earlier cases was left to those with an earlier liability. No attention was given to the risk of the insidious onset of disease already at work but which would not produce incapacity for a good many years. Today the victims may be without a remedy, either because passage of time has removed possible defendants or given rise to a Limitation Act defence.

The time has arrived when latent effects of pre-1974 injury or industrial disease could be taken into the accident scheme without undue strain upon the fund. We so recommend.

There is a limitation period of one year in The Accident Compensation Act. It is not and ought not to be used in such a context as this. That view is reinforced by the problems which can surround latent disease. The present provision should disappear.

Our only comment on the above quotes is that the last paragraph is not strictly correct. First, although there is a so called limitation period of one year, the actual wording of the legislative provision (section 98) gives four grounds for excuse for failing to comply with that time limit. It is quite clear that the four alternative (not cumulative) grounds seldom debar such claims. Secondly, and probably more importantly when considering latent disease, is the wording of section 28(3) — see appendix III — which lays down that the date the incapacity commences equates with the date of accident. Therefore, the countdown of the one year “limit” doesn’t commence until the first day of incapacity.

The Rehabilitation and Incapacity Bill 1990

This Bill was introduced by the then Minister of Labour prior to the 1990 election. It was designed to provide benefits for those suffering physical or mental incapacity (including disease). This meant that some of the equity concerns were being addressed although, as the proposal was to be “fiscally neutral”, there was to be a reduction in comparable benefits for those who had been covered by the Accident Compensation Act.

The Bill has not proceeded past the first reading but as drafted was to come into force on 1 April 1992 and was to apply in respect of incapacity on or after that date.

However, this year a working party was established in relation to ACC/incapacity (and this is covered in more detail later).

“The McKenzie decision”

Mention was made of this in relation to ACC policy. In early December a relevant decision was delivered by Heron J in the High Court. It was concerned with a claim for damages by McKenzie against the New Zealand Electricity Department, and dealt with the preliminary question of whether, on a proper interpretation of section 28 of the Accident Compensation Act 1982, McKenzie should have cover. McKenzie worked from 1950 to 1963 on power station sites where he was exposed to asbestos dust. From 1963 to 1981 he continued working for NZED, but in positions where he had no exposure to asbestos.

Heron J considered the relevant words of section 28(1) “... and the disease is or was due to the nature of any employment in which the person was employed as an earner during a period that ended on or after the 1st day of April 1974 ...”.

He concluded that when considering the words “disease is or was due to the nature of any employment”, the word “employment” means the job itself rather than the contract of employment. But when considering the time span “employment ... that ended on or after the 1st day of April 1974”, the word “employment” now means the contract of employment.

The result is that, in Heron J’s view, McKenzie has cover under the Accident Compensation Act even though his exposure to asbestos ended in 1963: “Mr McKenzie has at least (subject to proof of causation) the security of Accident Compensation.” He ends by saying “The consequences of this decision will be that the case is to be referred to the Accident Compensation Corporation accordingly.”

There are two points of particular interest:

- (i) McKenzie and his representative have lodged an appeal to the Court of Appeal as they wish to proceed with a common law claim against the NZED;
- (ii) The effect of the McKenzie decision, if it is accepted as good law, is to extend cover to asbestotics and other occupational disease sufferers if the victim remains with the same employer until at least 1 April 1974 even though the earner may have “left” the incriminated element of the work before that date.

Committee on Reform of Social Assistance

Following the election of a new government in November 1990 the Prime Minister established the Committee on Reform of Social Assistance. The committee has seven working parties which cover a broad spectrum of welfare aspects, including housing, health care, targeting and ACC/incapacity.

We are unaware of the impact of this committee's work on our proposals. However, we acknowledge that the decisions on the recommendations from both committees will finally be a matter for the Government.

Overseas jurisdictions

In New Zealand until 1974 an accident victim had a number of options. Workers' compensation paid a limited amount for accidents in the course of employment and industrial diseases. The Criminal Compensation Tribunal had some funds to compensate victims of criminal acts by others. All motorists were required to carry third-party insurance against killing or injuring others. Otherwise, accident victims could sue for damages in court, or rely on modest social security payments.

Accident compensation is, apart from minor exceptions, a "no fault" system. Victims qualify for compensation whether they or any other person or no-one is to blame. Even in the case of the minor exceptions, cover still exists even if entitlement is restricted and, hence, no action for injury can be brought in the courts.

The scenarios overseas basically reflect the situation in New Zealand prior to 1974. Notwithstanding this, it is still appropriate to briefly review other jurisdictions.

There are two main streams in those countries and states that provide cover. First is the situation where employees (and in a very few jurisdictions, self-employed persons) have an entitlement under workers' compensation legislation. Some jurisdictions utilise what have been termed "Schedules of Occupation Diseases" but the absence of these (as in New Zealand) does not preclude acceptance in appropriate cases. In fact in 1976 an asbestos-related condition was recorded in a Schedule in just one Australian state (South Australia) and was not referred to in other jurisdictions, e.g. the United Kingdom. In Ontario, Canada, asbestos-related diseases have only recently (1988) been scheduled under workers' compensation legislation following an extensive royal commission report produced in 1984.

The second broad category of remedy is a common law action. For our purposes most of these relate to persons contracted to work for an employer, but common law actions are not restricted to this situation. (In some jurisdictions this remedy is available in addition to prescribed entitlements under workers' compensation legislation.) The employer is not deprived of the defences of "*volenti non fit injuria*" or contributory negligence. In practice, proof of negligence is a difficult matter and the costs of an action are invariably considerable. If one takes this with the lengthy latency period, it can be reasonably concluded that the proving of negligence, based on actual or imputed employer knowledge at the time of exposure many years ago, will prove difficult. However, with existing knowledge, such a defence is less sustainable for claims brought in the future and particularly next century. It is, however, also timely to remind ourselves of some of the risks of litigation. Some 25 years on, the following extracts from the *Woodhouse Report* make interesting reading:

92. *Those who support the common law action claim that by this process alone can an injured plaintiff recover a complete indemnity for his losses. It is not argued that the system can produce absolute justice, but it is certainly expected that awards will reflect with reasonable accuracy the losses they are supposed to indemnify. The truth is that often the result of an action is far removed from doing so.*

93. *In the first place whenever there is contributory negligence the damages*

must be reduced, and not infrequently unhappy plaintiffs have discovered that the final figure they must accept for damages is well below the assessed losses. But of more significance (because it cannot be controlled) is the evident disparity which occurs in awards for similar incapacities.

