NOHSC
National Occupational Health & Safety Commission

NOHSC RESEARCH

THE INCIDENCE OF MESOTHELIOMA IN AUSTRALIA 1995 TO 1997

Australian Mesothelioma Register Report 2000

DECEMBER 2000

NATIONAL OCCUPATIONAL HEALTH AND SAFETY COMMISSION

THE INCIDENCE OF

MESOTHELIOMA IN AUSTRALIA 1995 to 1997

AUSTRALIAN MESOTHELIOMA REGISTER REPORT, 2000

DECEMBER 2000

Australian Mesothelioma Register

Location: Alan Woods Building, 25 Constitution Avenue
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INTRODUCTION

This document is the twelfth report of the Australian Mesothelioma Register, produced by the Research and Epidemiology Units of the National Occupational Health and Safety Commission (NOHSC).

Malignant mesothelioma is a cancer of the outer covering of the lung (the pleura) or the abdominal cavity (the peritoneum). Formerly rare, it is increasing in incidence throughout the industrial world and is very frequently associated with past exposure to asbestos. It is usually fatal and has no direct relation to smoking. Australia has the world's highest incidence rate (Takahashi et al, 1999, Tossavainen and Takahashi, 2000).

ASBESTOS PRODUCTION AND USE IN AUSTRALIA

In Australia, more chrysotile than amphibole asbestos was mined until 1939. With the commencement of mining at Wittenoom, Western Australia in 1937, crocidolite dominated production, until final closure in 1966. New South Wales, the first State to mine asbestos, also produced the largest tonnages of chrysotile (until 1983) as well as smaller quantities of amphibole (until 1949). With the closing of the crocidolite mine at Wittenoom, Australian asbestos production and exports declined. Imports of chrysotile also started to decline. The main sources of raw asbestos imports were Canada (chrysotile) and South Africa (crocidolite and amosite). Consumption peaked in about 1975 at 70,000 tonnes/year.

In addition to imports of asbestos fibre, Australia also imported many manufactured asbestos products, including asbestos cement articles, asbestos yarn, cord and fabric, asbestos joint and millboard, asbestos friction materials and gaskets. The main sources of supply were the United Kingdom, USA, Federal Republic of Germany and Japan. In Australia, over 60% of all production and 90% of all consumption of asbestos fibre was used by the asbestos cement manufacturing industry. From about 1940 to the late 1960s all three types of asbestos were used in this industry. The use of crocidolite began being phased out from 1967. Amosite was used until the mid 1980s. Much of this industry output remains in service today in the form of "fibro" houses and water and sewerage piping. By 1954 Australia was number four in the Western world in gross consumption of asbestos cement products, after USA, UK and France, and clearly first on a per capita basis. After World War II to 1954, 70,000 asbestos cement houses were built in the State of New South Wales alone (52% of all houses built). In Australia as a whole, until the 1960s, 25% of all new housing was clad in asbestos cement.

Exposures in the past were very high in some industries and jobs - (eg, 25 million particles per cubic foot (150 fibres/ml) in asbestos pulverisors and disintegrators in the asbestos cement industry; up to 600 fibres/ml in baggers at Wittenoom). Australia still imports about 1,500 tonnes a year of chrysotile fibre and some asbestos products a year, mainly friction material and gaskets. Handling of asbestos in place and removal operations are subject to a National Code of Practice. A series of regulations adopted in the late 1970s and early 1980s by the various States now impose exposure limits of 0.1 fibre/ml for crocidolite, amosite and mixtures and 0.1-1.0 fibre/ml for chrysotile (TWA 8 hr membrane filter method light microscopy, WHO fibres). In October 2000 NOHSC agreed to a phase-

out of chrysotile use, and the chrysotile exposure limit is now under review. At its December 2000 meeting, the Workplace Relations Ministers Council agreed to release for public comment early in 2001, NOHSC's proposal to phase out the use of chrysotile.

The first reported case of mesothelioma, from Wittenoom, was in 1962 (McNulty, 1962). Retrospective search identified 658 cases (535 male, 123 female) occurring in Australia from 1945-1979 (Musk et al, 1989).

THE AUSTRALIAN MESOTHELIOMA PROGRAM AND REGISTER

The Australian Mesothelioma Surveillance Program (Ferguson et al, 1987) began on 1 January 1980. Formal voluntary notification of cases was actively sought from a network of respiratory physicians, pathologists, general and thoracic surgeons, medical superintendents, medical records administrators, State and Territory departments of occupational health, cancer registries, compensation authorities or any other source. A full occupational and environmental history was obtained for each case, either from the patient or next-of-kin. The history taking was non directive but included specific questions on asbestos exposure at the end. Occupational and environmental exposure was based on the opinions of two experienced hygienists, who were not independent nor blinded as to disease status. The diagnosing pathologist was requested to provide slides and/or tissue specimens. These were circulated among a pathology expert panel for confirmation of diagnosis. Post-mortem examination was actively sought in every case in order to confirm diagnosis and to obtain lung tissue free of tumour for lung fibre content analysis.

From 1 January 1986, a less detailed notification system has operated, with a short questionnaire history, which is followed up by mail. In the case of all WA and most of the NSW notifications (comprising 60% of the total Australian notifications), detailed occupational and environmental exposure histories from interview are available from the WA Mesothelioma Register and the NSW Dust Diseases Board. Only histologically confirmed cases are accepted but there is no pathology panel diagnosis confirmation. This is now known as the Australian Mesothelioma Register but is a continuation of the Program. Cross checks with State cancer registries are regularly carried out. Annual incidence reports are published (NIOHS, NOHSC (AGPS) 1989-2000). Recent reviews are available (Leigh, 1994, Leigh et al 1998, 2000).

This report includes data on cases notified to the register and diagnosed in 1995, 1996 and 1997. Full reconciliation with all State cancer registries has been carried out.

Full analysis of incidence in 1998, 1999, 2000 awaits reconciliation checks with State cancer registries. However, notifications for 1998, 1999, 2000 were 404, 551, 490 respectively (to 31 December 2000).

This report was prepared by Jim Leigh, Leigh Hendrie and Dale Berry. We are grateful to the continued cooperation of the notification network.

STATISTICS

Incidence in a calendar year is defined as the number of new cases of mesothelioma first occurring* in an Australian State or Territory in that year. Age specific incidence rates are computed from population tables published by the Australian Bureau of Statistics for the estimated resident mid year populations for 1995, 1996 and 1997 (estimates based on Census 30 June, 1996). Standardised incidence rates (SI) were calculated using the "World Standard Population" 20 years of age or greater[1].

The cumulative incidence rate (CR) is obtained by summing the annual incidence rates (assumed constant in each 5 year group). It can be shown, for rare diseases like mesothelioma, that the cumulative incidence rate approximates the cumulative risk, or probability, of developing the disease in a lifetime[2]. This can be expressed as a percentage. Thus the figure 0.39 in table 3 for NSW (males) under CR indicates a 0.39% or 0.0039 lifetime (20-75) risk of developing mesothelioma. Therefore, the chance of developing mesothelioma between the ages 20-75 is approximately 1 in 254.

* "First occurrence" is the earliest known date of diagnosis (presumptive or confirmed). Cases where a presumptive diagnosis had been rejected before the date of this report (October 31, 2000) have been excluded.

1. Waterhouse, J., Muir, C., Shanmugaratnam, K., & Powell, J., eds, *Cancer Incidence in Five Continents Volume IV*, Lyon (IARC Scientific Publications No 42, 1982) pp 671- 674.

2. Breslow, N. & Day, N., *Statistical Methods in Cancer Research Volume I*, Lyon (IARC Scientific Publications No 32, 1980) pp 51-52.

