



CORONERS REGULATIONS 1996

Form 1

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Case No: 1598/03

FINDINGS (WITHOUT INQUEST)

The death of Donald Rawson occurred on 21st May 2003 at the Royal Melbourne Hospital, Parkville, Victoria from 1(a) Malignant Mesothelioma.

Introduction

Mr. Rawson, aged 67 at the time of his death, had a varied working history, which is necessary to trace in order to identify, if possible, the source of his exposure to asbestos.

Work and environmental history

The police officer conducting the investigation for the Coroner, Detective Senior Constable Phillip Haywood, prepared a summary of his investigation which states:

"... 2. Mr. RAWSON began his working career as a motor mechanic apprentice with what appears to be little exposure to asbestos. He then worked for a steel merchant which involved some welding. He has no recollection of asbestos exposure during this time and his jobs varied, including working as a truck driver for another steel merchant.

3. In the early 1960's, Mr RAWSON worked for another steel merchant named Atkins Pty Ltd who were located in Geelong Road, Brooklyn which was not far from the James Hardie factory. It is noted that this time of employment was prior to the 1964 New York Conference where environmental asbestos pollution and mesothelioma were linked. (Refer KILPATRICK report pg.3 par.1).

4. Mr RAWSON continued working for steel merchants in a sales role with no exposure to asbestos. In the 1960's Mr RAWSON worked for a company named Benny Teare Pty Ltd in a sales role again. He left the company for a period to work as a truck driver for Four 'n' Twenty Pies before returning to work with Benny Teare in West Footscray. He had no recollection of seeing or handling asbestos products during that time. However it is assumed the company did sell asbestos products as per their competitor at the time, Blackwood's and McPherson's.

5. Mr RAWSON then worked for a pneumatic and hydraulic system manufacturer in Moonee Ponds between 1978 - 1993 with no apparent exposure to asbestos.

6. Around 1977 Mr RAWSON clad his Henry Street, East Keilor home with Hardie Plank. Contractors performed the cladding, however Mr RAWSON would clean up the debris and dust at the end of the day."

Apparently Mr Rawson was retrenched in 1993 and did not work after that time. Detective Senior Constable Haywood considers that the:

"... reports compiled by KOTTEK and KILPATRICK conclude that Mr RAWSON may have been exposed to asbestos in his workplace and/or at home. Mr RAWSON may have had exposure as an apprentice mechanic through brake lining dust, or when working as a welder, however these two possibilities appear unlikely due to the level of exposure. Mr RAWSON worked for companies that probably handled asbestos products, however he was in the sales department and not involved in servicing or installing. He worked relatively close to the James Hardie Plant during the early 1960's and his home was clad with Hardie Plank around 1977 where he cleaned up the dust behind the builders. The attached reports raise various possibilities, but are unable to be precise as to the direct cause of the malignant mesothelioma that caused the death of Mr RAWSON."

Expert opinion

As part of the investigation Detective Senior Constable Haywood provided reports from Mr. David Kilpatrick (Hygienist and Ergonomist) and Mr. Michael Kottek (Occupational and Environmental Health Consultant).

Mr. Kilpatrick stated that he could only find two probable asbestos exposure situations of any significance for Mr Rawson. These are:

"Firstly, which will need further inquiries to establish it, was when he worked for an engineering and plumbing supply company known as Benny Teare Pty Ltd in the 1960's. At that time they were in Franklin Street in Melbourne and he worked for them for a few years until the company moved to Springvale and at which time he left this employment and delivered pies for Four 'N Twenty Pies, but rejoined Benny Teare when they moved to West Footscray.

At Benny Teare Pty Ltd he was in a small mezzanine office just above the showroom and engineering goods, pipes, plumbing supplies and industrial hardware was sold across the counter below. He has no recollection of seeing them sell asbestos products such as lagging and millboard, but as Benny Teare Pty Ltd was a competitor to Blackwoods and McPhersons, both of which companies did sell asbestos products over the counter, I think it rather unlikely that they did not handle the same products as those other two major industrial hardware companies. The only former workmate which Don Rawson thinks may be alive has an unfortunately fairly common name, Jack Kelly, and as Mr Rawson does not know where he lived then let alone where he lives now, it may well take a lot of ringing around. I will leave this to you in the first instance.

Both Blackwoods and McPhersons have had mesothelioma cases and it would certainly not be impossible to imagine that Mr Rawson may have had some exposure there. Mr Rawson notes this was not an open-plan mezzanine office but in fact was sealed off from the main showroom by a means of a wall."

And secondly:

"the other exposure, which undoubtedly occurred was when the Rawson's had their home in Henry Street, East Keilor, clad with Hardie Plank in about 1977. Although contractors did the cladding, each night after work he would come home and clean-up all the dust and debris. He indicates this was quite a messy, dirty and dusty job.

I may be mistaken, but it is my understanding that Hardie Plank would only have contained a few percent of chrysotile by 1977."

On personal and occupational history Mr. Kilpatrick reports that Rawson *"started his working life as a motor mechanic apprentice, but had only very rare contact with brake linings. After a short time in this job the owner of the company died and the business closed."* He then had uneventful short term work leading to work for:

"a steel merchant in Kensington and worked there for a few years, and he started to learn welding at Footscray Tech in the evenings before he lost the sight of one eye when he was involved in an industrial accident. He recalls no asbestos used in this plant where roof trusses were made, and he also does not recall the quasi-arc welding rods shown to him. As times were hard, this steel merchant would hire out his trucks and Don Rawson often was doing deliveries. Although he went to the Port of Melbourne wharves from time to time, he was never allowed out of the truck and does not ever recall seeing people handling hessian bags.

From time to time he would use asbestos gloves during the welding work he did at Footscray Tech but he does not recall them being particularly dusty."

Next Mr. Rawson worked for another firm of steel merchants, *"Atkins Pty Ltd in Geelong Road, Brooklyn where he worked for a few years as head storeman."* Apparently at that job Rawson recalled no asbestos exposure.

Mr. Fitzpatrick noted that:

"the Geelong Road steel merchant plant he worked at was not very far from James Hardie's factory in Hardie Road Brooklyn which is on the south side of the Geelong Road. I note, however, this would have been prior to the 1964 New York Conference where environmental asbestos pollution and mesothelioma were linked."

And Mr. Rawson: *"next joined another steel merchant HA Barnard in Salmon Street, Port Melbourne, where he worked on phone sales for a few years with no asbestos exposure to his knowledge."*

Mr. Rawson then went to work in the office of Stewart & Lloyds in City Road, South Melbourne (steel pylon sales) with no contact in the Latrobe Valley power station construction area. Next he went to work for Benny Teare Pty Ltd and:

"Between leaving Benny Teare in Franklin and rejoining them in West Footscray a few years later, during the period Benny Teare was at Springvale, Don Rawson delivered pies for Four 'N Twenty."

When Benny Teare Pty Ltd ceased operation Mr. Rawson *"joined a pneumatic and hydraulic system manufacturer in Moonee Ponds where he worked from 1978-93 with no asbestos exposure."*

Apparently when he was working for Benny Teare Pty Ltd Mr. Rawson married and purchased a house in Henry Street, East Keilor.

"He took an old hot water service out of the house and as the neighbour wanted the copper drum he and a neighbour delagged it, but he immediately identified a sample of rockwool blanket shown to him picking this out of a number of samples shown to him at the same time."

In a report to Mr. Rawson's solicitors dated 14th August 2002, Mr. Michael Kottek (Occupational and Environment Health Consultant) indicated that he had discussed Rawson's exposure with him and, as a result, Kottek says:

"it is clear that Mr Rawson has had some occupational and some domestic exposure to asbestos..."

Mr. Kottek's report presents a slightly different emphasis on the factual detail and conclusions. He states:

"When Mr Rawson was indentured as a motor mechanic apprentice he had some exposure to asbestos from brake maintenance and repair work and some (probably lesser) exposure from gasket materials. While Mr Rawson used compressed air to de-dust brake drums, he did not recall grinding friction materials nor did he frequently carry out brake work."

And:

"When working for Dan Nugent over the period 1953-54, Mr Rawson recalled that he would frequently wear asbestos gloves and aprons while welding outdoors in Kensington. After 1954, Mr Rawson continued to weld at Kensington of and on up until 1959. On being shown a Quasi-Arc electrode, Mr Rawson was confident that he had not used such electrodes when welding, but he was unsure if the other welders could have used them."

On his work in the home Mr Rawson recalled:

"a number of instances of asbestos exposure at their house at 22 Henry St, East Keilor. He recalled that he lined a shower with asbestos cement sheet which he cut with Bentley Shears, he did not recall this as being dusty. The house was also extended, with the external lining of the extension being Hardiplank. This extension was mainly the work of a builder, and Mr Rawson's exposure from these two renovations is likely to be quite limited. Mr Rawson related one instance where he helped a next door neighbour recover the copper cylinder from a Braemer hot water service. He recalled this involved stripping internal insulation which may have been asbestos, however Mr Rawson's recollection was not particularly clear and he initially described the insulation as having a pink colour and latter as being more woolly than my samples of asbestos insulation. I am not confident that the insulation removed was asbestos, as the description is consistent with fibreglass. There are two other possible sources of asbestos exposure at East Keilor."