94. Disparities arise from all the risks of the adversary system — from difficulties of proof, the ability of advocates, the reactions of juries, and unquestionably mere chance itself. Some plaintiffs achieve successes which seem quite dazzling; others are dismayed by failures which surprise even the defendant. In fact, the uncertainty which inevitably must surround such a contest has prompted the comment that the system has the attraction of a lottery with every hopeful plaintiff satisfied that in his case the result must certainly be a major prize. Accidents occur, however, in circumstances which frequently defy the subsequent disembodied attempts to recapture them; and indeed there may be no eye-witnesses able to come before the Court to give evidence. In every common law jurisdiction there is growing criticism of all this.

95. In the United States observers have been led to describe the system as one which —

... is loaded with unfairness. Some get too much — even many times their losses — especially for minor injuries ... Others among the injured, as we have just suggested, get nothing or too little, and most often it is the neediest (those most seriously injured) who get the lowest percentage of compensation for their losses

96. When Fleming wrote The Law of Torts (regarded generally as one of the important modern works on the subject) he was still in Australia. From this vantage point he criticised the fault system as one —

Which is content to leave the compensation of casualties to the fortuitous outcome of litigation based on outdated and unrealistic notions of fault. What is required is to assure accident victims of compensation and to distribute the losses involved over society as a whole or some large portion of it.

And he later refers to the accelerating obsolescence of tort doctrines resulting from the pressure of modern social forces.

97. We have been privileged to read in advance of publication of an admirable book by a Canadian author who has wryly given it the title of The Forensic Lottery. He has referred to “the complex problems of causation” which are inherent in the system and which carry “their inevitable toll of mistakes and injustices.” In his view “liability for negligence is a capricious and unsatisfactory method of compensating the victims of injury or disease”.

Dimensions of problem

There are really two aspects here — the risk of potential exposure and the likely incidence of asbestos-related disease. Earlier in this paper we referred to the fact that accurate information was difficult to obtain. Much of the documentation originates from overseas and this needs to be interpreted before translating it into the New Zealand context. We had hoped to develop a statistical model that would identify the likely dimensions and, hence, the potential liability. However, the required base information is not readily obtainable. Within the time constraints of reporting the working party has not attempted to develop a

statistical model. In some respects such a hypothetical model may not be overly helpful. However, the following information gives some guide to us.

Overseas information

- (a) The American Bar Foundation’s Interim Report entitled *Asbestos Litigation in the United Kingdom* traverses the employment situation — see extract in appendix VI.
- (b) Outside of the true employment situations is covered in Harvard University’s Energy and Environmental Policy Center’s *Summary of Symposium on Health Aspects of Exposure to Asbestos in Buildings* (1989) — see extract in appendix VII.
- (c) According to an article in *Business Week* of January 28, 1991 “more than 100,000 asbestos-injury cases are pending on the nation’s dockets” within the USA.

New Zealand information

Again, **we caution against directly applying overseas data to the New Zealand situation.** Some information that we have obtained is as follows:

- (a) There appears to have been some mining of chrysotile asbestos at Takaka. The information we have obtained indicates that the fibre was of low quality and was mixed with imported fibre. Production was believed to be some 4060 tonnes per month and appears to have been used from the mid-1950s until the early 1960s.
- (b) The workforce employed by New Zealand’s two main asbestos manufacturing plants is estimated to have totalled some 8,000. This is a rough estimate of the total number of employees who may have been exposed to asbestos while working in those factories. The two New Zealand plants have, to date, settled 11 claims, some of which also had cover under the accident compensation scheme.
- (c) In relation to mesothelioma, the Input Cancer Registry has collated the following incidence figures:

1954	2	1975	6
		1976	6
		1977	5
1962	1	1978	5
1963	2	1979	11
1964	0	1980	16
1965	2	1981	3
1966	3	1982	12
1967	1	1983	12
1968	3	1984	14
1969	4	1985	9
1970	1	1986	9
1971	1	1987	12
1972	6	1988	14 (provisional)
1973	6	1989	6 (provisional)
1974	2		

- (d) An article entitled “Lung Cancer, Smoking and Exposure to Asbestos in New Zealand” appeared in the February 1991 volume of the *Journal of Occupational Health and Safety (Australia and New Zealand)*. It relates to studies undertaken by W Glass, I Kawachi and N Pearce. Its concluding paragraph states:

Occupations with known or suspected asbestos exposure, previously identified in the literature, include: construction industry workers (which include asbestos and insulation workers, plasterers, carpenters and cabinetmakers), painters, plumbers and fitters, mechanics and repairmen, boilermakers, shipyard workers, welders and metal moulders. An association between asbestos-related cancers and these occupations was also found in the current study, particularly among machinery fitters, plumbers, welders, boilermakers, metal moulders and platers, and electricians ...and among construction-related workers These results indicate the need to recognise asbestos as a significant occupational hazard in New Zealand.

- (e) The Accident Compensation Corporation has received 80 claims relating to occupational asbestos exposure in the past 3 years. These claims can be broken down into three broad categories:
- (i) Asbestos exposure before 1 April 1974 (and, hence, no entitlement under the current provisions): 10
 - (ii) Asbestos exposure and asbestos-related disease after 1 April 1974 (and, hence, entitlement): 31
 - (iii) Asbestos exposure after 1 April 1974 but no disease (and, hence, no entitlement currently): 39
- (f) In endeavouring to interpret the above information we note the following pertinent points:
- Difficulty or delay in diagnosis by the medical profession;
 - Difficulty in linking the latent disease with an earlier exposure;
 - Lack of awareness generally regarding possible ACC entitlement for occupational disease; and
 - The current legislative criteria preclude ACC accepting certain claims, e.g. if incriminated employment ceased before 1 April 1974.
- (g) The other factor in endeavouring to establish a model is the issue of smoking *vis a vis* asbestos in relation to lung cancer. This is a mixed medical/legal matter which may need to be addressed separately if the basic thrust of this paper is accepted.

Compensation options for the future

This section deals primarily with compensation issues. We will return to the aid/support aspects in the next section, Aid.

The working party believes that there are four broad options for the future (although there are sub-options within these). These four broad options will be dealt with in full:

- (a) The *status quo*.
- (b) No cover under accident compensation scheme.
- (c) A stand alone scheme for asbestos-related disease.
- (d) Extend the present accident compensation scheme.

The current situation is as follows:

- (a) A person who is incapacitated by an occupational disease due to the nature of his/her employment after 1 April 1974 is covered by the accident compensation scheme. (Note the alternative interpretation in the McKenzie decision.) In some situations, including many involving asbestos-related disease with its lengthy latency period, this may not result in a weekly earnings-related compensation payment as the person may no longer be classified as an earner when the incapacity commences, e.g. retirement from earning, lengthy unemployment. However, there is a potential to receive the following entitlements:
- Weekly entitlement up to \$1,179;
 - Lump sum entitlement up to \$27,000;
 - Medical and other “reasonable” expenses;
 - Funeral expenses up to, say, \$2,000; and
 - Weekly entitlements and lump sums for dependants.