Figure 1

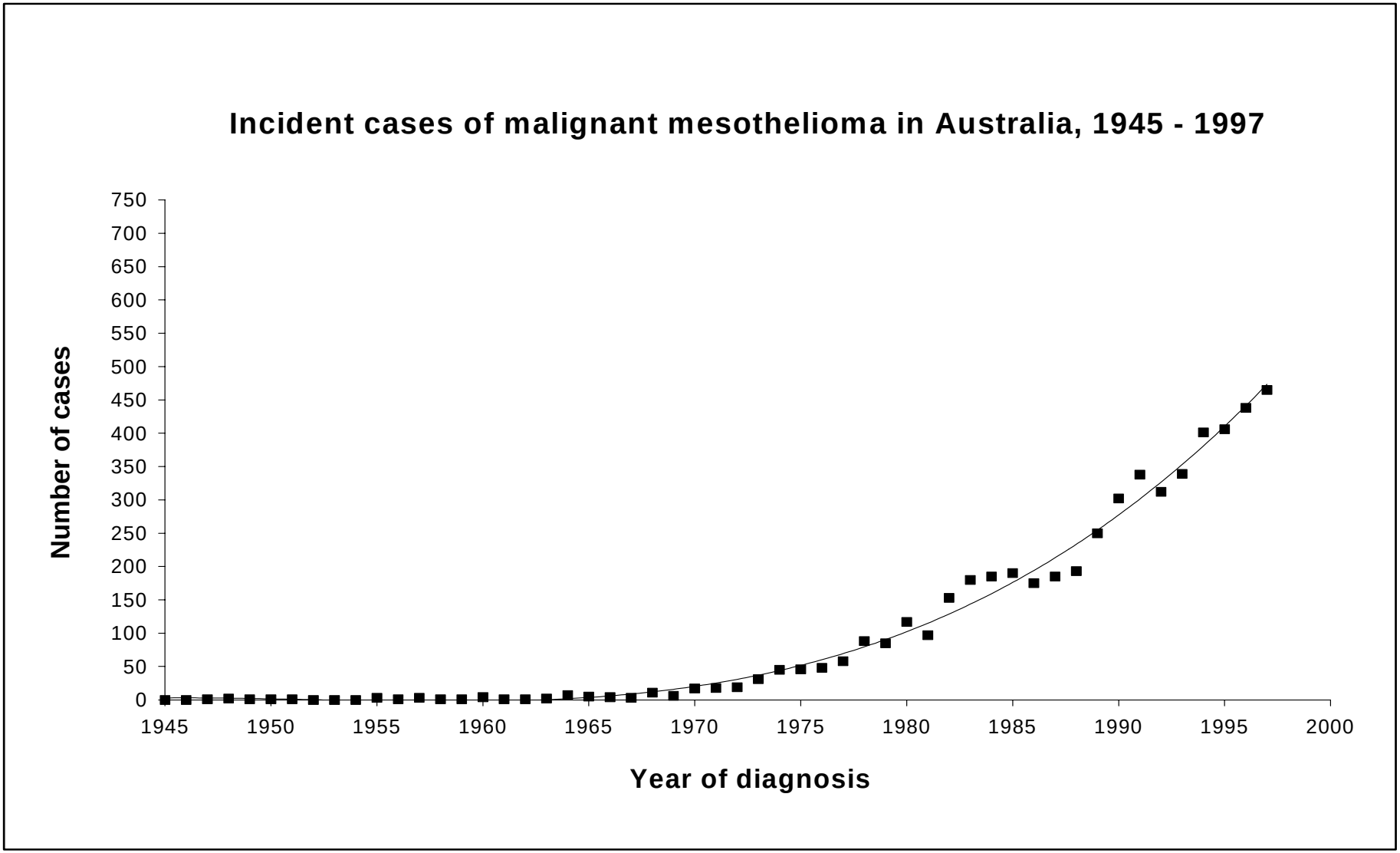

Incident cases of malignant mesothelioma in Australia, 1945 - 1997
Number of cases
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Year of diagnosis

Figure 2

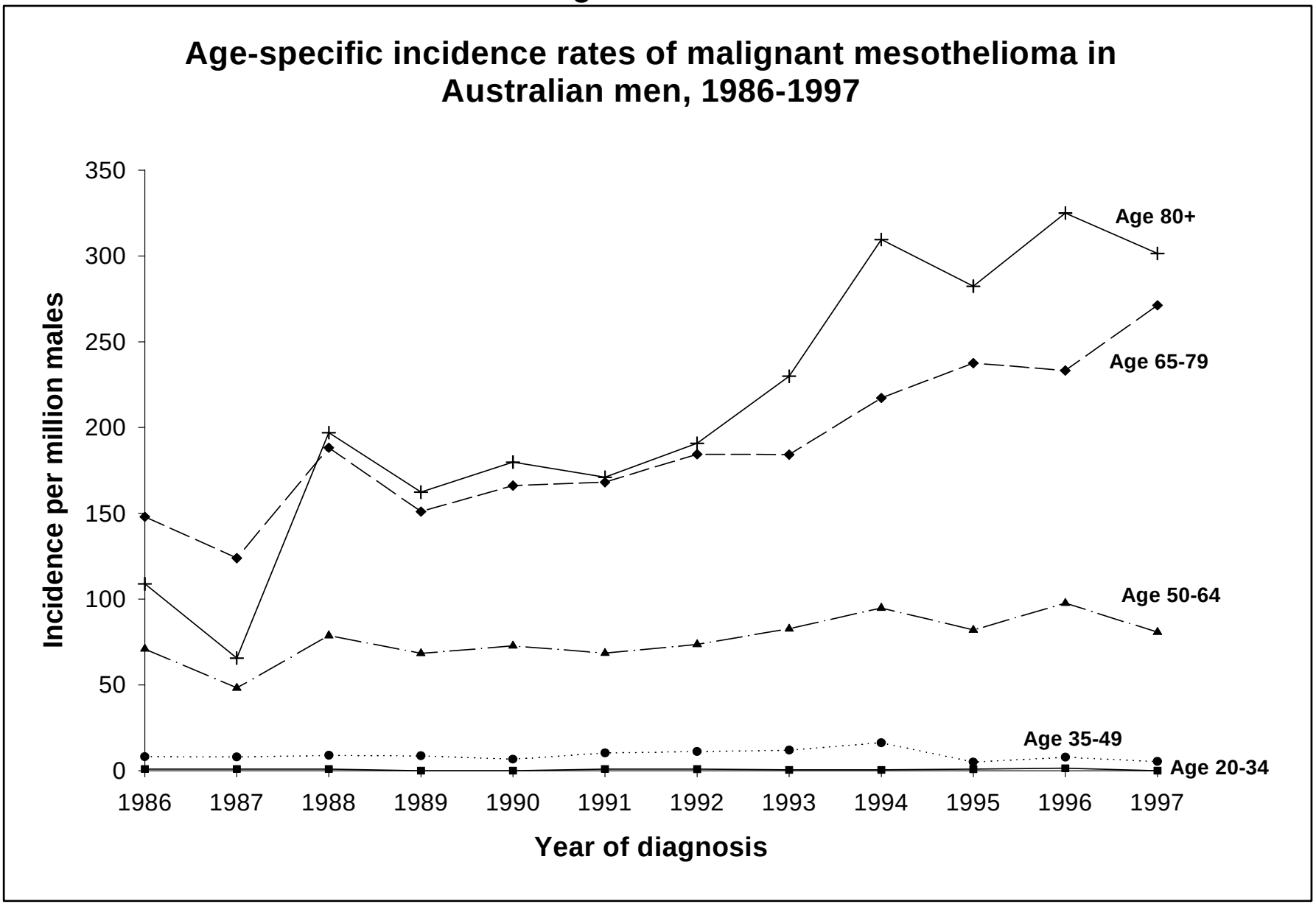

Age-specific incidence rates of malignant mesothelioma in Australian men, 1986-1997
Incidence per million males
350
300
250
200
150
100
50
0
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
Year of diagnosis
Age 80+
Age 65-79
Age 50-64
Age 35-49
Age 20-34