And:

"On being shown asbestos backed sheet vinyl, Mr Rawson recalled that when they first moved into the Henry St house, they installed sheet vinyl with an asbestos backing layer. This was subsequently removed by the Rawsons, after the builder had finished the extension. The removal of the sheeting would probably have been more significant than any exposure from the use of asbestos cement in the building works. I am presently unable to identify the manufacturer of the sheeting, but Mr Rawson recalled the vinyl had a blue leafy pattern. Finally, Mr Rawson recalled that the house at East Keilor had sprayed insulation in the ceiling space. It is unlikely that this would be asbestos, but it may be worthwhile to confirm this at some later time."

Finally Mr. Kottek concludes there are:

"a number of other possible sources of asbestos exposure. Mr Rawson was not especially confident that sprayed asbestos ceiling finishes would not have been present in the various

offices in which he had worked, he also recalled that many of the offices were renovated at various times. None of Mr Rawson's workplaces were listed in Dr Kilpatrick's records, however these are not comprehensive of all sprayed asbestos in Melbourne. Similarly, Mr Rawson thought he had seen Asbestolux ceilings installed in some offices, although I am not confident that Mr Rawson is not confusing Asbestolux with rockwool ceiling tiles. In any event, he could not clearly recall locations where he had seen these possible 'Asbestolux' ceilings."

And noted that:

"for three or so years in the early 1960s, Mr Rawson worked as a storeman for William Atkins who were located on Geelong Road, Brooklyn. On the current boundaries of Brooklyn, any address on Geelong Road is between 500m and around 2 km from the James Hardie factory. I omitted to question Mr Rawson on exactly where on Geelong Road he was located, and I suggest this be confirmed in the Pink Pages or Sands & McDougal Directory. While this is a somewhat speculative source of exposure, I note that the more certain and intense sources of Mr Rawson's exposure (welding paraphernalia at Dan Nugent, friction products in his apprenticeship and removal of vinyl sheeting) are to chrysotile only. In the period 1961-1963 the James Hardie plant will have been using crocidolite, and from what I understand environmental pollution would have been a real possibility in this period. It may be possible to prepare conservative estimates of exposure at William Atkins using records of emissions from the James Hardie plant. I suspect records or estimates of such emissions may have been required when licensing by the EPA commenced in the early 1970s. Presumably emissions a decade earlier will have been even greater."

Conclusion

On the material provided (including the expert reports) other than to say that there were many possible areas at both work and home where Mr. Rawson was exposed to asbestos, it is not possible to be more definitive as to where the source of his disease emanated. It is equally likely that the exposure came from one or other or even both sources.

COMMENTS

The History of Asbestos Exposure - a long term knowledge of risk

The report of David Kilpatrick (Hygienist and Ergonomist) dated 6th January 2003 provided to Mr. Rawson's solicitors sets out in some considerable detail the history of the first identification of a problem and the extent of the knowledge of the risk of exposure to asbestos fibre and its effects on health. It is interesting to note that the problem of asbestos **was first identified in 1898** in the Annual Report of the Chief Inspector of Factories and Workshops in England.

Kilpatrick notes there *"has been extensive documentation on the hazards of asbestos exposure over the decades) commencing around the turn of the century, with particular attention from the mid 1920s."* From his summary document key early dates can be observed from reports and research documents whereby the health and safety issue was recognized and highlighted. These dates are **1898**, **1924** (first case in the British Medical Journal), **1927** (Journal of Industrial Hygiene - wearing of masks recommended), **1930** (Merewether and Price report to British Parliament - this report was reviewed in various journals), **1930** (Journal of American Medical Association), Asbestos Industry Regulations (1931) (UK), **1931** (Journal of Safety Engineering), **1933** (Medical Journal of Australia), **1934** (Report of Director General NSW - first case in Australia), **1934** (Monthly Labour Review, UK - review of the Chief Inspector of Factories: 53 deaths from asbestosis), **1934** (Lancet

review of 100 cases of Asbestosis), **1936** (Inspector General NSW), **1937** (New England Journal of Medicine), **1938** (Threshold for occupational exposure developed in USA), etc. Kilpatrick's lengthy documentation and history continues almost to the present day.

It is useful to document this entire summary "history" section of his report. Clearly, the extent and lead-time of the knowledge and warning of risk in the areas of government regulators, the medical and research community and in industry is indeed, troubling.

"Inspector of Factories and Workshops, for the year 1898, HMSO 1900, in which "The Evil Effects of Asbestos Dust" was reported.

The first case of asbestosis in the English literature was reported by WE Cooke in the British Medical Journal in 1924.

In 1927, in the Journal of Industrial Hygiene, T Oliver discussed pulmonary asbestosis and recommended the wearing of masks, and ventilation, for the dustiest operations.

Merewether and Price, in their 1930 report to the British Parliament, highlighted the hazards attached to asbestos exposure in terms of fibrosis of the lungs. Merewether and Price paid particular attention, in this publication and others subsequent to that, to prevention of inhalation of excessive levels of asbestos dust.

The Merewether and Price report was reviewed in various journals in the early 1930s, including engineering journals.

In the Journal of the American Medical Association in 1930, it was reported that asbestosis victims were now eligible for workers compensation in the United Kingdom.

In the journal "Safety Engineering", Volume 62 (1931), F Wilson, in an article on dust and fume diseases, listed "asbestos and every operation in which it is used" as seriously harmful.

In the United Kingdom, the Asbestos Industry Regulations (1931) were gazetted on December 31, 1931 under section 79 of the Factory and Workshop act of 1901.

W A Edwards in the Medical Journal of Australia in 1933 included asbestos work as an industry which can cause "pneumoconiosis".

In the report of the Director General of Public Health for New South Wales for 1933, published in 1934, the first recorded case of asbestosis was noted, this being a mill hand in an asbestos works.

In the Journal "Safety Engineering" in 1934, in an article entitled "Asbestos Dusts", it was stated that an asbestosis hazard existed wherever asbestos dust was created.

In the journal "Monthly Labour Review" in 1934, there was a review of the 1933 UK Chief Inspector of Factories report, which listed 53 deaths from asbestosis.

In 1934 in the Lancet, Wood and Gloyne in an article entitled "Pulmonary Asbestosis; A Review of 100 Cases" reported asbestosis in a number of people who used asbestos products, including a van boy aged 18 whose spare time during 2 1/2 years employment had been spent in mixing powdered asbestos in an open yard, a middle aged boiler riveter who had served his apprenticeship as a youth in a shop where asbestos was used for lagging pipes, and a man who had been employed handling asbestos mattresses in the open air at an aerodrome.

The condition of asbestosis was further discussed in the report of the Director General of Public Health for New South Wales for the year 1935 published in 1936.

In 1937, J B Hawes in the New England Journal of Medicine, discussing dangerous dusts, indicated that asbestos was the most dangerous dust.

The first internationally accepted threshold for occupational exposure to airborne asbestos dust came from the work in the United States of America by Dreessen and others in 1938.

This standard was five million particles per cubic foot (mppcf) of total dust including fibres, averaged over a working day. In metric terms, this is equivalent to 177 particles/mL.

Despite obvious scientific flaws in the epidemiological study of Dreessen and others, the standard seems to have been accepted internationally, and within Australia, and in my opinion it was the standard that was included in the 1945 Harmful Gases, Vapours, Fumes, Mists, Smokes and Dusts regulations under the Victorian Health Act.

In 1938, A J Lanza edited a book entitled "Silicosis and Asbestosis", London, Oxford University Press, in which the asbestos hazard was comprehensively discussed.

In the annual report of the Chief Inspector of Factories for the year 1938, London, Her Majesty's Stationary Office 1939, it was noted that of 103 fatal asbestosis cases, 11.6% had cancer of the lung.

In 1939, D O Shiels in the "Health Bulletin", a Victorian Government Journal, asbestos was discussed, and Shiels recommended that workers be informed of the risk, that dust counts should be made, and indicated that asbestos causes asbestosis.

In the next issue of Health Bulletin, D O Shiels expanded the section on asbestos, and noted that asbestosis predisposed the victim to TB.

In 1940, in the Medical Journal of Australia, an Australian case of asbestosis was discussed.

In a book entitled "Outlines of Industrial Medical Practice", London, Edward Arnold (1940), H E Collier noted that whilst the risk in asbestos industries was recognised and under control, the risk was now greater in incidental asbestos use, for example lagging work.

In the report of the Director General of Public Health, NSW, for 1938, which was published in Sydney by the Government Printer in 1940, asbestos was discussed in a section entitled "Dust Diseases of the Lungs". This discussed the asbestos hazard in a factory where insulation and fibro cement were made. Using the Owens dust counter, a dust level of 280 mppcf was recorded between the circular saws cutting magnesite - asbestos sheet.

In 1941 in the journal "Safety Engineering", a claim for total disability for fibrosis of the lungs was discussed, wherein the worker had been involved tipping both silica and asbestos into tanks, and it was stated that both of these powders caused fibrotic condition to develop in the lungs.