Appendix VIII contains financial models that give a guide to the value of possible entitlements under accident compensation. By way of specific examples:

- (i) A 50-year-old earning \$40,000 pa and dependent wife and child. Assuming total incapacity and life expectancy of one year, provides a benefit with a present value of \$300,000 under accident compensation for the claimant and dependant; and
- (ii) A man in his mid-40s earning \$25,000 per annum and dependent wife. Assuming his life expectancy to be about 10 years provides a benefit with a present value of \$300,000 also plus, say \$100,000 for the estimated value of other support benefits.

As a generalisation, the financial worth of accident compensation benefits is not fully appreciated. The most valuable of these benefits are the weekly earnings-related compensation and the dependants’ weekly compensation. Case I in appendix VIII highlights the situation of a 67-year-old and a 47-year-old who do not have entitlement to weekly compensation. If, for example, the 47-year-old were unemployed due to some other factor, e.g. redundancy, but asbestos is subsequently identified as an incapacitating factor, that person may have no entitlement to weekly earnings related compensation.

- (b) The second option is a common law possibility. This requires a person attempting to establish negligence on the part of another. Within the employment situation sometimes a common law action is linked with workers’ compensation or employers’ liability claims or entitlements but publicity indicates that some out-of-court settlements may be taking place. Within New Zealand there are few recent precedents although a notable exception of particular interest is the McKenzie claim against the NZED (referred to earlier). We are unable to quantify a likely range of settlements due to the lack of actions reaching the Courts in New Zealand.

In the earlier section, Historical background we commented at some length about common law actions and the inherent injustices and practical difficulties in that approach.

- (c) The third and final option is a benefit from the Department of Social Welfare. This option really picks up those who have no entitlement under the others, e.g:

- earners who changed employment before 1 April 1974 to a non-incriminating one and do not opt for a common law action; and
- non-earners who, therefore, cannot avail themselves of establishing an occupational disease.

The benefits payable by the Department of Social Welfare are generally means-tested, so direct financial comparisons are inappropriate. However, by way of example:

For a married person with 2 children the rates effective from 1 April 1991 are:

- | | |
|---------------------------|----------------|
| - Weekly entitlement | up to \$229.88 |
| - Family Support | \$64.00 |
| - Accommodation allowance | variable |

Summary of *status quo*

The main advantage of the *status quo* is that of its familiarity and, hence, its application is fairly clear. Even if the McKenzie decision alters the existing interpretation, there is unlikely to be any real problem in overall administration.

Disadvantages centre on the lottery element. Earlier in this paper we have traversed the difficulties inherent in common law actions. The discrepancy between means-tested benefits provided by the Department of Social Welfare and earnings-related compensation payments by the Accident Compensation Corporation are well known. The lottery element is compounded with conditions such as asbestos-related disease due to its latency.

In summary then, the *status quo* is workable but is inequitable. We hasten to add that this equity issue is not restricted to asbestotics or even those who suffer from occupational diseases.

No cover under accident compensation scheme

Sub-options under this scenario are:

- To exclude asbestos-related disease totally; or
- To remove cover for occupational disease totally.

It is also, in theory, possible for legislation both to abolish entitlement under accident compensation for incapacity on or after 1 April 1974 and to preclude any legal remedies by way of common law action. This would achieve a perceived relative equity as all claimants would come into the social welfare scheme, but is clearly not a viable option.

Any advantages seen in any of the above would be heavily outweighed by the following disadvantages:

- Such legislation would contravene ILO Convention No. 121;
- The change would signal a reversal of the trend accepted both within New Zealand and overseas jurisdictions this century; and
- It would be politically inexpedient.

In summary then this is not a viable option unless it is taken in conjunction with the introduction of a special scheme.

A stand-alone scheme

As already indicated, this option is viable as it could provide compensation for asbestotics as a special case. The sub-options are:

- Earners and ex-earners not covered by ACC where incriminated employment ceased pre-1 April 1974;
- All earners and ex-earners where incriminated employment arose at any time;
- All asbestotics (including non-earners).

The advantage of a stand-alone scheme is that it recognises asbestos-related disease as a special case and enables special rules to be applied without constraint. For example, it also has the potential to recognise the impact of “down-wind” cases — where those not directly employed but still subject to asbestos exposure can be covered by the scheme.

In reality, asbestos-related disability is not a special case and the introduction of a stand-alone scheme inevitably raises the issue of equity for other disease-induced disability. A second disadvantage is the administrative cost of establishing and maintaining, perhaps for decades, an agency to administer these claims. The third disadvantage is the issue of identifying an appropriate funding regime mix from the following:

- Levy on ex-mining companies;
- Levy on importers and/or ex-importers;
- Levy on manufacturers and/or ex-manufacturers;
- Levy on users; or
- General taxation.

Summary of a stand-alone scheme

There are practical implications in adopting a realistic funding structure due to the difficulties in identifying the potential payers, their relative contributions to the overall hazard which the community now faces and then establishing their continued existence. The option is, however, a possibility.

Extending the accident compensation scheme

This broad option has a range of sub-options which might cover asbestos specifically, occupational disease or incapacity in general and includes:

- (i) Provision for asbestos only;
- (ii) Occupational diseases resulting in incapacity commencing after 1 April 1974 where the incriminated employment ceased before that date;
- (iii) Personal injury by accident (or alternatively any condition) resulting in incapacity commencing after 1 April 1974 where the incriminated cause occurred before that date;
- (iv) Occupational diseases resulting in incapacity commencing before 1 April 1974;
- (v) Personal injury by accident (or alternatively any condition) resulting in incapacity commencing before 1 April 1974.

Comments on the five sub-options:

(i) Asbestos only

This is effectively the previous option of a stand-alone scheme, but which is administered by the ACC. As stated previously, this is a possible option. Formal integration within the accident compensation scheme does tend to blur the previously identified advantages and disadvantages:

- Special case recognition is less clear;

- The perceived inequity increases: and
- Administration is simpler but funding is still difficult.

(ii) Occupational disease with incriminated employment pre-1 April 1974 and incapacity after that date

This situation was addressed by the 1988 Law Commission report and the pertinent paragraphs have been quoted previously — see pp 11-12 and specifically paragraphs 167(3), 168 and the first three paragraphs in 15.