Figure 3

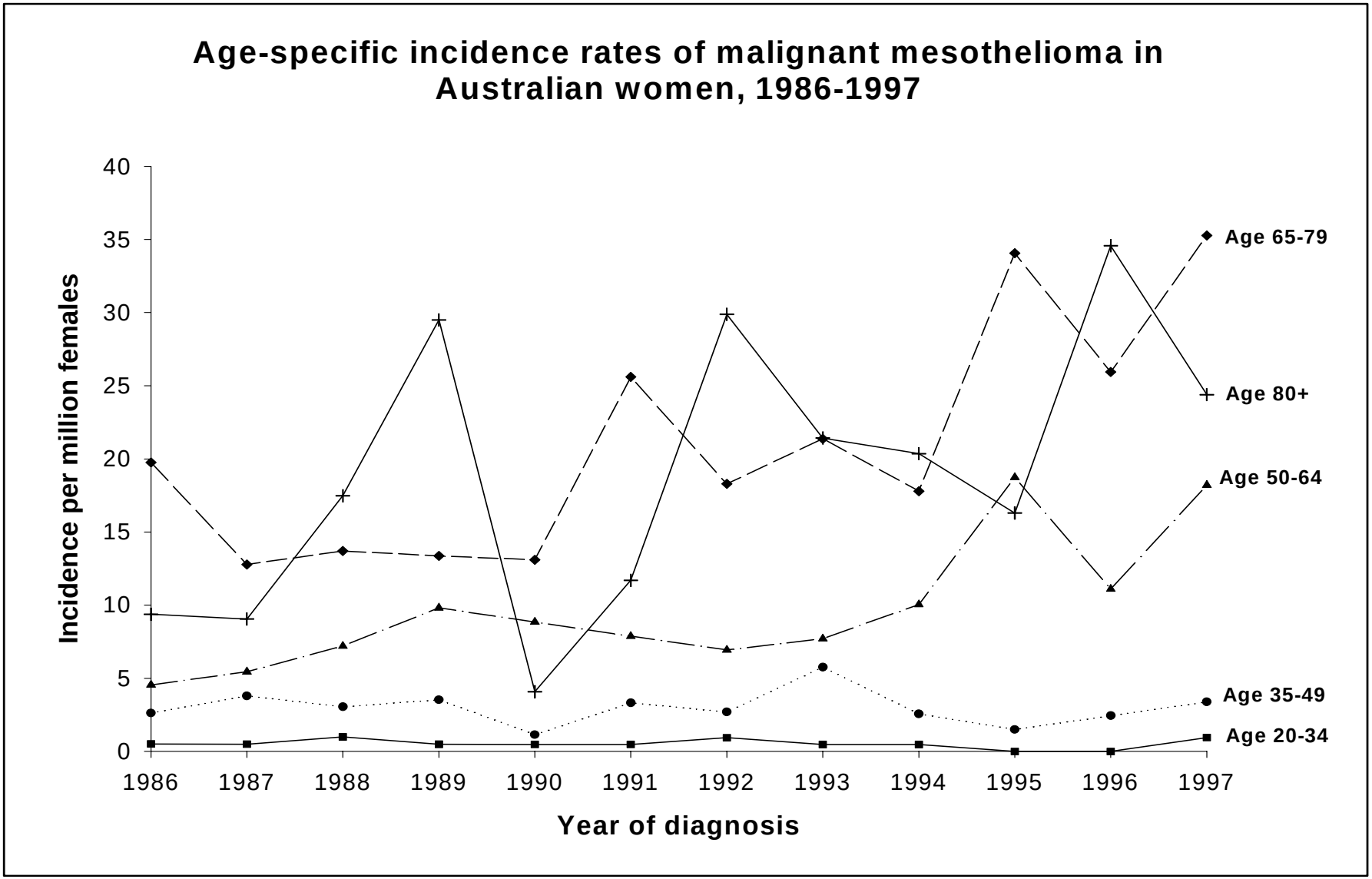

Age-specific incidence rates of malignant mesothelioma in Australian women, 1986-1997
Incidence per million females
40
35
30
25
20
15
10
5
0
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
Year of diagnosis
Age 65-79
Age 80+
Age 50-64
Age 35-49
Age 20-34

Table 1

TABULATION OF MALE CASES OF MESOTHELIOMA IN AUSTRALIA, 1995 BY AGE AND STATE

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUST
20-24	0	1	0	0	0	0	0	0	1
25-29	0	0	0	0	0	0	0	0	0
30-34	0	0	0	0	1	0	0	0	1
35-39	0	0	0	0	0	0	0	0	0
40-44	1	0	0	0	1	0	0	0	2
45-49	4	1	1	0	2	0	0	0	8
50-54	4	5	3	1	2	0	1	0	16
55-59	9	15	8	2	7	0	0	0	41
60-64	19	6	6	6	8	0	0	1	46
65-69	25	15	7	5	11	1	0	0	64
70-74	30	16	11	8	11	0	0	0	76
75-79	20	7	9	3	4	1	0	0	44
80-84	11	7	5	4	6	0	0	0	33
85+	6	3	1	0	2	0	0	0	12
ALL AGES	129	76	51	29	55	2	1	1	344

Table 2

TABULATION OF FEMALE CASES OF MESOTHELIOMA IN AUSTRALIA, 1995 BY AGE AND STATE

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUST
20-24	0	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0
30-34	0	0	0	0	0	0	0	0	0
35-39	0	0	0	0	0	0	0	0	0
40-44	0	0	0	0	0	0	0	0	0
45-49	1	0	0	2	0	0	0	0	3
50-54	2	1	1	0	1	0	0	0	5
55-59	1	1	2	1	2	1	0	0	8
60-64	4	4	1	1	0	0	0	0	10
65-69	3	3	0	0	1	0	0	0	7
70-74	6	1	2	0	0	1	0	0	10
75-79	6	6	1	0	0	1	0	0	14
80-84	0	2	1	0	1	1	0	0	5
85+	0	0	0	0	0	0	0	0	0
ALL AGES	23	18	8	4	5	4	0	0	62

Table 3

TABULATION OF AGE SPECIFIC INCIDENCE RATES FOR MESOTHELIOMA PER MILLION MALES IN AUSTRALIA, 1995 BY AGE AND STATE

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUST
20-24	0.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	1.4
25-29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-34	0.0	0.0	0.0	0.0	14.0	0.0	0.0	0.0	1.4
35-39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40-44	4.5	0.0	0.0	0.0	14.9	0.0	0.0	0.0	3.0
45-49	18.7	6.4	8.6	0.0	31.8	0.0	0.0	0.0	12.6
50-54	23.6	40.9	32.8	25.0	42.1	0.0	214.4	0.0	32.2
55-59	63.9	146.4	110.2	60.0	184.7	0.0	0.0	0.0	100.8
60-64	153.6	66.2	98.5	196.9	251.9	0.0	0.0	224.8	130.1
65-69	211.2	174.5	122.2	162.0	383.7	109.6	0.0	0.0	190.9
70-74	311.8	233.2	236.7	314.2	492.7	0.0	0.0	0.0	281.5
75-79	330.1	163.7	302.4	186.1	296.0	208.2	0.0	0.0	259.6
80-84	306.7	262.1	286.5	402.6	688.5	0.0	0.0	0.0	321.6
85+	315.1	197.8	100.1	0.0	384.0	0.0	0.0	0.0	211.4
ALL AGES	59.7	47.9	44.7	55.5	90.7	12.3	16.4	9.6	54.2
SI	50.4	42.0	39.8	44.2	88.2	9.0	17.9	15.0	47.7
CR	0.39	0.34	0.30	0.38	0.71	0.05	0.11	0.11	0.38
LIFETIME RISK. 1 in:	254	297	328	264	141	1824	933	890	265

Table 4

TABULATION OF AGE SPECIFIC INCIDENCE RATES FOR MESOTHELIOMA PER MILLION FEMALES IN AUSTRALIA, 1995 BY AGE AND STATE

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUST
20-24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35-39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40-44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45-49	4.8	0.0	0.0	39.0	0.0	0.0	0.0	0.0	4.9
50-54	12.3	8.4	11.6	0.0	22.7	0.0	0.0	0.0	10.5
55-59	7.3	9.9	29.2	29.6	55.4	93.1	0.0	0.0	20.2
60-64	31.8	43.2	16.6	31.9	0.0	0.0	0.0	0.0	28.0
65-69	23.7	32.6	0.0	0.0	33.8	0.0	0.0	0.0	19.8
70-74	51.7	11.9	37.6	0.0	0.0	111.6	0.0	0.0	31.0
75-79	71.2	100.2	25.7	0.0	0.0	148.9	0.0	0.0	60.0
80-84	0.0	44.1	35.7	0.0	69.6	204.8	0.0	0.0	29.0
85+	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALL AGES	10.3	10.8	6.9	7.3	8.2	23.4	0.0	0.0	9.4
SI	8.2	8.3	6.0	8.0	7.9	14.1	0.0	0.0	7.8
CR	0.07	0.05	0.05	0.05	0.06	0.10	0.00	0.00	0.06
LIFETIME RISK. 1 in:	1519	1889	2104	1990	1788	977	-	-	1749