In 1942 Dr Warren Cook wrote in the journal "Industrial Medicine":

"Criteria for Evaluation of Dust Hazard

In the first place, too quick snap-judgements should be guarded against. If an unjustified OK is given, the health of the worker may be jeopardized; if a condemnation, then money may

be spent unnecessarily, to say nothing of developing a lack of confidence of management in your judgement.

In the case of the asbestos dust condition, our evaluation of the exposure should be based on the knowledge that the present toxic limit for asbestos is five million particles of dust per cubic foot of air. This is a very small concentration, so small in fact that the condition may look good even to a critical eye and still present an exposure greater than this low limit. Some indication of the amount of dust present in the air may be obtained by noting the layer of dust on nearby settling places after learning how long a time has elapsed since they were last cleaned. If only a thin layer of dust has accumulated over six months or a year, and there are no visible puffs of dust escaping from the operation, it is probably that the condition is satisfactory.

In the case of asbestos dust, however, and this holds with even more certainty for dusts high in free silica content, the toxic limit is so low that the only safe procedure is to have recourse to actual dust determinations. This is especially important where the injurious condition is not immediately evident but requires years to develop as in the case of asbestosis and silicosis."

My own experiences in terms of measuring dust and observing dust levels is consistent with the comment made by Dr Warren Cook, that is that 5 mppcf of asbestos dust is a level which under most ordinary industrial circumstances is not necessarily going to be visible to the naked eye under normal lighting conditions.

In 1943, in the journal "Industrial Medicine", in an article entitled "Minimum Requirements for Safety and Industrial Health in Contract Shipyards", under the heading "Asbestosis" there was a listing of the sources of asbestos dust, with a general comment "In general, any job in which asbestos dust is breathed", giving examples of handling, sawing, cutting and moulding of asbestos and asbestos mixtures. The article noted that the job could be done safely with segregation of dusty work and either special ventilation or wearing of special respirators.

In the Journal of the American Medical Association in 1944 in an article entitled "Environmental Cancer", asbestos was include in a list of known or suspected occupational carcinogens.

In 1944 in the New England of Medicine, IR Tabershaw noting the asbestosis lung cancer risk, stated that it "seems too significant to be overlooked".

In an article in the journal "National Safety News" in April 1944 entitled "Fume Control in Shipyards", W. E. Lawrence, a safety engineer with a New York ship building corporation ill New Jersey, recommended for the use of asbestos insulation in ship work, to protect against dust or possible asbestosis, that material be dampened wherever possible, and that dust respirators be worn in addition to the provision of special ventilation. He also noted that periodic medical examination of those exposed was also necessary.

In 1945 the "Harmful Gases, Vapours, Fumes, Mists, Smokes and Dusts Regulations" were gazetted in the Victorian Government Gazette, stipulating a 5 mppcf standard for asbestos.

In 1946 in the Journal of Industrial Hygiene and Toxicology, WE Fleisher noted many very high dust counts from asbestos lagging operations on naval vessels, and three cases of asbestosis amongst the ladders.

In the Annual Report of the Chief Inspector of Factories for the year 1947, published in London by HMSO in 1949, it was noted that 13.2% of 235 deaths from asbestosis involved lung cancer.

In 1949, the report of the NH&MRC (27th Session) was published. The report refers to "Blue Asbestos Hazards in Western Australia".

In the Journal of the American Medical Association in 1949, an editorial discussed a link between asbestosis and lung cancer, and noted that many thousands of workers used asbestos.

In the popular science magazine "Scientific American" in 1949, in an article entitled "Cancer and Environment", G Conklin noted the asbestos lung cancer risk and further that carcinogens should be eliminated wherever possible and protective procedures used.

In 1950, the Third International Conference on Pneumoconiosis was held in Sydney, NSW. The asbestos hazard was discussed in various journals, including the Medical Journal of Australia.

G C Smith in the Medical Journal of Australia in 1950 reviewed occupational factors in pulmonary dust disease, and noted that asbestos causes severe pulmonary disease after a shorter exposure than required for other pneumoconiosis.

In the Annual Report of the Chief Inspector of Factories for the year 1949, HMSO 1951, it was noted that portable asbestos spraying plants were used to an increasing extent by contractors on buildings, ships etc. for insulation purposes. The risk to health unless proper precautions were taken was noted.

In 1952, G C Smith writing in the Commonwealth Department of Health publication "Health" noted that asbestos can cause pneumoconiosis. Smith noted that it was the very small and invisible particles which caused the pneumoconiosis.

In 1953 the "Factory Health Safety and Welfare Encyclopaedia" was published, compiled by C. Conway Plumbe who was formerly superintending inspector of factories in the UK. On page 28 under the heading "Asbestosis" it was noted that "it is to be realised that asbestos dust is one of the most dangerous of all industrial poisons. No degree of care at all stages of handling, machining, mixing, cleaning, packing or unpacking etc of any material consisting of or containing asbestos is wasted effort". In the section entitled "dust" the reader is referred also to the section on asbestosis. In the section on "Regulations in Particular Trades", the 1931 UK asbestos regulations are summarized.

A McLaughlin in 1953 writing in The Lancet in an article entitled "Prevention of Dust Diseases" mentions the asbestos hazard, and notes that the exposure standards may not guarantee prevention and suggests that dust control is the only means of prevention.

CN Davies in 1955 in the book "Dust is Dangerous", London, Faber and Faber noted that there is now little doubt that there is a connection between asbestosis and lung cancer.

In 1955, Richard Doll published his well-known paper "Mortality From Lung Cancer In Asbestos Workers" in the British Journal of Industrial Medicine. I believe that this further established the connection between asbestos and lung cancer.

The report of the Director General of Public Health for New South Wales for 1948, published in 1955) discussed a visit to an asbestos mine in Northern New South Wales, and the use of asbestos as heat insulation in steel moulding.

In the report of the Director General of Public Health for New South Wales for 1950, published in 1956, a report was presented of an inspection made of a factory engaged in the manufacture of asbestos lagging. Dust levels at the breathing zone of a worker were determined at 280 mppcf.

In the report of the Director General of Public Health for New South Wales for 1951, published in 1956, in a section entitled "Asbestosis", the report noted six cases of asbestosis were described including a case developing after five years of spraying an asbestos bituminous cement for refrigeration purchases. It was noted that "there is good evidence to suspect that pneumoconiosis is widespread throughout industries handling or manufacturing asbestos products.

In the report of the Director General of Public Health for New South Wales for 1952, published in 1956, of 109 asbestos workers who were X-rayed, 8 had asbestosis and 18 had increased markings.

On Wednesday July 11th 1956 in the Victorian Government Gazette, under the Health Act, there was a declaration of certain trades to be Dangerous Trades. An extract from the proclamation is as follows:

"By virtue of the powers conferred by the Health Acts, I, the Governor of the State of Victoria, in the Commonwealth of Australia, by and with the advice of the Executive Council of the said State, and on the recommendation of the Commission of Public Health, do by this my proclamation, declare the following trades (whether ordinarily carried out on fixed premises or at varying places) being trades which unless preventive measures are adopted may become dangerous to the health of persons employed therein, to be dangerous trades within the meaning of the Health Act 1928.

Asbestos lagging or spraying.

Asbestos works or factories in which asbestos is used, manipulated, crushed or pulverized".

Dr D L G Thomas' paper discussing his study of the "dusty trades" in Victoria, indicated on page 76 of the Medical Journal of Australia, January 19th, 1957:

"The following occupations are involved:

handling the substance in its raw state; grinding the substance prior to its use in some process; mixing with diatomaceous earth or kaolin to form lagging materials; sawing, cutting and finishing of any product containing asbestos - for example, brake linings, asbestos sheeting and various insulating materials; tearing down old lagging - this is a very dangerous process, even in the open air; spraying asbestos on walls and ceilings as an insulator."

On January 13th, 1956 in the Melbourne "Age", in an article entitled "Dust Becoming Bigger Hazard in Industry; More Workers Affected", a dusty trades survey carried out by the Victorian Health Department was reported, with 260 workers being X-rayed, 50 having asbestosis and 40 showing early signs. There was a similar article in The Age the next day (Saturday 14/1/56). There was another article in The Age on 5/2/57.

In the Melbourne based journal "Manufacturing and Management", in an article entitled "Dust Hazard in Industry", the Victorian survey was discussed and the asbestosis risk to asbestos workers including ladders was noted.

In 1958, WF Cooper writing in the journal "Australian Factory" noted that asbestos was a "destroyer of lung tissue" and notes the occupational exposure standard. He also noted that the prevention of asbestosis required dust suppression and ventilation.

In 1959 an international pneumoconiosis conference was held in South Africa, and the proceedings were published in 1960. IC Wagner published a paper on the occurrence of mesothelioma cases in the South African crocidolite mining district.

In 1960, IC Wagner and others, writing in the British Journal of Industrial Medicine, noted 33 cases of mesothelioma, all but one having asbestos exposure. Of the 32 cases with asbestos exposure, 13 cases had not been involved in the mining or milling operations but had simply lived in the vicinity of the mines or mills or lived on the wagon route.