(iii) Incriminated accident pre-1 April 1974 and incapacity after that date

This was also addressed by the 1988 Law Commission report — see paragraph 169 on p 11 of this paper — but with the caveat that the incapacity has “not already been the subject of remedial attention”. The *Woodhouse Report* also faced this question — see paragraph 290(a) and (b) on p 8 of this paper. Finally, the Rehabilitation and Incapacity Bill tabled late last year adopted the philosophy of providing benefits for those suffering physical or mental incapacity (including disease) on or after 1 April 1992.

(iv) Occupational disease with incapacity commencing pre-1 April 1974

This option would provide cover to those who either had no entitlement or had not chosen to pursue a claim previously. Conceivably this includes the self-employed; ex-employees whose latent disease was excluded by the prescribed periods under the Workers’ Compensation Act; and ex-employees who for other reasons have not pursued claims.

(v) Incriminated cause with incapacity commencing pre-1 April 1974

This option is basically an extension of option (iv) for reasons of equity. The logic being that there is a natural flow from “asbestos” to “occupational diseases” to “incapacities” in general.

Summary of sub-options

Sub-options (iv) and (v) can be dispensed with quite quickly. Both of these would involve claims where the incapacities commenced more than 17 years ago. The vast majority of cases would have had at least the opportunity to initiate remedies under the old regime and the re-litigation and administrative implications are horrendous. It also raises the potential for argument that the pre-1974 accident injury cases should also be re-opened. For these reasons we discard these options.

Sub-options (ii) and (iii) introduce the latency principle to occupational diseases and incapacities in general respectively. This highlights the shortcomings in the legislation in dealing with, for example, asbestos. In a sense then, we have considered options outside of our specific terms of reference. However, like the *Woodhouse Report* and the *Law Commission Report* we acknowledge the logic inherent in the extension. We reluctantly discard the general extension in relation to all incapacity, but wish to strongly support leaving open the option of an occupational disease extension.

Summary

We believe that there is a need to provide additional compensatory opportunity for asbestotics. The leading options are:

- (a) Cover designed specifically for asbestotics and, particularly, for those who suffer as a result of an occupational disease arising from any employment within New Zealand;

- (b) Cover extended under special provisions of the Accident Compensation Act for those who suffer the delayed effects of asbestos exposure arising from any employment within New Zealand; and
- (c) Cover extended under section 28 of the Accident Compensation Act for those who suffer the delayed effects of any disease arising from any employment within New Zealand.

Note: We comment on the term “within New Zealand” in the section, other factors, under the heading “Acceptance criteria”.

Our terms of reference refer specifically to asbestos. **We have no brief to go beyond asbestos as such and, therefore, have no hesitation recommending (b) above. However, we believe that to be consistent and equitable, option (c) is a more logical solution.** Although we have no concrete evidence to support the contention, it is our view that the adoption of (c) is unlikely to be a big financial step beyond (b).

Aid

The preceding section centred on compensation for asbestotics. but our terms of reference require us to consider the broader issue of asbestos aid. The Medical and Industrial Issues Working Party is required, *inter alia*, “to investigate the need for, and feasibility of, establishing and maintaining a register for workers who have been (significantly) exposed to asbestos ...”. In a sense the establishment of such a register would provide the necessary catalyst for the points we wish to cover:

- Medical screening;
- Counselling services; and
- Relevant publicity.

Medical screening

We are aware of employers in New Zealand, e.g. Electricorp, Fletcher Challenge Ltd, James Hardie Industries, which provide a health screening programme for those who may have been exposed to asbestos. Although the specific details vary, the programmes provide the opportunity for ex-employees to be reviewed by a medical “panel”. The frequency of follow-up reviews is determined by the results of the initial screening. We commend the principle. Ideally, this screening should be available more widely and administered by a neutral agency. We note that the gate to accident compensation benefits is the contraction of an occupational disease and that this is quite different from the screening of those who may have been exposed to asbestos and who may not be suffering any disease as a result.

Because of the quite specific situation with the latency of the effects of asbestos, **we recommend that a formal administrative system be established to provide screening for those who have been occupationally exposed.**

Responsibility for this could lie with, for example:

- (a) The employer concerned;
- (b) The local area health board;
- (c) OSH; or
- (d) The ACC.

Time constraints have meant that we have not reached a conclusion as to the most appropriate agency to be responsible for this. We are also conscious of the wider implications arising from the work of the Prime Minister's Committee on Reform of Social Assistance. **We think that whatever option is adopted, the funding should be a charge on employers rather than general taxation.**

Counselling services

There are few precedents within the public sector for support services for victims and/or their families. Generally, the support has come from the so-called voluntary sector or by networking on the part of those affected. Asbestotics and their dependants are not alone in this situation. However, although the financial support provided under either accident compensation or social welfare is generally victim orientated, both agencies can provide assistance by way of home help and attendant care funding.

We recommend that the agency identified as being responsible for medical screening be the channel for referring victims and their families to the appropriate counselling service. Funding for this should be linked with that for the medical screening.

The existing accident compensation scheme precludes support and counselling for families, but **we believe that, consistent with our recommendations for the scheme structure, the Accident Compensation Act should be amended to enable the full range of rehabilitation services to be available to victims and/or their affected family members.** There is merit in this amendment being extended to accident injury claimants as well as the occupational disease claimants covered by our specific recommendation.

Relevant publicity

We believe that there is a need for communication from the relevant agencies covering some of the facts about asbestos, exposure, medical screening availability, access to accident compensation and social welfare and rehabilitation support services.

This may well require separate pamphlets targeted at victims and their families, medical practitioners, and employers. We are particularly concerned about the apparent lack of material available through medical advisers.

Other factors

Acceptance criteria for compensation entitlement

We address here the following points:

- Occupational disease where the incriminated employment is totally or mainly overseas:
- The "standard of proof" required to establish an entitlement.

It is our view that any extension of entitlement to compensation should be restricted to situations where a New Zealand employment can be incriminated. This is in line with the basic tenet of the existing accident compensation scheme and we see no reason to modify that precedent. No problem arises where the evidence clearly incriminates overseas employment only and the

claimant thereby retains a possible remedy “overseas”. Where there is a mix of incriminating employments from overseas and New Zealand there is some difficulty. The difficulties arise, however, not in acceptance of the claim but in assessing the amount of lump sum compensation if the sufferer had a demonstrable, pre-existing, related permanent loss or impairment which can be established. To put the “difficulty” into context we observe that this is no different from all other claims currently submitted to the Accident Compensation Corporation or to insurance companies.

There is an ongoing debate internationally regarding statutory presumptions and policy guidelines or eligibility rules for the adjudication of claims for disease. We have already noted in the section, Historical background, the current criteria in relation to occupational disease but it is appropriate to expand on this aspect.