Figure 4

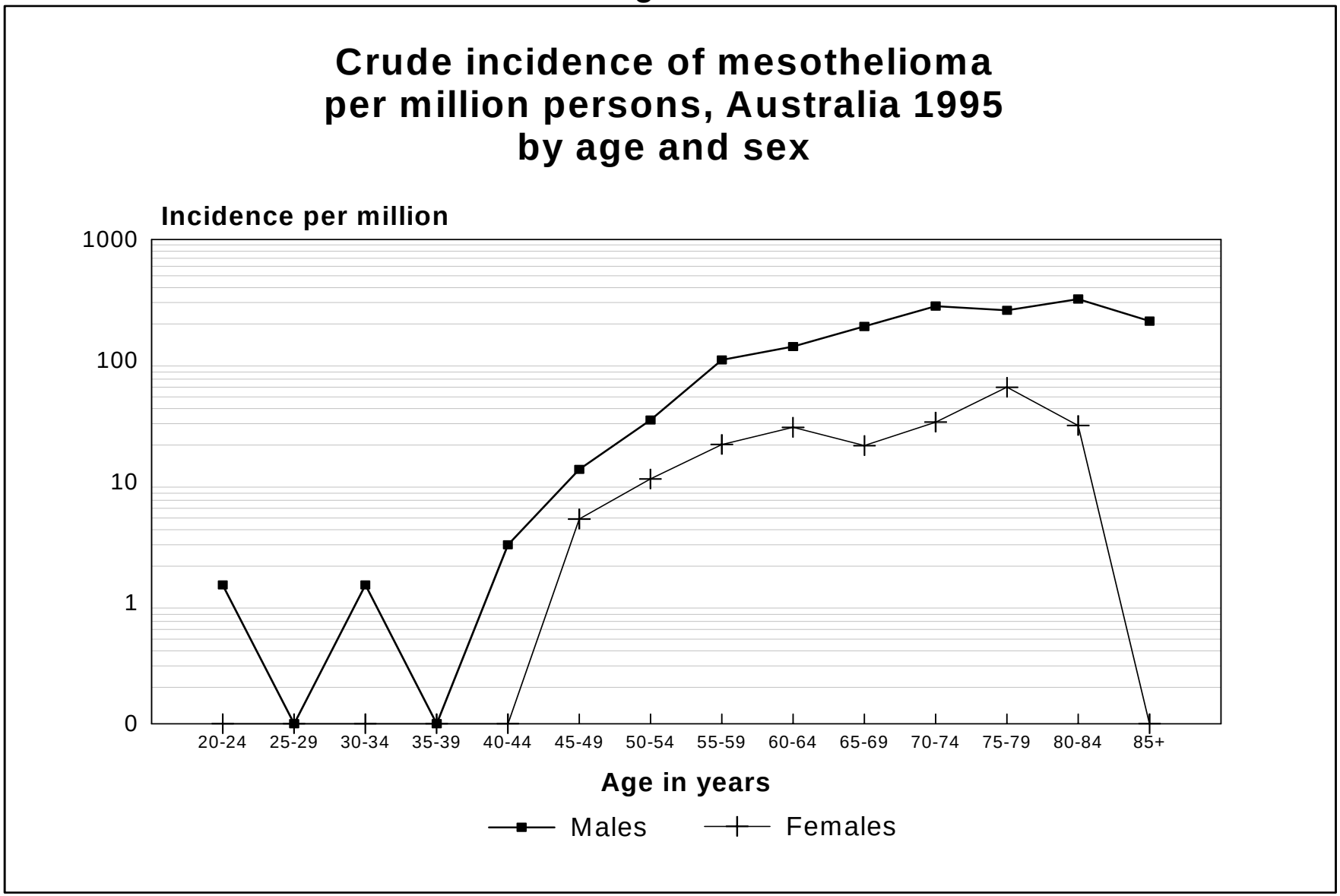

Crude incidence of mesothelioma
per million persons, Australia 1995
by age and sex
Incidence per million
1000
100
10
1
0
20-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
60-64
65-69
70-74
75-79
80-84
85+
Age in years
Males
Females

Table 5

TABULATION OF MALE CASES OF MESOTHELIOMA IN AUSTRALIA, 1996 BY AGE AND STATE

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUST
20-24	0	1	0	0	0	0	0	0	1
25-29	1	1	0	0	0	0	0	0	2
30-34	0	0	0	0	0	0	0	0	0
35-39	0	0	0	0	0	0	0	1	1
40-44	1	0	1	0	0	0	0	0	2
45-49	6	1	1	2	3	0	0	0	13
50-54	13	6	1	2	3	0	0	0	25
55-59	13	8	4	5	6	0	1	0	37
60-64	23	13	5	6	14	2	0	1	64
65-69	25	12	8	4	9	0	0	1	59
70-74	24	20	9	7	7	1	0	0	68
75-79	23	16	7	1	10	1	0	0	58
80-84	10	8	5	2	8	2	0	1	36
85+	4	6	3	1	3	1	0	0	18
ALL AGES	143	92	44	30	63	7	1	4	384

Table 6

TABULATION OF FEMALE CASES OF MESOTHELIOMA IN AUSTRALIA, 1996 BY AGE AND STATE

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUST
20-24	0	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0
30-34	0	0	0	0	0	0	0	0	0
35-39	0	1	0	0	0	0	0	0	1
40-44	0	0	0	0	1	0	0	0	1
45-49	0	2	0	0	1	0	0	0	3
50-54	1	0	0	0	2	0	0	0	3
55-59	1	1	2	0	0	0	0	0	4
60-64	4	1	1	0	1	0	0	0	7
65-69	0	1	1	0	0	0	0	0	2
70-74	7	1	1	1	0	1	0	0	11
75-79	4	3	3	0	1	0	0	0	11
80-84	3	3	0	1	1	0	0	0	8
85+	0	2	0	0	1	0	0	0	3
ALL AGES	20	15	8	2	8	1	0	0	54

Table 7

TABULATION OF AGE SPECIFIC INCIDENCE RATES FOR MESOTHELIOMA PER MILLION MALES IN AUSTRALIA, 1996 BY AGE AND STATE

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUST
20-24	0.0	5.7	0.0	0.0	0.0	0.0	0.0	0.0	1.4
25-29	4.2	5.6	0.0	0.0	0.0	0.0	0.0	0.0	2.8
30-34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35-39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.1	1.4
40-44	4.4	0.0	8.1	0.0	0.0	0.0	0.0	0.0	3.0
45-49	27.3	6.3	8.2	37.8	45.7	0.0	0.0	0.0	19.9
50-54	73.7	47.3	10.4	48.2	60.5	0.0	0.0	0.0	48.3
55-59	90.0	76.1	52.5	146.9	152.2	0.0	305.2	0.0	88.1
60-64	186.2	143.9	80.7	198.9	439.2	211.8	0.0	220.8	180.9
65-69	210.0	138.9	137.8	131.2	307.4	0.0	0.0	271.9	174.9
70-74	244.7	284.8	188.6	271.1	304.1	133.3	0.0	0.0	246.3
75-79	359.0	353.9	220.7	58.6	695.4	200.1	0.0	0.0	323.0
80-84	269.8	291.4	275.3	196.5	901.5	668.9	0.0	1096.5	340.1
85+	197.8	374.3	281.4	177.4	547.7	609.4	0.0	0.0	298.5
ALL AGES	65.2	57.3	37.6	57.1	101.6	43.0	15.9	37.9	59.6
SI	56.8	48.6	32.9	50.5	98.2	32.6	20.3	45.5	52.6
CR	0.42	0.35	0.24	0.42	0.65	0.17	0.15	0.29	0.38
LIFETIME RISK. 1 in:	238	282	411	240	153	579	655	349	261