In the textbook "Modern Occupational Medicine", edited by Flemming and D'Alonzo, asbestosis, lung cancer, and mesothelioma were discussed, and in respect of asbestosis, the following was noted, "Important features in all cases of asbestosis are the existence of a lag period between the on-set of the symptoms and the inexorable progression of the disease despite cessation of dust exposure. There is evidence to support the view that the first few years of exposure to asbestos fibres are as important determinants of the final outcome as are most of the remaining years of exposure. Cases are currently cropping up in men and women who have worked as pipe insulators on Liberty ships during the second world war without since having had any further asbestos exposure".

In the report of the Director General of Public Health for 1958, published in 1960, a report was given on the hazards of limpet asbestos spraying. .

Further tests by the New South Wales division of occupational health for limpet spraying were given in the report of the Director General of Public Health for 1959, published in 1961.

In 1960, M Joseph writing in the Medical Journal of Australia, presented brief details on a number of Australian cases of asbestosis including one lagger, and noted the asbestos/lung cancer link.

WC Hueper in 1961 in Archives of Pathology, in an article entitled "Carcinogens in the Human Environment", noted that asbestos was recognised as causing lung cancer, and noted exposures to some product users and neighbourhood exposures.

In the report of the Director General of Public Health for New South Wales for 1960, published in 1962, dust concentrations above the recommended limits were found for the removal of filter bags from a hot air cyclone in an asbestos crushing plant.

In 1962, JC McNulty in the Medical Journal of Australia, noted the first Australian case of mesothelioma from asbestos exposure. This was a worker from the Wittenoom mine.

In the report of the Director General of Public Health for New South Wales covering the period from 1953 to 1957, published in 1962, a report was given of a major survey carried out in 1957 in a large Sydney factory manufacturing a wide range of asbestos products.

As well as the article by Wagner in 1960 on mesotheliomas in blue asbestos mining areas of South Africa, there were other articles published in the early 1960s indicating that exposure to asbestos dust was recognized as having a close association with diffuse mesothelioma and further indicating that in many of the cases of mesothelioma following exposure to airborne asbestos, the exposure was not continuous or prolonged, and in a number of cases the exposure was described as "minimal".

Even leaving out the risk of mesothelioma, when one looks at some of the articles published in Australia in the 1950s, one sees that the condition of asbestosis itself, that is fibrosis of the lungs caused by inhalation of asbestos dust, was known in that period to be a potentially terminal disease.

Referring to the extract from Mr Warren Cook's article in 1942, in respect to airborne asbestos dust and the toxic limit at that time, the only safe procedure in relation to determining the risk was to perform actual dust determinations.

By 1965, when the proceedings of the 1964 New York Conference on the Biological Effects of Asbestos was published, the situation was even more established in terms of risk, from the large number of professionals reporting on hazards of asbestos, including comments about the likely lack of protection offered by the old 5 mppcf exposure standard. In other words the exposure levels to asbestos dust needed to cause mesothelioma were much less than previously had been thought to be hazardous, examples of causation being environmental exposure, and secondary exposure such as women washing their husband's work clothes.

PC Elmes et al in an article titled "Diffuse Mesothelioma of the Pleura and Asbestos" published in the British Medical Journal in 1965 stated that "it is concluded that there is evidence that exposure to asbestos, even though it may have been transient and many years previous, is an important factor in the aetiology of mesothelioma of the pleura. This conclusion gives cause for anxiety because of the increasing commercial use of asbestos". Also stated was "until recently most asbestos used outside the shipyards was in the form of corrugated roofing. This was imported from England and was usually cut and handled in the open under conditions of good ventilation. The use of asbestos in many industries, and especially in the building trade, is now increasing (for the times 1964), and this gives rise to anxiety that there will be an increased incidence of mesothelioma of the pleura".

Newhouse and Thompson in the British Journal of Industrial Medicine in 1965, volume 22, page 268 indicate a peritoneal mesothelioma for a woman whose husband was a railway carriage builder, lining compartments with asbestos sheeting, with work clothes washed at home. Whilst there is no proof that this was asbestos-cement sheet, one would have thought that this article would have alerted manufacturers to the fact that dust from "asbestos sheeting" could represent a risk to the user.

In 1966, Hourihane et al in an article in the British Medical Journal noted a woman with calcified pleural plaques who had been exposed 25 years previously when she had held asbestos sheets intermittently over a period of six weeks while her husband sawed them to make rabbit hutches.

Elmes in an article in the Post Graduate Medical Journal of 1966, under the heading "Use of Asbestos Goods" noted an asbestosis case of a woman who had helped her husband build two asbestos bungalows in 1947/48, holding the sheets while her husband sawed them up.

Gold and Cuthbert, writing in the journal Public Health (London) in 1966, in an article entitled "Asbestos-A Hazard to the Community" concluded that "in view of the grave hazards to health which even very short period of exposure to asbestos can eventually cause, the increased uses of asbestos must be viewed with disquiet. We feel that the time has come to take a hard look at the possible alternatives to asbestos before an epidemic of serious and irremedial respiratory diseases ensues".

In the newspaper "The Australian" of Tuesday October 28th 1968, an article was published about the concerns of the ACTU about asbestos. Professor Irving Selikov was quoted: "the

public should be made aware of the problem. No one, particularly children and young people, should be unduly exposed. To days children are almost certainly inhaling more asbestos than their parents did, and we now know that if a person inhales sufficient amounts of asbestos dust, he carries a burden that will provide a latent potential for the development of cancer for the rest of his life".

In the report of the Director General of Public Health for New South Wales for 1964, published in 1967, it was noted that several processes were investigated including asbestos textile manufacture, laboratory testing, fibre crushing, and blending of various asbestos minerals, and noting some asbestos dust exposures in the range of 6.5 to 38.5 mppcf.

In the report of the Director General of Public Health for New South Wales for 1966, published in 1968, under the heading "Asbestos", it was noted "due to research overseas into carcinogenic effects of asbestos, often with minimal exposure, re-examination of asbestos cases found in previous asbestos surveys has commenced, Sputum cytological examinations of long term employees are being earned out, It is hoped that these will lead to further information on health hazards of asbestos".

In 1968, the first Australian Pneumoconiosis Conference was held in Sydney and the asbestos hazard was discussed at this conference.

Dr JC McNulty in an article entitled "Asbestos Mining, Wittenoom, Western Australia" noted that the Health Department had first become concerned about dusty conditions in the mine and mill in 1948, although the first diagnosis of asbestosis was not made until 1958. He further noted that by 1968 103 men had developed pneumoconiosis, after excluding another 24 men who had mined elsewhere. He also noted "A particularly bad feature of Wittenoom was the persistent use of mine tailings for road surfacing, which exposed the townspeople and children to loose dust containing varying percentage of blue fibre". He also noted the case of pleural mesothelioma which he had published earlier in 1962.

G Major in an article entitled "Asbestos Dust Exposure" described to the conference the dusty conditions at the mine and mill. He describes dust concentrations for hand bagging operators around 85 mppcf and 100 f/ml (fibres longer than 5 microns). He also describes a plant operator standing on the platform walking around inspecting parts of the plant equipment with dust exposure of about 85 mppcf including 270 f/ml (fibres long than 5 microns). He described dust concentrations for men on the picking belt of around 5 mppcf.

In 1968 the British Occupational Hygiene Society published a recommended standard for white asbestos (chrysotile) in air.

Two of the alternative indices for acceptable occupational exposure were:

*2 fibres/cc by membrane filter method
10 particles/cc by impinger method.*

It should be noted that 10 particles/cc by the impinger method is approximately equivalent to only 0.3 mppcf. Since 5 mppcf is likely to represent a level which maybe invisible to the naked eye, then certainly this new standard reflected the risk attached to exposing people to visible levels of airborne asbestos dust.

These standards whilst intending to reflect a working lifetime, were also eight hour time weighted averages.

In this BOHS report "Hygiene Standards for Chrysotile Asbestos Dust", published in Annals of Occupational Hygiene, volume 11, pages. 47 to 69, 1968, one reads information such as the following.

"As long as there is an appreciable amount of dust in the air, the committee recognises that there maybe some risk to health."

"The primary danger of inhaling asbestos dust is asbestosis. It is generally recognised that there is also significant risk of lung cancer associated with asbestosis. A risk of mesothelioma of the pleura and peritoneum exists in connection with the inhalation of crocidolite dust in particular."

"There can be little doubt that these risks will be at least in the lowest concentration, but the quantitative relationship between asbestos and cancer risk is not known, nor is it known exactly why these two are related nor even whether all kinds of asbestos present a risk.

Consequently it is not possible at this time to specify an air concentration which is known will be free of risk in this respect."

In the report of the Director General of Public Health for New South Wales for 1967, published in 1969, it was noted that the sputum cytology examination of long term employees in asbestos industries in continuing and an asbestos survey has been completed.