Given it is decided that claims for asbestos-related diseases should be compensated under the present accident compensation scheme (with such amendments as may be considered appropriate to accommodate the extended latency period) the question of “burden of proof” raises no special problems. Clearly, it would be unacceptable to have a different standard for acceptance of asbestos-related claims compared with other occupational diseases or accident claims generally.

The “standard of proof” associated with criminal and civil court actions does not apply to accident compensation claims. The standard applied by the Accident Compensation Corporation (and approved by the Appeal Authority and the High Court) is that the tribunal dealing with claims must feel “persuaded” by the available evidence that the claim should be accepted. This standard is, and is intended to be, less onerous than the “balance of probabilities” test that applies to civil claims at common law.

The practical implication of the “persuasion” test when applied to asbestos-related disease claims is quite straightforward. First, it must be established by reliable medical evidence that the claimant is incapacitated by a disease associated with exposure to asbestos. Secondly, there must be evidence of exposure to asbestos. If these two requirements are satisfied, “persuasion” of entitlement must follow automatically unless there is conclusive evidence that the disease is due to something other than exposure to asbestos. If the medical evidence associates the disease with asbestos, then the presence of an exacerbating factor or co-contributor such as heavy smoking does not deprive the claimant of entitlement.

Given this is the current policy of the corporation, **we see no need to set a differing standard of proof for acceptance from the standard.** We believe that the above standard is quite clear.

It is not appropriate for our working party to examine individual cases but it would appear that there has been an inadequate and inconsistent application of the Corporation’s general policy in some cases and these have attracted public attention recently.

Value of compensation entitlement

As a basic premise we think that the entitlement should be no less than that provided to other victims under accident compensation.

We have already noted that many asbestos-related disease claimants will be retired by the time a claim is presented and these claimants generally will not be entitled to receive weekly earnings-related compensation. The only significant compensation entitlement for such claimants is the “lump sum compensation” under section 78 (for permanent disability) and section 79 (for other non-economic loss which includes loss of capacity for enjoying life; and pain and

mental suffering). This is no different from any other claimant, but the absence of weekly earnings-related compensation highlights the inadequacy of the current levels of lump sum compensation. **The only observation we wish to make is that the level of lump sums has been eroded by inflation over the years.** The actual movement in the prescribed maxima over the years has been as follows:

Inception (1 April 1974)	$\$5,000 + \$ 7,500 = \$12,500$
1 October 1974	$\$7,000 + \$10,000 = \$17,000$
1 April 1983	$\$17,000 + \$10,000 = \$27,000$

By way of comparison, we have taken the 1 April 1974 amounts as bases and applied both the Consumers' Price Index (CPI) and the National Average Wage (NAW) to them to ascertain the following notional figures:

<i>Base</i>	<i>CPI (1 Jan 91)</i>	<i>NAW (Nov 90)</i>
\$5,000	\$33,482	\$36,285
\$7,000	\$50,223	\$54,428
\$12,500	\$83,705	\$90,713

Adopting a similar approach to the 1 April 1983 figures gives the following:

<i>Base</i>	<i>CPI (1 Jan 91)</i>	<i>NAW (Nov 90)</i>
\$17,000	\$33,612	\$33,318
\$10,000	\$19,772	\$19,599
\$27,000	\$53,384	\$52,917

The effective date

Essentially, there are only two options if it is accepted that compensation should be extended:

- Incapacity post-1 April 1974; or
- Incapacity post legislative amendment, (e.g. 1 December 1991).

Other options in between these are really only variants of the first one.

Factors relevant to using 1 April 1974 as the cut-off date are:

- It provides entitlement for asbestotics and their dependants (or all occupational disease sufferers) whose incapacity commences on or after the advent of the accident compensation scheme;
- It duplicates entitlement for those who have obtained a remedy already via Workers' Compensation Act, common law action or directly negotiated settlement;
- It would be difficult to administer a 17-year backlog in relation to establishing entitlements for claimants. Difficulties include dealing with medical records going back in time, employers which no longer exist and dependants who are reliant on causes of death being recorded on the deceased's death certificates; and
- There would be major funding issues to be faced through levy or general taxation provisions because no financial provision has been made for this "backlog".

Factors relevant to using a date post legislative amendment:

- It provides entitlement for asbestotics and their dependants (or all occupational disease sufferers) whose incapacity commences or continues on or after the date specified where the incriminated employment ceased before 1 April 1974. There is an equity loss for those whose entitlement ceases before the specified date;
- It duplicates entitlement for those who have already sought and obtained a remedy elsewhere;
- Difficulties in administration are lessened but still exist under this option;
- Funding issues are lessened under a pay-as-you-go scheme.

In considering viable compensation scenarios in the section, Compensation options for the future, we identified a special stand-alone scheme. In our view, if this scenario were adopted, the entitlements provided should reflect those available under comparable provisions — in this case, currently occupational diseases under the Accident Compensation Act. There is little merit in developing a different benefit structure. Under a special scheme we still face the same issues in setting an effective date.

In summary then, the equity issue is to be balanced against the other issues. Appendix VIII sets out the financial implications for two theoretical situations. We are concerned about equity and access issues but welfare legislation is seldom backdated. There must of necessity be a cut-off point somewhere. We are also conscious that, although perceived difficulties of administration should not drive a decision, the administration of legislation effective up to 17 years prior to its implementation is untenable.

On balance then, **we favour any extension of compensation entitlement being introduced for incapacity on or after “a future date”**. In situations where the victim dies before that prescribed date then, subject to the normal rules regarding entitlement, the dependants should be entitled to their weekly benefits if dependency continues beyond that date, i.e. dependency equates with incapacity.

To complete the picture, however, we need to consider the categories of asbestotics not covered by the adoption of a “future” effective date:

- Incapacity post-1 April 1974 from incriminated employment in New Zealand prior to that date but suffers incapacity before the effective date. (If incapacity continues beyond the prescribed date, then entitlement commences from that time);
- The dependants of asbestotics who otherwise would have entitlement, but whose dependency period occurs before the effective date. (If dependency continues beyond the prescribed date, then entitlement to weekly compensation commences from that time);
- Asbestotics whose disease is not occupationally originated; and
- Asbestotics whose sole exposure occupationally arises overseas.

In each case, although not widely recognised, there is the option of a common law action being initiated. This raises the issue, to which we have already referred, of entitlement under the Workers’ Compensation Act. **If the broad thrust of this paper is accepted we see a need to:**

- **Review the level of entitlements under the Workers’ Compensation Act (and allow such actions to be brought in terms of the prescribed periods); and**
- **Restrict common law actions to “losses” occurring for periods up until the effective date only.**

Appendix I: Workers' Compensation Act 1956, s 19

Industrial diseases

19. Compensation for diseases arising out of employment —

(1) Where a worker's total or partial incapacity for work or a worker's death results from any disease, and the disease is due to the nature of any employment in which the worker was employed within the prescribed period before the date of the commencement of the incapacity (or the date of the death if there has been no previous period of incapacity), compensation shall be payable as if the disease were a personal injury by accident arising out of and in the course of that employment, and all the provisions of this Act shall apply accordingly, subject, however, to the provisions of this section.