Table 8

TABULATION OF AGE SPECIFIC INCIDENCE RATES FOR MESOTHELIOMA PER MILLION FEMALES IN AUSTRALIA, 1996 BY AGE AND STATE

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUST
20-24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35-39	0.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	1.4
40-44	0.0	0.0	0.0	0.0	14.6	0.0	0.0	0.0	1.5
45-49	0.0	12.5	0.0	0.0	16.1	0.0	0.0	0.0	4.7
50-54	5.9	0.0	0.0	0.0	43.6	0.0	0.0	0.0	6.0
55-59	7.1	9.6	27.9	0.0	0.0	0.0	0.0	0.0	9.8
60-64	31.9	10.8	16.6	0.0	31.6	0.0	0.0	0.0	19.6
65-69	0.0	10.9	16.8	0.0	0.0	0.0	0.0	0.0	5.6
70-74	59.7	11.7	18.5	32.2	0.0	111.5	0.0	0.0	33.6
75-79	45.7	47.9	73.0	0.0	52.0	0.0	0.0	0.0	45.1
80-84	47.9	64.8	0.0	58.8	67.5	0.0	0.0	0.0	45.3
85+	0.0	52.6	0.0	0.0	82.9	0.0	0.0	0.0	21.2
ALL AGES	8.8	8.9	6.7	3.6	12.8	5.8	0.0	0.0	8.1
SI	6.2	5.9	5.6	1.6	10.9	3.7	0.0	0.0	5.9
CR	0.05	0.03	0.04	0.02	0.05	0.06	0.00	0.00	0.04
LIFETIME RISK. 1 in:	1912	3277	2506	6206	1889	1793	-	-	2431

Figure 5

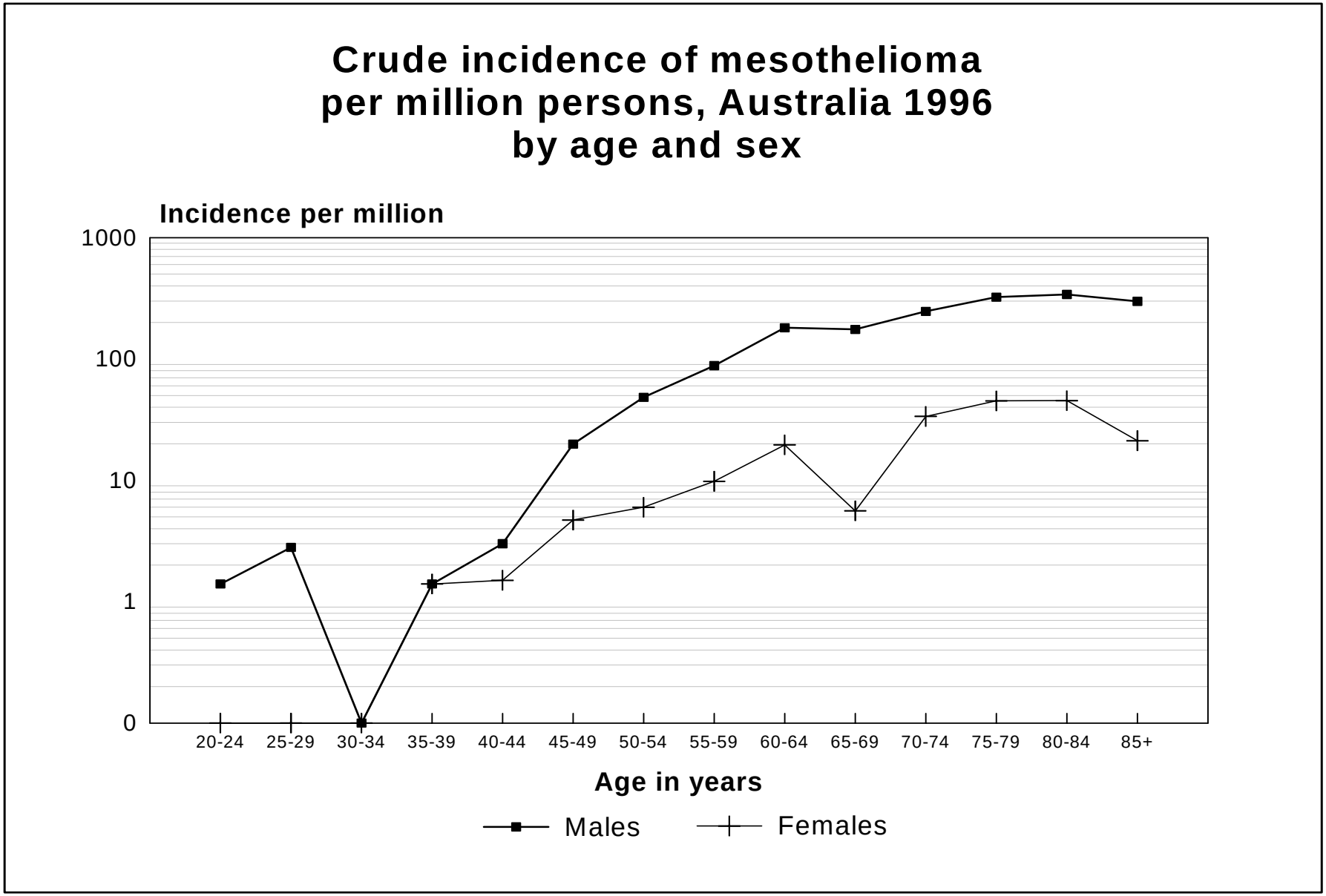

Crude incidence of mesothelioma
per million persons, Australia 1996
by age and sex
Incidence per million
1000
100
10
1
0
20-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
60-64
65-69
70-74
75-79
80-84
85+
Age in years
Males
Females

Table 9

TABULATION OF MALE CASES OF MESOTHELIOMA IN AUSTRALIA, 1997 BY AGE AND STATE

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUST
20-24	0	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0
30-34	0	0	0	0	0	0	0	0	0
35-39	1	0	0	0	1	0	0	0	2
40-44	1	1	0	0	1	0	0	0	3
45-49	4	0	1	0	1	0	0	0	6
50-54	7	4	11	1	1	1	0	0	25
55-59	8	5	9	3	6	0	0	0	31
60-64	13	15	13	2	10	0	0	0	53
65-69	16	16	12	6	11	0	0	0	61
70-74	38	22	12	10	9	1	0	0	92
75-79	23	12	9	7	15	0	0	0	66
80-84	11	12	4	5	4	0	0	0	36
85+	5	4	1	1	2	3	0	0	16
ALL AGES	127	91	72	35	61	5	0	0	391

Table 10

TABULATION OF FEMALE CASES OF MESOTHELIOMA IN AUSTRALIA, 1997 BY AGE AND STATE

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUST
20-24	0	0	0	0	0	0	0	0	0
25-29	0	0	0	1	0	0	0	0	1
30-34	0	1	0	0	0	0	0	0	1
35-39	0	0	0	0	0	0	0	0	0
40-44	0	0	0	0	0	0	0	0	0
45-49	1	3	3	0	0	0	0	0	7
50-54	0	2	2	3	0	0	0	0	7
55-59	3	4	1	0	1	0	0	0	9
60-64	4	0	0	2	2	0	0	0	8
65-69	1	2	0	1	0	0	0	1	5
70-74	7	6	1	1	1	0	0	1	17
75-79	6	1	2	1	1	0	0	0	11
80-84	1	1	0	0	1	0	0	0	3
85+	0	2	1	1	0	0	0	1	5
ALL AGES	23	22	10	10	6	0	0	3	74

Table 11

TABULATION OF AGE SPECIFIC INCIDENCE RATES FOR MESOTHELIOMA PER MILLION MALES IN AUSTRALIA, 1997 BY AGE AND STATE

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUST
20-24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35-39	4.0	0.0	0.0	0.0	13.7	0.0	0.0	0.0	2.7
40-44	4.3	5.9	0.0	0.0	14.3	0.0	0.0	0.0	4.4
45-49	18.4	0.0	8.2	0.0	15.2	0.0	0.0	0.0	9.2
50-54	37.0	29.4	105.6	22.3	18.5	70.4	0.0	0.0	44.9
55-59	54.1	46.3	113.1	86.3	145.8	0.0	0.0	0.0	71.6
60-64	103.5	164.0	203.5	65.5	306.5	0.0	0.0	0.0	147.1
65-69	134.9	186.1	205.4	201.7	372.8	0.0	0.0	0.0	181.3
70-74	382.5	307.3	246.6	379.9	378.9	131.8	0.0	0.0	327.3
75-79	339.3	251.3	268.0	390.9	979.5	0.0	0.0	0.0	347.6
80-84	288.9	431.4	211.6	479.3	444.0	0.0	0.0	0.0	331.8
85+	230.7	236.4	88.8	166.6	348.2	1743.2	0.0	0.0	250.0
ALL AGES	57.2	55.9	60.3	66.2	96.2	30.7	0.0	0.0	59.8
SI	45.7	46.4	56.2	46.6	90.2	24.8	0.0	0.0	50.6
CR	0.37	0.37	0.44	0.38	0.63	0.10	0.00	0.00	0.39
LIFETIME RISK. 1 in:	271	271	227	265	158	989	-	-	254