In the report of the Director General of Public Health for New South Wales for 1968, published in 1969, limpet asbestos spraying was reported and tests of the air in the breathing zone of the sprayer showed up to 250 mppcf. It was noted that assistants standing some distance away were also exposed to lesser but still hazardous amounts of asbestos.

In the report of the Director General of Public Health for New South Wales for 1969, it was noted that the medical branch had detected 19 new cases of asbestosis. Also, several investigations were made of the use of asbestos as a spray insulation and as a lining board. The hazards were found not only to some unprotected operators, but also because of the presence of other personnel not engaged in the process.

In 1969, in the Medical Journal of Australia, JEH Milne from the Victorian Department of Health, Industrial Hygiene Division, describes fifteen cases of pleural mesothelioma in Victoria, and amongst other occupations, lists mesotheliomata in a logger, in Naval Dockyard workers, and in a person whose father worked at an asbestos cement factory.

In the proceedings of the International Pneumoconiosis Conference held in Johannesburg in 1969, published in 1970, E Walther noted that "the Asbestosis Research Council in the UK has reached the conclusion, and emphasizes the fact, that there is no hazard in the handling, working and fixing of asbestos cement products, provided certain simple precautions, outlined in their Code of Practice, are followed".

The Asbestosis Research Council in their recommended "Code of Practice for Handling, Working and Fixing of Asbestos and Asbestos Cement Products in the Building and Construction Industries" published in April 1967, recommended that when mechanical cutting or machining takes place in factories or in confined spaces, efficient dust extraction equipment should be installed or respirators of a type which are approved by the factory inspectorate should be worn. They also note that waste dust or rough cuts should not be allowed to accumulate in the working area and should be disposed of in such a way as to avoid escape of dust. Damping or wetting of waste before disposal was recommended. Vacuum cleaning was recommended to keep ledges,

floors, trusses etc free from dust accumulation and it was noted that removal of dust by brushing should be avoided. It was also noted that operatives should wear overalls made from nylon or other synthetic material and should be free from open pockets etc. They further state that under site conditions, in general the same recommendations apply as for factory cutting. They further note that operatives should be advised on the precautions to be taken when cutting asbestos and asbestos cement products.

Also in 1969, E O Longley from the Department of Public Health, Sydney, wrote in the Medical Journal of Australia:

"Asbestos is seen as one of the most significant medical problems deriving from industry in the present age. As not only asbestosis but also carcinoma of the lung and mesothelioma of the lung are accepted by the New South Wales Worker's Compensation (Dust Diseases) Board as compensable injuries provided that adequate industrial exposure to asbestos can be proven, it is important that all physicians should be acquainted with the three conditions and should, when they see conditions resembling carcinoma or mesothelioma of the lung, be alerted to make the fullest possible inquiries into the patient's industrial background and place of residence."

In Britain in 1969, the Asbestos Regulations, were gazetted as UK Statutory Instruments 690, with all asbestos operations to be required to be under extraction ventilation, or respiratory protection instituted.

The National Health and Medical Research Council in Canberra in 1969, in the 68th session of Council, published in 1970 its document "Atmospheric Contaminants. Hygiene Standards for Contaminants of the Air of the Workplace" and stipulated an occupational exposure standard for asbestos of 4 fibres/mL.

Bamber and Butterworth in 1970 in an article entitled "Asbestos Hazard from Protective Clothing" in the Annals of Occupational Hygiene noted hazardous levels of chrysotile even from the wearing of asbestos aprons and the use of asbestos gloves.

In March 1970, the UK Government released Technical Data Note No. 13, "Standards for Asbestos Dust Concentration for Use with the Asbestos Regulations 1969". A copy of this document is appended to this report. In this Technical Data Note, guidance was given on how HM Inspectors of factories would interpret the expression "Dust consisting of or containing asbestos to such an extent as is liable to cause danger to employed persons and how the measurements may be made". The levels regulated were as follows:

*0.2 fibres/cc maximum for crocidolite
2 fibres/cc time-weighted-average for other asbestos types
12 fibres/cc maximum peak for other asbestos types*

In 1972, R Barnes from the Workers Compensation (Dust Diseases) Board, Sydney, reported in the Medical Journal of Australia a number of cases of patients with asbestosis, including a lagger, a boiler maker who was often engaged in stripping old asbestos lagging from boilers and hot water pipes, and a 57 year old male who had been an asbestos worker for 17 years, mainly cutting asbestos cement sheets. With respect to the last-named patient he indicated that "these power saws are now exhaust-ventilated, but were not so in the early years".

In January 1973 an editorial in the Medical Journal of Australia noted that "workers outside the asbestos processing industry who handle asbestos materials may also be at risk and it is most

important to carry out an educational program amongst workers in the house building and ship building industries for example, where the handling of asbestos products is quite common".

In the report of the Director General of Public Health for New South Wales for 1971, published in 1973, a report was presented in respect of asbestos dust exposure to truck drivers whilst picking up asbestos at wharfs and delivering to various importing agents and manufacturers, all involving Canadian shipments of chrysotile. The workers compensation (Dust Diseases) Board noted 30 new cases of asbestosis and further cases of mesothelioma and bronchogenic cancer related to exposure to asbestos dust.

The report of the Health Commission of New South Wales for the year ended 30th June 1974, published in 1975, it was noted that surveys of the handling of asbestos in industrial processes had been undertaken that year. They also note 28 new cases of asbestosis, 1 case of asbestosis with lung cancer, and 3 cases of asbestosis with mesothelioma.

In 1975 the NH&MRC released its "Model Asbestos Regulations", which discuss hazards and control procedures.

In 1976 the NH&MRC released its "Membrane Filter Method for Estimating Airborne Asbestos Dust".

D O Shiels, in a letter to the Medical Journal of Australia on November 13th 1976, discussed the intended application of the 1945 Harmful Gases, Vapours, Fumes, Mists, Smokes and Dusts Regulations. He wrote:

"As long ago as 1945, the Harmful Gases, Vapours, Fumes, Mists, Smokes and Dusts Regulations 1945 of the Health Act specified the maximum permissible dust counts for asbestos particles for any occupation. These "blanket" regulations were designed to cover any circumstances of its use, Secondly, through evidence which was given to the Workers Compensation Board, patients received compensation for pneumoconiosis due to asbestos dust, in the 1950s. Thirdly, I personally carried out a large number of asbestos counts in a variety of occupations using asbestos. These were done many years before my retirement, which was in 1956. Fourthly, asbestosis bodies were first found in the sputum of persons suffering from asbestosis, in this Division in the late 1940s or early 1950s. Incidentally, the university professor to whom a sample was referred had failed to find them. Finally, in lectures to medical students, nurses, and health inspectors, asbestosis was described and illustrated. These lectures included reference to the carcinogenic effects of asbestos, the contrasting x-ray pictures in asbestosis and silicosis the time of exposure intervals and so on."

In 1977 the NH&MRC produced its Approved Occupational Health guide to Asbestos. The hazards of exposure to asbestos dust and preventive measures were discussed.

In 1978, the Victorian Government introduced the Labour and Industry (Asbestos) Regulations, 1978, under the Labour and Industry Act 1958, these regulations being Statutory Rules 1978 No. 435.

In 1978, the NH&MRC produced the "Code for the Handling of Asbestos by Small Users" which discussed, amongst other things, the disposal of asbestos wastes and the cutting of asbestos-containing boards.

In 1978, the NH&MRC reduced the occupational exposure standard for asbestos to 2 fibres/ml."

As indicated the above summary, by Mr. Kilpatrick, of the history of identification of the risk of asbestos is useful from a coronial perspective.

Coroner's comment

This court has already highlighted the issue of deaths from exposure to asbestos in the case of Alban Atwood (Coroners Case Number 2153/99). Fitzpatrick's summary of the knowledge and history of risk adds to the useful information being collected by the State Coroner's Office on this important issue.

No doubt Mr. Rawson was exposed to the asbestos fibre (from which he subsequently acquired his disease) many years after the risk and consequences of exposure were well identified by governments, industry and the research community.

It should be observed that deaths associated with asbestos exposure are now being reported to the Coroner (see comments in Atwood, p.11).

As a matter of information copy of this finding will be sent to the:

- Attorney General,
- The Minister for WorkCover, and
- The State Coroner's Committee examining the issue of reporting an investigation of occupational disease.

Graeme Johnstone
State Coroner

**RECORD OF INVESTIGATION INTO THE DEATH OF
ALBAN BASIL ATWOOD (WITHOUT INQUEST)**

FINDINGS

The death of Alban Basil Atwood occurred on the 16th July 1999 at the Peninsula Private Hospital from 1(a) Generalised Hypoxia; 1(b) Pulmonary Atelectasis; 1(c) Bilateral pneumothorax with subcutaneous emphysema following biopsy of pleura with drainage of effusion for right pleural effusion due to fibrosis and mesothelioma. Contributing factors - II Ischaemic Heart Disease.

Recent medical history and events leading to death

Mr. Atwood, aged 86, worked as a plumber for various firms prior to his retirement in July 1975. On 10th July 1999 Atwood presented to his general practitioner, Dr. Stewart Bowman with shortness of breath. An x-ray was performed and a large right sided pleural effusion was discovered. He was admitted to the Peninsula Private Hospital where he died shortly after surgery.