(2) For the purposes of this section, the term "prescribed period" means —

(a) In the case of any disease due to exposure to X-rays, ionising particles, radium or other radioactive substances, or other forms of radiant energy, a period of [twenty years]:

(aa) In the case of hydatid disease, a period of ten years:

(b) In any other case, a period of two years.

(3) No compensation shall be payable under this section in respect of the incapacity or death of a worker if that incapacity commences or that death happens, as the case may be, more than the prescribed period after the worker has ceased to be employed by the employer, from whom the compensation is claimed in any employment to the nature of which the disease is due:

Provided that this subsection shall not apply to the death of a worker when his death has been preceded, whether immediately or not, by any period of incapacity in respect of which the employer is liable under this section.

(4) For the purpose of calculating the weekly earnings of the worker in a claim for compensation under this section, the date of the commencement of the incapacity of the worker (or the date of his death if there has been no previous period of incapacity) shall be treated as the date of the happening of the accident, if he is then employed by the employer from whom the compensation is claimed in any employment to the nature of which the disease is due; and if he is not then so employed, the last day on which he was so employed shall for this purpose be treated as the date of the happening of the accident.

(5) For all the other purposes of this Act, the date of the commencement of the incapacity of the worker (or the date of his death if there has been no previous period of incapacity) shall be treated as the date of the happening of the accident.

(6) The compensation shall be recoverable from the employer who last employed the worker within the prescribed period preceding the date of the commencement of the incapacity (or the date of the death if there has been no previous period of incapacity) in any employment to the nature of which the disease was due, and notice of the death or disablement shall be given to that employer and may be so given notwithstanding that the worker has voluntarily left his employment:

Provided that —

(a) The worker or his dependants, if so required, shall furnish that employer with such information as to the names and addresses of all the other employers who employed him in any employment to the nature of which the disease was due within the prescribed period preceding the date of the commencement of the

incapacity (or the date of the death if there has been no previous period of incapacity) as he or they may possess, and if that information is not furnished or is not sufficient to enable that employer to take proceedings under paragraph (b) of this proviso that employer, upon proving that the disease was not contracted while the worker was in his employment, shall not be liable to pay compensation:

(b) If that employer alleges that the disease was in fact contracted while the worker was in the employment of some other employer within the prescribed period before the date of the commencement of the incapacity (or the date of the death if there has been no previous period of incapacity), and not while in his employment, he may join that other employer as a party to the proceedings before the Court, and if the allegation is proved that other employer shall be the employer from whom the compensation is to be recoverable:

(c) If the disease is of such a nature as to be contracted by a gradual process, any other employers who within the prescribed period before the date of the commencement of the incapacity (or the date of the death if there has been no previous period of incapacity) employed the worker in any employment to the nature of which the disease was due shall be liable to make to the employer from whom compensation is recoverable such contributions as in default of agreement may be determined by the Court.

(7) If any worker contracts any disease in respect of which he would be entitled to a miner's benefit under the Social Security Act 1938, he shall not be entitled to receive any compensation in respect of that disease for any period for which he receives the miner's benefit, or to receive a miner's benefit for any period for which he receives compensation, and no compensation shall be paid in a lump sum in respect of incapacity caused by any such disease as aforesaid.

(8) In any case where the death of a worker results from any such disease as aforesaid, payments of miner's benefit received by the worker shall be deducted from any compensation payable in respect of his death in the same manner and to the same extent as if they were weekly payments of compensation.

(9) Nothing in this section shall affect the right of any person to recover compensation in respect of a disease if the disease is a personal injury by accident within the meaning of this Act.

Cf 1922, No 39, s10; 1947, No 58, s42.

The words "twenty years" were substituted for the words "five years" in para (a) of subs (2) of this section by s9 of the Workers' Compensation Amendment Act 1960 and para (aa) was inserted by s2 of the Workers' Compensation Amendment Act 1967.

Appendix II: Accident Compensation Act 1972, s 67

67. Compensation for diseases arising out of employment —

(1) Where an earner's total or partial incapacity for work or an earner's death results from any disease, and the disease is due to the nature of any employment in which the earner was employed during a period that ended after the commencement of this section and within the prescribed period before the date of the commencement of the incapacity (or the date of the death if there has been no previous period of incapacity), cover shall exist, rehabilitation assistance

shall be given, and compensation shall be payable as if the disease were a personal injury by accident arising out of and in the course of his employment, and all the provisions of this Act shall apply accordingly subject, however, to the provisions of this section.

(2) For the purposes of this section, the term “prescribed period” means —

(a) In the case of any disease due to exposure to X-rays, ionising particles, radium or other radioactive substances, or other forms of radiant energy, a period of 20 years, or such other period as the Governor-General may (by Order in Council) prescribe.

(b) In the case of hydatid disease, a period of 10 years, or such other period as the Governor-General may (by Order in Council) prescribe:

(c) In relation to any other disease for which, by Order in Council, a special period is for the time being prescribed, for the purposes of this section, the period so prescribed:

(d) In any other case, a period of 2 years.

(3) Any Order in Council prescribing for the purposes of this section a special period in relation to any disease or class of diseases may be made to come into force on the day in which it is made or on any earlier or later date.

(4) No rehabilitation assistance shall be given and no compensation shall be payable under this section in respect of the incapacity or death of an earner if that incapacity commences or that death happens, as the case may be, more than the prescribed period after the earner has ceased to be engaged in any employment to the nature of which the disease is due:

Provided that this subsection shall not apply to the death of an earner when his death has been preceded, whether immediately or not, by any period of incapacity due to the disease in respect of which the earner was entitled to any compensation under this section.

(5) For the purpose of calculating the relevant earnings of an earner in a claim for any compensation under this section, the date of the commencement of the incapacity of the earner (or the date of his death if there has been no previous period of incapacity) shall be treated as the date of the happening of the accident, if he is then engaged in any employment; and if he is not then so engaged the last day on which he was so engaged shall for this purpose be treated as the date of the happening of the accident.

(6) For all the other purposes of this Act, the date of the commencement of the incapacity of the earner (or the date of his death if there has been no previous period of incapacity) shall be treated as the date of the happening of the accident.

(7) If any earner contracts any disease in respect of which he would be entitled to a miner’s benefit under the Social Security Act 1964, he shall not be entitled to receive any compensation under this Act in respect of that disease for any period for which he receives the miner’s benefit, or to receive a miner’s benefit for any period for which he receives any earnings-related compensation under this Act.