Table 12

TABULATION OF AGE SPECIFIC INCIDENCE RATES FOR MESOTHELIOMA PER MILLION FEMALES IN AUSTRALIA, 1997 BY AGE AND STATE

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUST
20-24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-29	0.0	0.0	0.0	18.6	0.0	0.0	0.0	0.0	1.4
30-34	0.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	1.4
35-39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40-44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45-49	4.7	18.8	25.6	0.0	0.0	0.0	0.0	0.0	10.9
50-54	0.0	15.0	20.3	67.2	0.0	0.0	0.0	0.0	13.1
55-59	20.8	37.6	13.4	0.0	25.6	0.0	0.0	0.0	21.4
60-64	31.5	0.0	0.0	63.7	61.6	0.0	0.0	0.0	22.0
65-69	8.0	22.0	0.0	31.8	0.0	0.0	0.0	253.0	14.2
70-74	59.6	69.9	18.4	32.2	37.8	0.0	0.0	276.5	51.8
75-79	65.5	15.2	46.4	40.7	48.9	0.0	0.0	0.0	43.0
80-84	15.7	21.5	0.0	0.0	67.5	0.0	0.0	0.0	16.8
85+	0.0	50.3	41.4	68.8	0.0	0.0	0.0	800.0	33.5
ALL AGES	10.0	12.8	8.2	18.0	9.4	0.0	0.0	27.2	10.9
SI	7.6	10.5	6.9	16.2	8.5	0.0	0.0	28.5	9.0
CR	0.06	0.08	0.04	0.11	0.06	0.00	0.00	0.26	0.07
LIFETIME RISK. 1 in:	1605	1185	2579	936	1600	-	-	378	1468

Figure 6

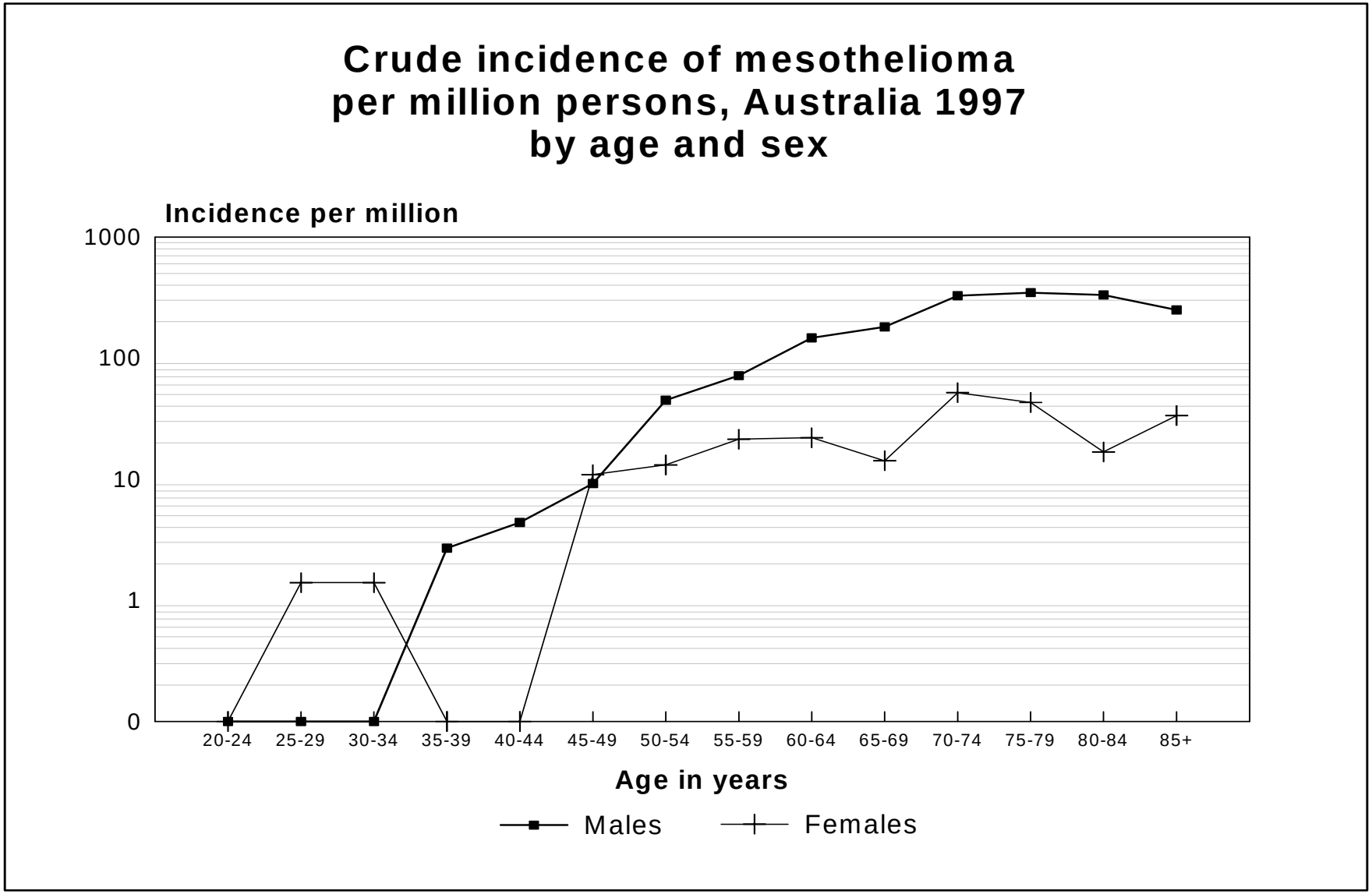

Crude incidence of mesothelioma per million persons, Australia 1997 by age and sex
Incidence per million
1000
100
10
1
0
20-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
60-64
65-69
70-74
75-79
80-84
85+
Age in years
Males
Females