Mr. Atwood had a history of shortness of breath with Chronic Obstructive Airways Disease (C.O.A.D.) identified as far back as 1986. In a report dated 16th September 1986, Mr. Malcolm Scott wrote that the:

‘ . . . problem is this dyspnoea on exertion and this tight feeling across his chest which takes away his breath rather than causes pain i.e. he really denied any pain to me even when specifically asked. It eases very quickly when he stops.’

And on examination (in part):

‘ . . . There is very significant C.O.A.D. with a peak flow of only 320, but no focal changes. . .

Mr. Scott noted that chest x-rays did not disclose any ‘*significant abnormalities.*’

On presentation to Dr. Bowman various tests were conducted and, as indicated, Atwood was admitted to Hospital. Dr. Peter Cole reported on Atwood’s admission to Peninsula. Cole wrote:

‘Mr. Atwood was found to have a large right pleural effusion and was arranged to undergo a thoracoscopy, biopsy and talc pleurodesis.

At the thoracoscopy there were plaques over the chest wall characteristic of a malignancy and biopsy proved them to be extensive malignant mesothelioma. It was thought at the time that if any of the lung could be pleurodesed to the chest wall it would limit the amount of build up of pleural fluid with its subsequent underlying poor lung expansion, and so talc was insufflated and drains inserted.

Following this procedure, he developed an air leak from the lung evident by bubbling in the chest drain, and he subsequently developed extensive subcutaneous emphysema. As the chest X-ray showed that the lung would not fill the lower half of the chest the air leak could not be

stopped by waiting for pleural apposition and pleurodesis, and it was felt the drain should be left and that time would seal the lung.'

On the emergency that eventually lead to death, Dr. Cole reported that following surgery, he was:

'called urgently to the High Dependancy Unit because he was hypotensive and sweating and unwell. When I arrived I confirmed the findings and felt he must be having a myocardial infarct. The chest drain was still swinging with breathing and intermittent bubbling was occurring. Because of the incurable nature of the immediate surgical problem of the air leak and the overall incurability of the mesothelioma, no desperate measures were undertaken, apart from giving a dose of adrenaline which he did not respond to, and he passed away quietly from the myocardial infarct.'

It is noted that Dr. Cole reported the death of Atwood to the coroner because it *'occurred within 24 hours after the surgery it had to be reported. . . .'*

Mr. Atwood's work history

- **summary**

Senior Constable King Taylor, from the Coroner's Assistants Office, investigated the circumstances surrounding Atwood's death. Taylor summarised the work history as:

'Mr. Atwood started a plumbing apprenticeship in 1929. He worked for Thomas Walker's Mechanical Services pre war then served in the Second World War from 1939 to 1945, and was employed by Mountain & Fraser (plumbing Co.) from the late 1940's till February 1975.'

As part of the investigation Senior Constable Taylor interviewed Jack Williamson, a practising plumber who has experience of the plumbing industry straddling the time of Atwood's working life.

- **pre-war**

Apparently Mr. Atwood worked for Thomas Walkers:

' . . . which had it's head office down in the dockland area. Thomas Walker's employees did a lot of work on ships, large buildings in the City, hospitals and blocks of flats.'

- **Second World War**

Mr. Atwood enlisted in the Australian Army in September 1941 and was discharged on 4th December 1945. Taylor indicated that from perusing his Army files it does not appear Atwood came *'into contact with asbestos during his enlisted years'*. During this period he attained various qualifications including mechanic, panel beater, painter and electrician.

In September 1999 Mrs. Eileen Atwood (Atwood's widow) made a claim in relation to his death to the Commonwealth Department of Veterans' Affairs. Initially the claim was rejected as not being *'related to service.'* It was alleged in the claim that death was caused by Atwood's *'smoking and drinking habits.'* The Delegate of the Repatriation Commission (Sandro Cardinali) decided that the cause of death was *'mesothelioma'* and that any exposure to asbestos fibres *'did not occur on operational service'*.

Following that decision Mrs. Atwood lodged an application for review and the decision was reversed on 7th December 1999. The Review Officer (Ron Fergusson) considered that *'Ischaemic Heart Disease contributed to the death. . . '* and that *'Mr. Atwood had a war-caused smoking habit that meets the requirements of the Statement of Principles for Ischaemic Heart Disease.'*

It appears that Mr. Atwood did not come into contact with asbestos during his time overseas at the War.

- **post war**

Mr. Atwood commenced working for Mountain & Fraser Plumbing in 1947 and retired in July 1975. Taylor ascertained from Geoff Peterken (Mountain & Fraser Plumbing) that Atwood initially worked from the head office of the plumbing business which was at 333 Collins Street, Melbourne. Apparently:

'Mr Atwood was employed as a sheet metal worker, cum installer of ventilation air conditioning and heating systems in the metropolitan area. He would have worked on institutional type buildings as well as commercial type buildings. At this time he would have spent 20% of his work time in the factory manufacturing the ducting and 80% of his time on site installing the systems.'

In 1958 the business moved from its Collins Street location to 18 Weston Street, Brunswick. Taylor's investigation indicates that:

'Mr. Atwood's employment changed only slightly after this move. He now spent 80% of his work time at the factory manufacturing the duct work and only 20% on site. This arrangement stayed in place till he retired in 1975, from the Clarke Street, East Brunswick factory.'

Asbestos and its general use in plumbing work

Senior Constable Taylor's investigation indicated that both before and after the Second World War Asbestos was used extensively in the plumbing industry. Asbestos cement (AC) sheeting and Asbestos *'Mill Board'* (compressed Asbestos) was used in the building industry until the 1980s from which time *'Villa Board'* has been used.

Senior Constable Taylor reports that:

'4. Asbestos was also used in "lagging," a method of covering pipes for insulation. Compressed asbestos would be wound around piping then covered with calico. This was not a great problem in itself until the asbestos had to be cut to cover a bend (right angle join) in the pipe. The technique used to cover a bend was called "lobster back" joining. During this operation the asbestos would have to be cut many times which would allow the fibres to become air born and inhaled. Lagging was usually done by "lagger", i.e. unregistered plumbers, but was also done by plumbers when necessary.

5. Asbestos was also used to insulate Boilers. The boilers of this era were made of cast iron and needed to be insulated. The only method was for the plumber to place chicken wire over the outside of the boiler then mix water with powdered asbestos then place it over the chicken wire, thus forming a type of cast around the boiler. Packaged Boilers, i.e. already insulated, were not widely available till the 1980's.

6. Asbestos was also used in fluing for domestic gas heaters, in the form of asbestos sheeting.'

And that the:

'8. The work done on ships would have entailed lagging boilers and insulating piping. It would also have included work on navy vessels. A specific job on navy vessels was to insulate between decks. This was achieved by bolting sheet metal trays to the deck head above. The trays had asbestos powder layed out in them, they would then be raised to the deck head by the plumbers and held in place using their heads. The plumber would then locate a bolt by tapping the tray. Once the bolt was located the tray was forced upward till the bolt broke through the sheet metal, allowing the plumber to fasten the tray to the deck head. In doing this, asbestos would come away through the hole and drift in the air.

9. The work done by plumbers in hospitals, large buildings and blocks of flats would, apart from regular plumbing, include lagged plumbing for the heating of the flats. The plumbers would be in constant contact with asbestos doing this work, especially insulating boilers and pipes, inserting the flues and any other job that entailed cutting asbestos sheeting.'

The product 'Mill Board' was used by plumbers:

'... during the installation of duct work for the heating and cooling systems. This board was used to line parts of the duct work, where large electric heating elements were situated, and would have to be cut with a "Stanley" type knife to fit. The cutting of the board would allow fibres to become air born and thus inhaled. Asbestos Mill Board like other asbestos products was phased out of use in the early 1980's.'

Post mortem report and the development of the disease

Dr. John Maynard, Specialist Pathologist, Victorian Institute of Forensic Medicine concluded:

'1. Death was due to reduced oxygen supply to the blood from the lungs which had collapsed following a pneumothorax following pleural tap and biopsy for drainage of a pleural effusion. This is a recognised complication of the procedure.

2. The pleural effusion had accumulated because of the presence of pleural fibrosis and more particularly mesothelioma.

3. Mesothelioma is a malignant tumour arising from the mesothelial cells of the pleura and is commonly associated with asbestos exposure during life. In this case there was exposure to asbestos in his job as a plumber according to his son.

4. The ischaemic heart disease would have compounded the lack of oxygen and was a contributing factor to the cause of death.'

The extent of time for development of pleural fibrosis is about 10 years and the eventual development of mesothelioma following exposure to asbestos fibres can be variable and is generally long term in the vicinity of about 35 years.¹ Although, Woodford and Ranson also report that there are 'wide variations in this time frame. . . ' Those variations are considered by Sir Montague Levine

¹ Dr. N. Woodford and Associate Professor D. Ranson - Journal of Law and Medicine, Volume 7, Number 4 (May 2000) at pps. 347 and 349.

in *'Levine on Coroners' Courts.'* Levine and his co-author James Pyke write that the intervals *'have been found to be seldom less than 20 years, usually 30 to 40 years, and sometimes as long as 60 years.'*²

It is noted that lung tissue samples have been retained but not tested as to asbestos fibre numbers and type.