(8) Nothing in this section shall affect the right of any person to recover compensation in respect of a disease if the disease is a personal injury by accident within the meaning of this Act.

Cf 1956, No 62, s19; 1967 No 29, s2.

Appendix III: Accident Compensation Act 1982,

s 28

28. Compensation for diseases arising out of employment —

(1) *If a person's total or partial incapacity or death results from any disease, and the disease is or was due to the nature of any employment in which the person was employed as an earner during a period that ended on or after the 1st day of April 1974, cover shall exist as if the disease were a personal injury by accident arising out of and in the course of his employment, and all the provisions of this Act shall apply accordingly subject, however, to this section.*

(2) *For the purpose of calculating the entitlement to earnings-related compensation (if any) in a claim for compensation under this section, the date of the commencement of the incapacity or, if there is more than one period of incapacity the date of the commencement of each period of incapacity of the person (or the date of his death if there has been no previous period of incapacity) shall be treated as the date of the happening of the accident.*

(3) *For all the other purposes of this Act, the date of the commencement of the incapacity or, if there is more than one period of incapacity, the date of the commencement of each period of incapacity of the earner (or the date of his death if there has been no previous period of incapacity) shall be treated as the date of the happening of the accident:*

Provided that, where more than one period of incapacity occurs in the employment of the same employer, only the date of commencement of the first period of incapacity with that employer shall be treated, for the purposes of section 57 of this Act, as the date of the happening of the accident.

(4) *If any person contracts any disease in respect of which he would be entitled to a miner's benefit under the Social Security Act 1964, he shall not be entitled to receive any earnings-related compensation under this Act in respect of that disease for any period for which he receives the miner's benefit, or to receive a miner's benefit for any period for which he receives any earnings-related compensation under this Act.*

(5) *Nothing in this section shall affect the rights of a person under any of the provisions of this Act in respect of a disease if the disease is personal injury by accident within the meaning of this Act.*

Cf 1972, No 43, s67

Appendix IV: Original ACC five-point test

Based primarily on Australian cases

A disease is "due to the nature of" a claimant's employment only if the following tests are met:

- (a) *The work engaged in by the employee must have an inherent tendency to cause or disseminate that particular disease.*
- (b) *This tendency must exist because the work itself possesses, or contains, a particular property or characteristic which gives rise to that disease.*
- (c) *Such tendency, property or characteristic must be peculiar to that work and not found in employment generally.*
- (d) *Because of that peculiar and distinctive tendency, property or*

characteristic, an employee is faced with a special risk of contracting that disease, a risk is not similarly faced in other employment.

- (e) *This tendency, property or characteristic does not have to be present throughout the whole of the employee's work, but may exist only at a particular time or in a particular place.*

Appendix V: Current ACC policy and procedure

(Extracts from *Claims Manual - Part 3*)

4.3 Disease as PIBA

Paragraph (b)(ii) of the s2 definition of PIBA excludes “damage to the mind caused exclusively by disease, infection, or the ageing process” except to the extent that it is covered by one of the “inclusions” in paragraph (a) of that definition (refer 1.0). A disease may be a physical consequence of an injury or of the accident (refer 4.1.1). Similarly, mental illness may be a consequence of the injury or the accident (refer 4.1.2). Apart from this, disease may be deemed to be PIBA in accordance with the special provisions in the Act. The s2 definition expressly includes occupational diseases covered under sections 28 and 29. Section 28 deals with occupational diseases in general and s29 deals with industrial deafness.

4.3.1 Occupational Diseases

To qualify for cover as PIBA under s28 a disease must be due to the nature of the person's employment.

A disease is due to the nature of a person's employment where it can be shown either:

- *that there was a causal connection between the particular work and the disease (refer 4.3.1.1); or*
- *that the general class of work in which the person is engaged has by its nature a recognised tendency to cause the disease and, accordingly, people in that class of work are exposed to a special risk of contracting the disease (refer 4.3.1.2).*

4.3.1.1 Causal Connection — Particular Work

In relation to this type of claim a causal connection can arise either:

- *because the particular work being undertaken at a specific time or period resulted in the person contracting the disease (e.g. a nurse looking after a patient who had an infectious disease (mumps) which the nurse contracted); or*
- *because the person was required to work in a particular place which resulted in his being exposed to and contracting a disease (e.g. a school teacher who contracts hepatitis from an infected swimming pool while supervising a students' camp).*

The evidence must be sufficient to establish a causal connection between the person's work or a particular part or aspect of that work (whether through its nature, its location, or a combination of these) and the disease. It is not necessary for the disease to be recognised risk in the person's general class of work.

Thus, claims by members of the Armed Forces and others who have cover extended under sections 30, 31 or 32 will be acceptable under s28 if they contract a disease endemic to the country or countries they are required to work in, unless it is established that contraction of the disease was unrelated to

the nature of the work in which the person was engaged. If the disease is non-endemic, it must be established that the particular work caused the disease (i.e. the test in point one of 4.3.1.1. above).

4.3.1.2 General Employment Risk

If the Corporation is satisfied on the evidence that the work engaged in by the accident victim has a known or demonstrable tendency to cause the particular disease, this will justify acceptance of the claim in the absence of evidence showing that the employment was not the cause of or a factor contributing to the contraction of the disease. Examples are leptospirosis in dairy and pig farmers, lead poisoning in battery process workers, miners' silicosis.

4.3.2 [Time Limits]

[Section 67 of the 1972 Act imposed a "prescribed period" within which an occupational disease had to be contracted before cover would exist. In general terms, the prescribed period was within 2 years after leaving the particular employment. Special periods applied in certain specified cases.

Section 28 of the 1982 Act removes these time limits. All that is now necessary is that the claimant must have been employed in the particular employment on or after 1 April 1974. This change will allow diseases with a long "incubation period" to be accepted if properly documented.]

...

(e) Exposure to asbestos dust does not, in itself, constitute personal injury by accident, and a claim cannot be accepted merely because the exposure may result in an asbestos-related disease at some later date.

If enquiries are received from persons who have only recently been exposed to asbestos — say in the last 5 years — they should be advised to obtain written confirmation of the exposure from their employer.

This statement should contain:

- i) the period(s) of exposure;*
- ii) the concentration of fibres in the workplace if measured;*
- iii) notification of other workers suffering similar exposure.*

This evidence should be retained by the employer, union or employee and produced at a later date as evidence should an asbestos-related disease manifest sometime in the future.

It is widely accepted that asbestos-related illnesses develop some years (15-20) after a known asbestos exposure. Therefore, diseases following a more recent exposure are not likely to be asbestos related unless exposure has been gross.