Figure 7

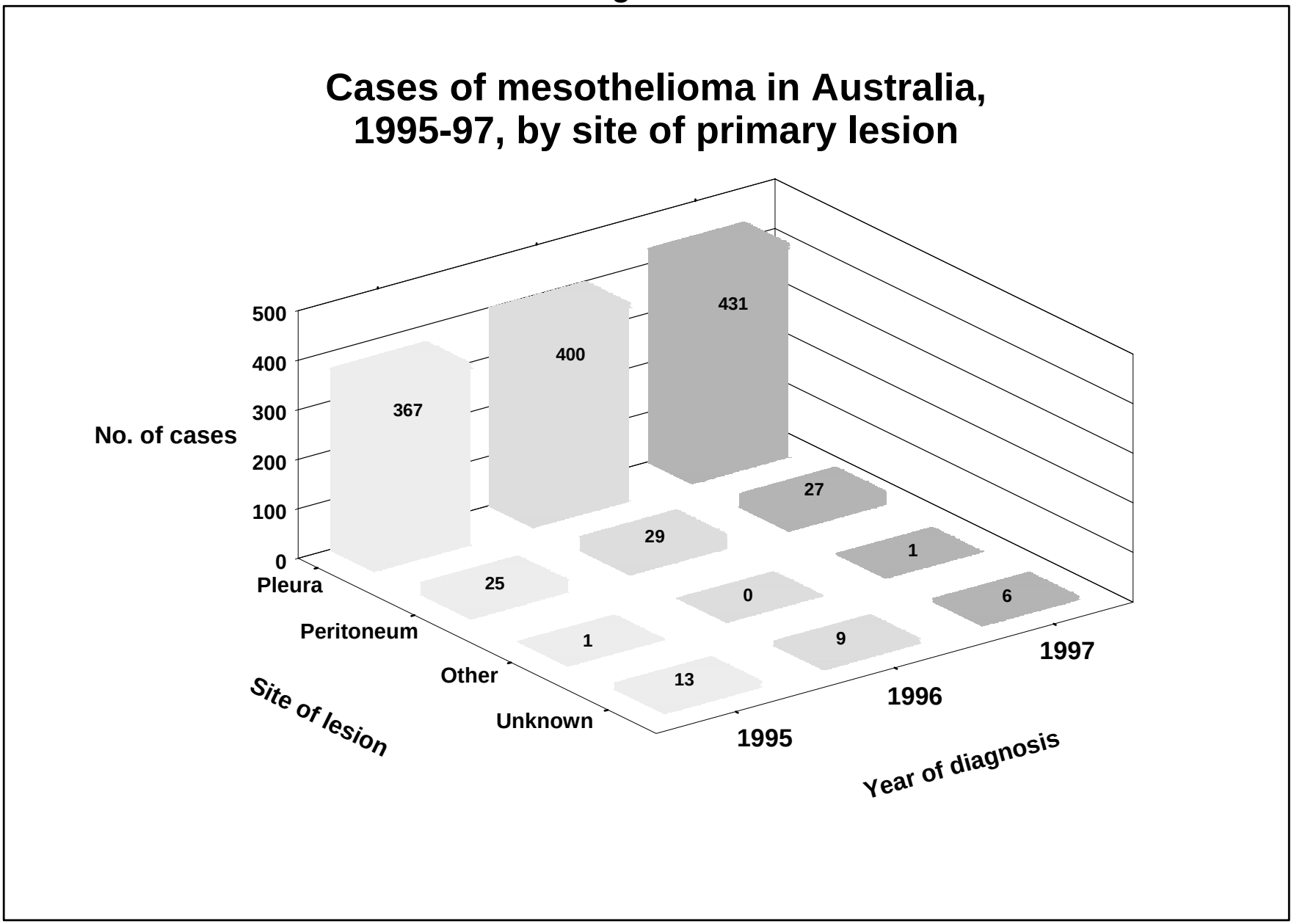

Cases of mesothelioma in Australia, 1995-97, by site of primary lesion
No. of cases
500
400
300
200
100
0
Pleura
Peritoneum
Other
Unknown
Site of lesion
1995
1996
1997
Year of diagnosis
367
400
431
25
29
27
1
0
1
13
9
6

Figure 8

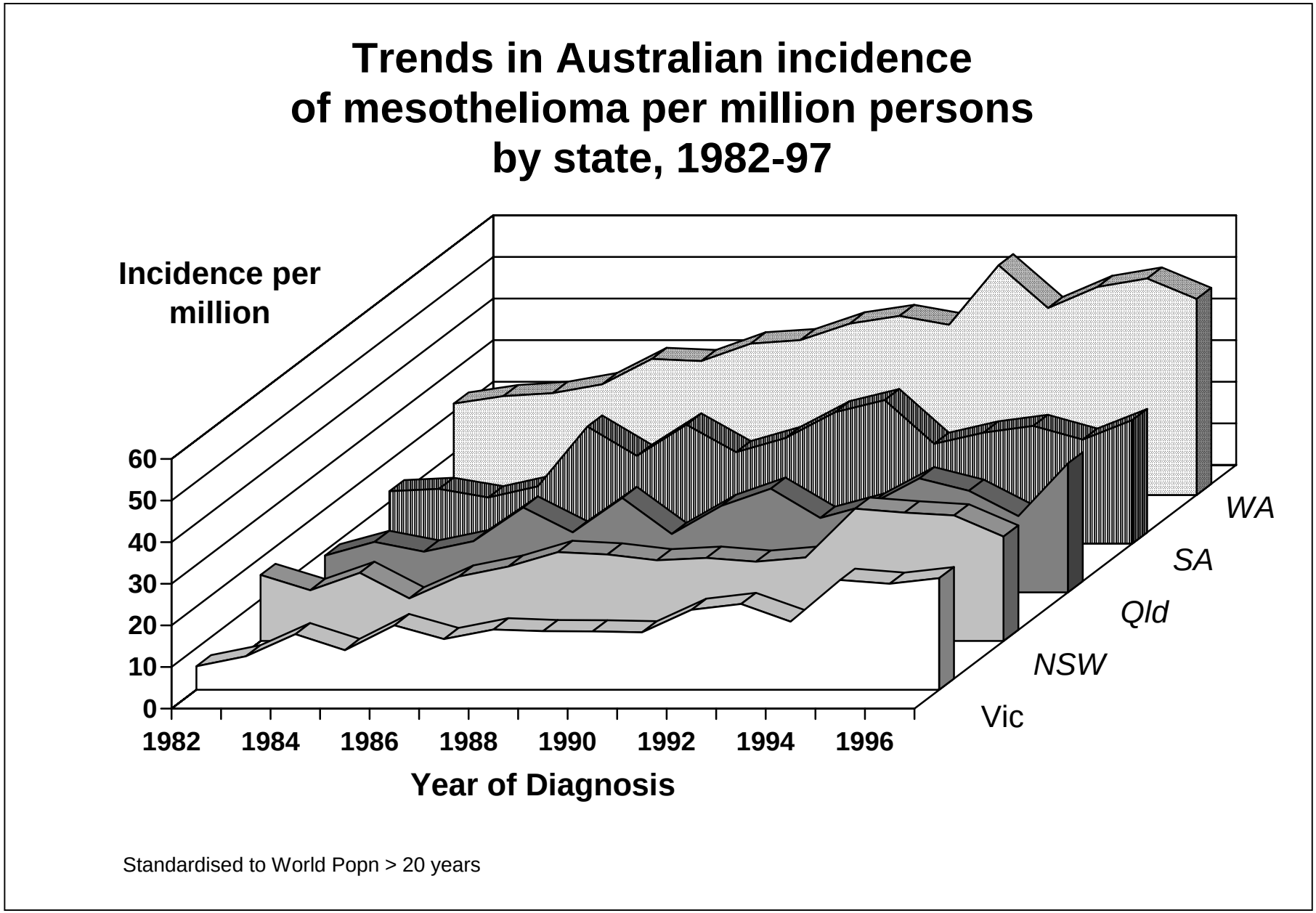
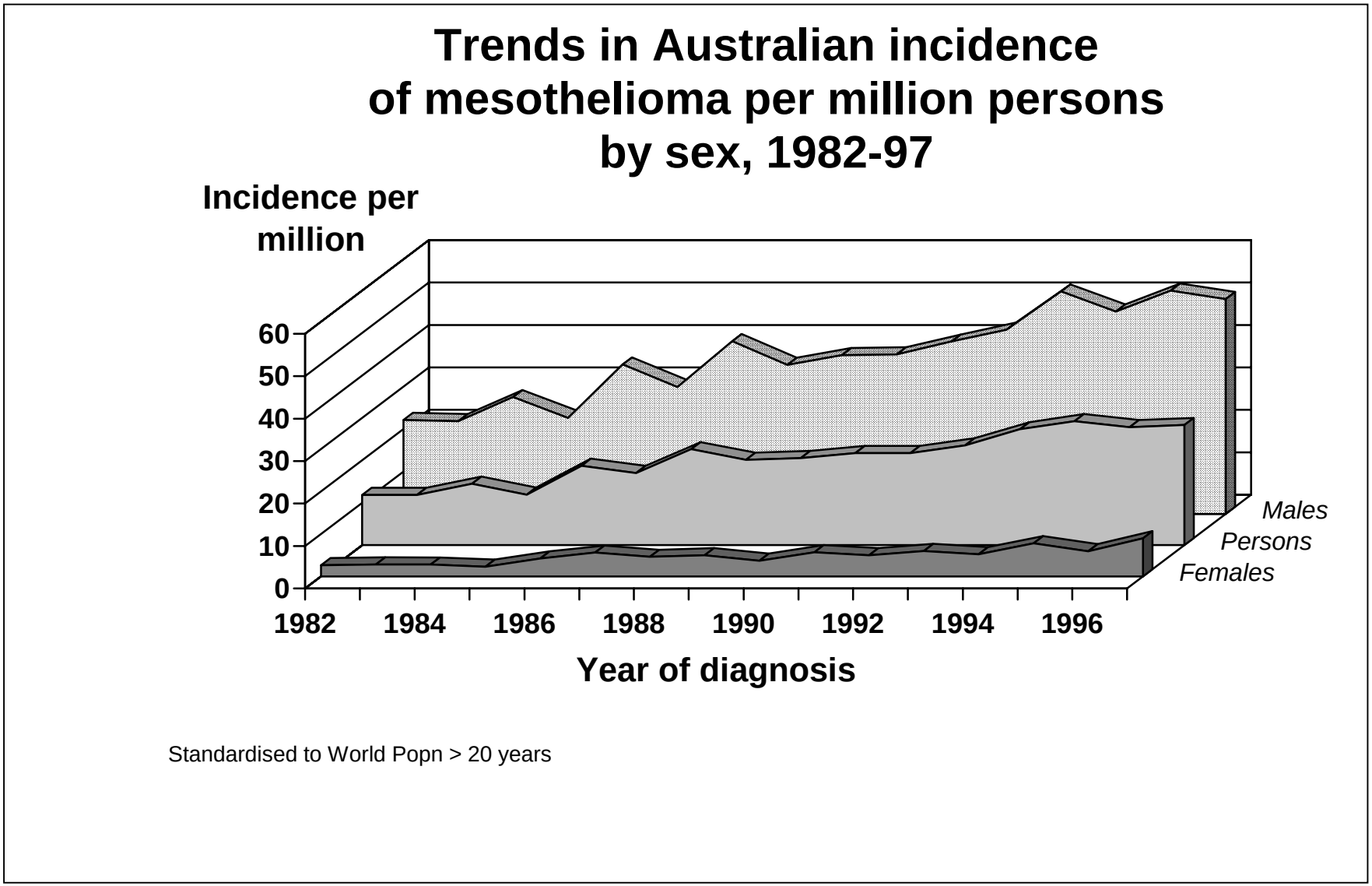