Conclusion

Senior Constable Taylor comments that:

'It would appear that Mr. Atwood would have come into contact with Asbestos related products during his entire working life as a plumber. As to which era of his working life is the most likely to have contributed to his later ill health I am unable to say.'

It is reasonable to conclude that, as a plumber, working as he did over a period of about 45 years, Mr. Atwood was exposed to asbestos fibres. Whether the particular exposure (which eventually contributed to his death) was before the Second World War when he was employed by Thomas Walker's Mechanical Services or after the War when he worked for Mountain & Fraser Plumbing (or both) is difficult to identify.

RECOMMENDATION AND COMMENTS

The Findings, Recommendations and Comments will be forwarded to the Attorney General and the respective Ministers for WorkCover and Health for their consideration.

The reporting and coronial investigation of deaths from industrial disease in Victoria (e.g. Mesothelioma)

It is likely that Mr. Atwood eventually contracted mesothelioma as a direct result of his work as a plumber. He had a lengthy work history in the plumbing trade³, which meant that it has been difficult to determine the precise circumstances and time at which he ingested the asbestos fibres that lead to his death.

The problem of death from mesothelioma will be a more significant and developing issue for our society over the next few years. Woodford and Ranson estimate that *'the annual incidence of mesothelioma is not expected to peak until the year 2020.'*⁴ Whilst this figure relates to a specific occupation in Western Australia it is some indication of the potential for the Australian Health sector and for the Victorian community. The National Occupational Health & Safety Commission's *'Australian Mesothelioma Register Report, 1998 (Executive Summary)'* notes that:

'Australia has a long history of asbestos mining and production, as well as a history of importation of raw asbestos and heavy use of manufactured asbestos cement and other products.'

² Sir M. Levine and James Pyke - *'Levine on Coroners' Courts'*, Sweet & Maxwell, 1999, p.335. para. 33-11.

³ It is noted that for the period 1994 to 1996 (in Australia) 62 plumbers were by recorded the National Occupational Health & Safety Commission's report on *'The Incidence of Mesothelioma in Australia 1994 to 1996'* as having contracted the disease (Note: this number is incidence and not necessarily deaths).

⁴ Dr. N.Woodford and Associate Professor D. Ranson - *'Asbestos-related disease'* in Journal of Law and Medicine, Volume 7, Number 4 (May 2000) , 347. (quoting de Klerk and Armstrong's 1989 research paper on *'Predictions of Future Cases of Asbestos-related Disease Among former Millers of Crocidolite in Western Australia'*).

And that Australia:

'has a very high and increasing incidence rate.'

Over the last three years in Victoria there have only been three cases reported to the Coroner where mesothelioma was a potential cause of death. Dr. Matthew Lynch commented in an article entitled *'Natural Disease and the Coroner'* published in a recent edition of the *Journal of Law and Medicine*⁵ that:

'The disease "mesothelioma" would have appeared on several hundred death certificates in Victoria in the last few years. However, between 1996 and 1998 only three deaths involving patients with mesothelioma were reported to the coroner. Two of these deaths occurred unexpectedly during medical procedures and one was a suicide. The reporting of these cases to the coroner was therefore unrelated to the nature of their underlying tumour pathology.'

It is noted that the death of Mr. Atwood was reported to the Coroner by the treating doctor because it *'occurred within 24 hours after the surgery it had to be reported. . . .'* Whilst the reasoning that it had to be reported because it occurred within 24 hours after surgery is based on a mistaken (but perhaps common) view within the medical profession of the Coroner's jurisdiction it should have been reported on another basis. That basis is either that that the death of Atwood from mesothelioma is *'unnatural'* or that it has occurred as a result of *'accident'* or *'injury'*.⁶ The ingestion is presumably by *'accident'* and has resulted in an *'injury'* (albeit a long time ago).

These bases of reporting to the Victorian Coroner are also considered in *'Natural Disease and the Coroner'* by Dr. Lynch.⁷ Lynch comments that:

*'A recent high-profile case reported in the mainstream news media in Australia raises the problem of what constitutes a death that is reportable to the coroner. The circumstances of the case involved the tragic death of a young woman from a malignant tumour (mesothelioma). The case received media coverage because the young woman was allegedly exposed to the cancer-causing agent (asbestos) whilst employed in a government department. It was reported that her lawyers had secured an out-of-court settlement only days prior to her death from the disease. Indeed, it seemed for a time that she might die before her claim could be heard or settled. The Victorian State Coroner accepted jurisdiction to investigate the death, presumably on the basis that it was a death that was or might be a reportable death. The case is fascinating at a medico-legal level with respect to the potential extent of the coronial jurisdiction in the different categories of reportable deaths.'*⁸

Dr. Lynch also examines the philosophy behind the modern coronial system and the Coroners Act 1985 (Victoria) when he writes:

'More importantly perhaps, the Act enables the coroner to make recommendations to the Attorney General on matters of public safety or the administration of justice. This is an addition to the more "traditional" domain of coronial power with respect to death

⁵ Dr. M. Lynch - *Journal of Law and Medicine*, Volume 7, Number 4 (May 2000), 345. Lynch is a Forensic Pathologist working at the Victorian Institute of Forensic Medicine. He also holds the degree of LLB (Hons).

⁶ Coroners Act 1985 – Section 3 (*'Definitions'*) *'Reportable Deaths'* (e).

⁷ Dr. M. Lynch - *Journal of Law and Medicine*, Volume 7, Number 4 (May 2000) , 345.

⁸ Op cit p.345.

*investigation where the coroner must find, if possible, the identity of the deceased, how death occurred, the cause of death, and particulars required to register the death. It is this last mentioned function of the modern coroner, vis-a-vis injury prevention and wider community responsibility with respect to disease surveillance, that touches on the issue of mesothelioma and other is like diseases that arise in the setting of industrial or to environmental exposure to toxic agents.*⁹

The extent of reporting and coronial investigation of industrial diseases such as mesothelioma is ultimately a matter for the government (as it will need additional resourcing and/or there may be alternative methods of investigating and recording these type of deaths). There is certainly a lack of attention to these cases¹⁰ at many levels with a resultant potential for lack of awareness of specific systems issues and inadequate data on the true nature of the circumstances and death rates across a wide range of industrial disease processes. Dr. Lynch also makes the point that:

'The current position is certainly one whereby most such death are signed off by a treating medical practitioner as "natural" and thus are not subject to the glare of coronial scrutiny.

*If the coroner is to investigate unnatural or accidental deaths or those resulting from injury, there certainly needs to be some consistency. The community needs to be reassured that specific categories of death are either reportable and investigated or are not. . . '*¹¹

In the United Kingdom, unlike Australia, coroners regularly investigate deaths from industrial disease. Historically, industrial diseases have been reportable to UK coroners under the category of 'unnatural' deaths.¹² Also certain classes of 'industrial diseases'¹³ which are related to a specific occupation are 'notifiable' by the coroner to certain agencies for purposes like Social Security (this procedure also assists in providing a clear line of documentation and information on the extent of the problem) or recording of deaths in mines. However, it must be noted that the list of specified 'industrial diseases' under the Social Security legislation (or other legislation) is not exclusive for coroners' purposes and coroners may investigate industrial diseases where a particular occupation is not involved.

In 1999, in a publication 'Coroner's Courts – a guide to law and practice', United Kingdom Coroner Christopher Dorries notes that in some UK coroners' jurisdictions:

⁹ Op cit P.345.

¹⁰ For example Silicosis/Pneumoconiosis in Mine Workers, cancers induced by industrial chemicals (bladder cancer in die workers, skin cancers in petroleum workers, nasal cancer in woodworkers, etc), disease caused by radiation exposure in the workplace, infectious diseases contracted in the workplace (ie. Legionaire's disease).

¹¹ Dr. M. Lynch - Journal of Law and Medicine, Volume 7, Number 4 (May 2000) , 346.

¹² See discussion in 'Jervis on Coroners' (W.B.Purchase and H.W.Wollaston, Eds.), Sweet & Maxwell, Ninth Edition. 1957. at pps. 93-97. Also Dorries (C. Dorries – 'Coroner's Courts, a guide to law and practice', John Wiley & Sons, Chichester, 1999, p.45-46, para. 3.13.1) provides his own list for guidance in determining whether a death is reportable. He notes:

'The present requirements for reporting deaths to the coroner are a muddle of legislation, common law and varying advice. This is most unsatisfactory and in an effort to provide doctors in his jurisdiction with some clear guidance the author prepared the list. . . '

In that list Mr. Dorries states that a death should be reported to the Coroner if 'the death could be due to an industrial disease or related in any way to the deceased's employment.'

¹³ Defined under the UK Social Security legislation – 'Social Security (Industrial Injuries) (Prescribed Diseases) Regulations 1985.'