Appendix VI: Asbestos litigation in the United Kingdom

Extract from p 5 (see references)

THE EXTENT OF THE PROBLEM

In the USA the main groups of workers exposed to asbestos were employed in asbestos factories, shipyards, construction and insulation work ('lagging'). Asbestos entered the USA by rail, from mines in Canada so that the only handling was by workers directly employed in asbestos processing factories unloading from private delivery sidings. The same groups were also among

those most heavily exposed in the UK, together with dock workers, railway engineering workers, tradesmen working in proximity to ladders, boilermakers and women involved in the manufacture of gas masks during World War II. In contrast to the USA, exposure was dispersed widely in manufacturing plants, shipyards and power stations around the whole country.

The actual number and distribution of injuries is difficult to determine with any precision. There are no comparable figures for asbestosis and asbestos-induced lung cancer, both of which are, in any case, subject to considerable variation in diagnosis depending upon the skills and interests of the medical practitioners involved (see p 8).

There is considerable controversy over whether or not gastro-intestinal cancers may be caused by asbestos exposure. The mesothelioma estimates for each country are, however, thought to be more reliable, because of the severity and distinctive nature of the condition. These may serve as an indicator of the incidence of other asbestos-induced diseases, although there are suggestions that the types of asbestos used in the UK may have been somewhat more likely to cause this particular disease. Nevertheless, to the extent that the comparison can be accepted as valid, it would suggest that, although the UK has about one-quarter the population of the United States, it is likely to have about one-third as many cases of asbestos-induced disease. We estimate that about 10,000 tort claims have been filed in the UK since the early 1960s. As of 1986, when the number of cases filed in the USA increased dramatically as a result of a change in the method of processing claims, this represents about 28 percent of the number of US claims. Simply put, the UK might be expected to generate significantly more litigation than the USA but seems to come up with about the same amount, suggesting that there is a loss of potential cases somewhere in the system.

Appendix VII: Summary of symposium on health

Extract from the report (see reference)

Lung cancer and mesothelioma risk models have been developed for asbestos exposure that are considered to be conservative (i.e. tend to overpredict rather than underpredict the risks). Recent data indicate that the average concentration of asbestos in schools and other buildings that have asbestos-containing materials is generally well below the 0.001 (mixed) fibers/ml used in risk calculations performed for school children. Using these conservative risk models and exposures higher than typically measured, the projected lifetime risk from exposure to mixed asbestos fibers is one death among a cohort of 100,000 children. These risk projections do not differ greatly among different investigators.

The risk of 1 in 100,000 is far less than most other commonly experienced environmental health risks, such as those attributable to environmental tobacco smoke and radon. Even though the risk posed by in-place asbestos is very small, both in absolute and relative terms, the public perception of these risks are high, which often leads to the decision to simply remove all of the asbestos-containing materials from buildings that have ACM (asbestos-containing materials).

Appendix VIII: Financial models

Notes

These two cases attempt to quantify the financial implications inherent in entitlements being back-dated as opposed to introduction with effect from a future date.

The following assumptions are made:

- “Early” diagnosis and, hence, some years of incapacity (seldom the case);
- Total work incapacity from time of diagnosis (rather than an initial period of partial incapacity which, again, is seldom the case);
- Spouse same age as asbestotic and totally dependent until age 65 (i.e. no material income and no subsequent relationship in the nature of a marriage);
- Children totally dependent until age 16; and
- Weekly compensation entitlement increases of 5% per annum.

In view of the above assumptions, it is readily apparent that the models are conservative.

Very few potential claimants would receive anywhere near the amounts modelled in Case 2.

Other points to note:

- If the legislation provisions grant retrospective entitlement, then the issue of interest on unpaid entitlements needs to be addressed;
- If the legislative provisions come into effect at some future date, then the issue of allowing a common law option for the intervening period needs to be considered.

Case 1

Retired from employment 31 March 1974
 Incriminated employment ceased 31 March 1974 (or earlier)
 67-years-old at 1 December 1983
 Incapacity from 1 December 1983 and total
 Totally dependent spouse

<i>Item</i>	<i>Entitlement from</i>		<i>*Entitlement from</i>	
		<i>1/12/83</i>		<i>1/12/91</i>
Life expectancy	2 yrs	5 yrs	10 yrs	10 yrs
Lump sums	27,000	27,000	27,000	27,000
Homehelp & medical	5,000	10,000	15,000	5,000
Funeral expenses	1,500	2,000	2,500	2,500
Spouse’s lump sum	4,000	4,000	4,000	4,000
Total	\$37,500	\$43,000	\$48,500	\$38,500

Notes:

1. General principle also applies for, say, an unemployed 47-year-old (although dependants’ lump sums will differ if there are dependent children).
 2. “Homehelp and medical” and “Funeral expenses” are estimates only.
- * Assumes no entitlement if asbestotic dies before 1 December 1991.

Conclusion:

Backdating of entitlements will have little impact unless interest on late paid or unpaid amounts of compensation were to be allowed.

Case 2

Incriminated employment ceased 31 March 1974 (or earlier)
 47-year-old earner with earnings of \$300 per week at 1 April 1983
 Total incapacity from 1 April 1983
 Totally dependent spouse and 2 children (12 and 5) at 1 April 1983

<i>Item</i>	<i>Entitlement from</i>		<i>*Entitlement from</i>	
		<i>1/12/83</i>		<i>1/12/91</i>
Life expectancy:	2 yrs	5 yrs	10 yrs	10 yrs
Weekly payments	25,584	68,960	156,972	37,799 (2 yrs)
Lump sums	27,000	27,000	27,000	27,000
Homehelp and medical	5,000	10,000	15,000	5,000
Funeral expenses	2,000	2,000	2,000	2,000
Dependants' lump sums	8,000	6,000	4,000	4,000
Spouse's ERC	194,284 (16 yrs)	169,451 (13 yrs)	128,068 (8 yrs)	128,068 (8 yrs)
Children's ERC	35,984 (2+9)	21,668 (0+6)	4,066 (0+1)	4,066 (0+1)
Totals	\$298,852	\$326,747	\$337,106	\$207,933

Notes:

1. Refer assumptions on first page of this appendix.
 2. "Homehelp and medical" and "Funeral expenses" are estimates only.
 3. Assumes that net interest equals inflation, i.e. that \$1 in 1983 is worth \$1 in 1991.
- * Assumes only entitlement if asbestotic dies before 1 December 1991 relates to spouse's weekly compensation and children's weekly compensation (if dependency continues beyond that date).

Conclusion

Backdating of entitlements could have a significant impact on the cost of introducing an extension to present coverage.

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