*‘ . . . industrial disease cases are by far the largest single verdict recorded. Although there are a vast number of recognised industrial diseases, the great majority arise from exposure to asbestos or coal dust.’*¹⁴

Coroner Dorries also footnotes the comment that:

*‘ . . . the proportion of verdicts of “industrial disease” returned by coroners has almost doubled in the last 10 years and in 1997 amounted to 1836 verdicts. . . ’*¹⁵

In Victoria, according to research undertaken by Dr. Lynch, over the last few years mesothelioma was recorded as having *‘appeared on several hundred death certificates’*. For the three years prior to September 1989 the number reported to the Australian Mesothelioma Register in Sydney was about 109.¹⁶ During that three-year period no deaths from mesothelioma were reported to the Victorian Coroner. Recent information obtained from the National Occupational Health & Safety Commission indicates that Mesothelioma deaths for Victoria are 1994-26; 1995-49; 1996-66.¹⁷

In 1995 the Industry Commission held an inquiry into Occupational Health and Safety (*‘Work, Health and Safety’*). The Commission reported that each year in Australia *‘between 650 and 2200 workers die as a result of occupational cancers – the majority from exposure to hazardous materials.’*¹⁸ The Commission commented that:

‘An understanding of the level, causes and cost of workplace injury and disease is essential to the development of effective and efficient prevention programs by individual workplaces, industry and government.’

In the process of examining the limits of the available information sources the Commission commented that the data contained in the National Data Set for Compensation-based Statistics is limited because it *‘is based on workers’ compensation claims. . . ’* and that it *‘significantly underestimates the extent of work-related injury and disease.’*¹⁹ The Commission examined other sources of workplace injury and disease data and in particular Worksafe Australia’s *‘Work-related Traumatic Fatality Study’* of coronial records of *‘traumatic accidents’* at work for the period 1982-1984. The Commission commented that the:

*‘Study excluded deaths from disease, as they are not usually investigated by the coroner.’*²⁰

The shortcomings and difficulties of the controls and research on both *‘old’* and *‘new’* hazardous chemicals are also discussed in the Industry Commission’s Report - Volume 1, Chapter 13.

¹⁴ C. Dorries – *‘Coroner’s Courts, a guide to law and practice’*, John Wiley & Sons, Chichester, 1999, p.106, para. 5.27.

¹⁵ C. Dorries, p.49, para. 3.13.10, footnote 52.

¹⁶ See also G. Johnstone - *‘An Avenue for Death and Injury Prevention’* in *‘Aftermath of Death’* Federation Press, Sydney, 1991, especially at pps. 160-161. The figure cited at p.161 (30 for the same three year period) of mesothelioma deaths reported to the Registry appears incorrect. At the time when the chapter was written (1990) that was the figure obtained from the Registry by the author.

¹⁷ Letter dated 3rd July 2000. It appears that between 1994 and 1996 5 plumbers died in Victoria as a result of mesothelioma. Generally see also National Occupational Health & Safety Commission’s Report *‘The Incidence of Mesothelioma in Australia 1994 to 1996 – Australian Mesothelioma Register Report 1999’* It should be noted that the incidence of mesothelioma reported to the Registry (now the National Health & Safety Commission) for the period 1994-96 is far greater than the deaths.

¹⁸ The 1995 Industry Commission Report (*‘Work Health & Safety’*) - Volume 1, Overview, p.xix.

¹⁹ *‘Work Health & Safety’*, Vol. 1.p.7.

²⁰ *‘Work Health & Safety’*, Vol. 1.p.9.

Coroners in Australia have potential to independently contribute to health and safety in the area of industrial disease. This is not a new idea. For example, in 1927 Mr. F. Danford Thomas (Ed) in *'Jervis on the Office and Duties of Coroners'*, wrote:

' . . . The Secretary of State would take this opportunity of pointing out that in cases where death is due or suspected to be due to an industrial disease. . . .an investigation directed by the coroner may be of great value not only in clearing up any obscurity as to the precise cause of death but also in bringing out all the circumstances contributing to the death, and showing, for example, how far the disease was due to neglect, on the part either of the management or of the worker, to observe the necessary precautions.' ²¹

Yet some 70 years later, the issue of death from industrial disease is still not generally investigated by coroners throughout Australia (or specifically by any other agency in any systematic way).²² Death from industrial disease arguably could be regarded as having originally been caused by an *'unnatural'*²³ (industrial) process, by *'accident'* or *'injury'* thereby coming under the jurisdiction of the coroner in Victoria. From the figures estimated in the *'Work Health & Safety Report'* the issue is a significant work-related health problem for our community.²⁴

As already indicated, very few such cases are reported to the Victorian Coroner, probably as the disease is not generally considered by the medical profession as having resulted from an unnatural process or injury in the first place. In most cases the precipitating event (exposure) has occurred long ago and results in attendant difficulties for investigators in following the trail. But without a systematic method of investigating such cases there is potential for current health/safety controls to lapse and/or new products to be developed without adequate consideration for the long-term health consequences.

The Victorian Coroners Act 1985 does provide a legislative framework (and access to scientific expertise) to investigate some of these industrial disease cases. These classes of deaths, as an alternative to being regarded *'unnatural'* or having resulted *'directly or indirectly'* from *'accident'* or *'injury'* various industrial diseases, could become reportable deaths by being specified as having occurred *'in prescribed circumstances'* in Regulations to the Coroners Act. Currently there is no list

²¹ F.D.Thomas (Ed) – *'Jervis on the Office and Duties of Coroners'*, Sweet & Maxwell, London, 1927, p.289.

²² See discussion by Perth (Western Australia) Coroner David McCann in his chapter *'The Range of Findings open to the Coroner'* in *'Aftermath of Death'* (H.Selby, QC., Ed.), Federation Press, Sydney, 1991. at pps. 17-18. McCann examines the issue of Industrial Diseases and the role of Australian Coroners. He writes:

'Deaths arising from apparent exposure to asbestos have been reported to Coroners in Western Australia from 1989 on the basis that it is reasonable to suspect that such deaths arise from non-natural causes...'

And:

'Now that industrial diseases arising from asbestos exposure are better identified, the question is what other industrial diseases might be causing deaths in the community, how can these be identified and what role will coroners play in drawing these dangers to the attention of the community. . . .'

Apparently, in the early 1990s the Perth Coroner investigated about 150 cases over an 18-month period. There were difficulties in obtaining fibre counts and eventually resources difficulties meant that the coroner could no longer continue with these investigations. It is understood that the Western Australian State Coroner no longer investigates asbestos related death.

²³ See discussion by Coroner David McCann in his chapter *'The Range of Findings open to the Coroner'* in *'Aftermath of Death'* (H.Selby, QC., Ed.), Federation Press, Sydney, 1991. at pps 16-17. McCann examines the meaning of *'natural causes'* and its limits in coronial cases.

²⁴ *'The Work Health & Safety Report'* estimates that about 2000 deaths occur in Australia each year due to *'industrial disease'*.

of 'prescribed circumstances'.²⁵ Perhaps certain classes of industrial diseases ²⁶ should be so prescribed (although the current coronial legislation in Victoria already probably provides a sufficient legal basis ²⁷ for reporting to the Coroner). Once specified in the Coroners Regulations 'prescribing' industrial diseases may be a clearer method of providing guidance for the medical profession (and others) as to the need to report a death (in defined and limited circumstances such as a specified industrial disease) to the Coroner for investigation.

No doubt the consequences of any new (and more defined) reporting arrangement²⁸ for specified industrial diseases (like mesothelioma or asbestos induced carcinoma) would mean a significant increase in the workload of the State Coroner's Office (and supporting investigative agencies such as Victorian Institute of Forensic Medicine,²⁹ Police and WorkCover inspectors) and thus any alteration in current reporting arrangements requires careful consideration. The Coroners' process is but one way of ensuring a reliable system of reporting, data collection and targeted investigation. Specific reported industrial disease cases could be initially evaluated for degrees of investigation and appropriate cases targeted for in-depth investigation, followed possibly by a public inquest.

Recommendation

The Attorney General (perhaps with the assistance of the respective Ministers for Workcover and Health) consider whether there should be improvements in the reporting to the Victorian Coroner of industrial diseases such as mesothelioma (improvements in investigation may also need consideration). The Attorney may consider that it is more appropriate to refer the issue to the Victorian Law Reform Commission for further examination.

Graeme Johnstone
State Coroner
8th July 2000

²⁵ See Coroners Act 1985, Section 3 'Definitions' – 'Reportable death' subsections (e) and (i).

²⁶ See for example the list of dust diseases specified in the First Schedule of the Victorian Administration and Probate (Dust Diseases) Act 2000.

²⁷ See Coroners Act 1985, Section 3 – Definition of Reportable Death (e).

²⁸ Note: Even using the current provisions of the Coroners Act and developing improved education for the medical profession in the obligation to 'report' deaths due to 'industrial disease.'

²⁹ In many cases an autopsy (or full autopsy) may not be necessary as lengthy medical histories may provide sufficient information for the coroner (on advice from the pathologist) to determine the cause of death on an inspection report or inspection report combined with a biopsy.