Trends in Australian incidence
of mesothelioma per million persons
by state, 1982-97
Incidence per
million
60
50
40
30
20
10
0
1982
1984
1986
1988
1990
1992
1994
1996
Year of Diagnosis
WA
SA
Qld
NSW
Vic
Standardised to World Popn > 20 years

Figure 9


Trends in Australian incidence of mesothelioma per million persons by sex, 1982-97
Incidence per million
60
50
40
30
20
10
0
1982
1984
1986
1988
1990
1992
1994
1996
Year of diagnosis
Males
Persons
Females
Standardised to World Popn > 20 years

APPENDIX A

ASBESTOS EXPOSURES AS DOCUMENTED IN THE AUSTRALIAN MESOTHELIOMA REGISTER FROM 1 JANUARY 1986 TO 31 OCTOBER 2000

CIRCUMSTANCES OF EXPOSURE	NO. EXPOSED (WITH NO OTHER EXPOSURE) (Single)	NO. EXPOSED (WITH OTHER EXPOSURES) (Multiple)	TOTAL EXPOSURES
ACOUSTIC ENGINEER	1	-	1
AIRCONDITIONING	12	14	26
AIRCRAFT	11	3	14
ARMED FORCES /WARTIME	28	16	44
ARMED FORCES /PEACETIME	6	2	8
ASBESTOS BAGGING (NOT WITTENOOM)	8	4	12
ASBESTOS BAGS – HANDLED WHICH HAD CONTAINED	8	-	8
ASBESTOS CLOTHING WORN	9	4	13
ASBESTOS COVERS FOR COOKING	3	-	3
ASBESTOS DWELLING/FENCE – BUILT/RENOVATED	70	13	83
ASBESTOS DWELLING – LIVED IN	29	8	37
ASBESTOS PRODUCTS FACTORY – LIVED NEAR	11	2	13
ASBESTOS PRODUCTS FACTORY – WORKED NEAR	11	-	11
ASBESTOS MINE – WORKED/LIVED NEAR (NOT WITTENOOM)	12	6	18
ASBESTOS PRODUCT HANDLED IN THE WORKPLACE	42	8	50
ASBESTOS PRODUCT MANUFACTURER – WORKED	106	36	142
ASBESTOS PRODUCT PART OF WORKPLACE OR SURROUNDS	26	9	35
ASBESTOS TAILINGS – PLAYED ON AS A CHILD	8	4	12
ASBESTOS /OR PRODUCTS WORKER –- LIVED WITH/WASHED CLOTHES	42	6	48
BAKERY (OVENS)	3	-	3
BOILERMAKER/CLEANER/ATTENDANT /INSTALLER/WELDER	79	54	133
BRAKE LININGS – MADE/ REPAIRED	58	19	77
BREWERY	1	-	1

CIRCUMSTANCES OF EXPOSURE	NO. EXPOSED (WITH NO OTHER EXPOSURE) (Single)	NO. EXPOSED (WITH OTHER EXPOSURES) (Multiple)	TOTAL EXPOSURES
BRICKLAYER	15	4	19
BRICKWORKS	8	3	11
BUILDER/ BUILDER'S LABOURER	185	40	225
CARPENTER/JOINER	224	42	266
CEMENT FACTORY WORKER	20	1	21
CHEMICAL ENGINEER	1	-	1
CIVIL ENGINEER	7	-	7
CONCRETING	5	3	8
CONSTRUCTION WORKER	12	2	14
DEMOLITION	5	2	7
DESIGN ENGINEER	2	1	3
DIESEL ENGINEER	-	1	1
DOCKYARD WORKER	40	23	63
ELECTRICAL ENGINEER	5	7	12
ELECTRICAL FITTER	15	4	19
ELECTRICAL MECHANIC	3	-	3
ELECTRICIAN	55	12	67
ELECTROPLATER	-	1	1
ENGINEER	26	1	27
FIREPROOFING	5	-	5
FIREDOORS	5	-	5
FIREFIGHTER	5	3	8
FITTER/TURNER	51	20	71
FOUNDRY	6	2	8
FURNACE	6	-	6
GLASSWORKS/GLAZIERS	6	-	6
INDUSTRIAL CHEMIST	4	-	4
INDUSTRIAL ENGINEER	2	-	2
INSTRUMENT TECHNICIAN	1	-	1
INSULATION	18	4	22
JEWELLER	6	2	8
LABORATORY TECHNICIAN	6	2	8
LABOURER	33	15	48

CIRCUMSTANCES OF EXPOSURE	NO. EXPOSED (WITH NO OTHER EXPOSURE) (Single)	NO. EXPOSED (WITH OTHER EXPOSURES) (Multiple)	TOTAL EXPOSURES
LAGGER	31	16	47
LAGGING IN WORKPLACE	24	4	28
LAUNDRY/DRYCLEANERS	14	5	19
LINESMAN	9	4	13
LOCKSMITH	1	-	1
MACHINE FITTER	3	1	4
MACHINE INSPECTOR	2	-	2
MACHINE OPERATOR	1	3	4
MACHINIST	3	-	3
MAINTENANCE CARPENTER	3	1	4
MAINTENANCE ELECTRICIAN	2	1	3
MAINTENANCE ENGINEER	3	1	4
MAINTENANCE FITTER	13	4	17
MAINTENANCE MECHANIC	3	2	5
MAINTENANCE WORKER	12	3	15
MARINE ENGINEER	9	7	16
MECHANICAL ENGINEER	5	-	5
MECHANICAL FITTER	7	3	10
METAL FABRICATION	2	-	2
METAL TRADES	3	1	4
METALLURGY	1	-	1
MOULDER	4	-	4
NAVY/MERCHANT NAVY	160	64	224
OIL REFINERY	7	2	9
PAINTER/DECORATOR	37	8	45
PANELBEATER	9	1	10
PAPERMILL	3	2	5
PATTERNMAKER	6	3	9
PIPES – HANDLED/CUT/STORED/DRILLED	24	5	29
PLASTERER	16	7	23
PLUMBING	56	27	83
POWER STATION WORKER	86	51	137
PRESSURE PAK MANUFACTURER	1	-	1

CIRCUMSTANCES OF EXPOSURE	NO. EXPOSED (WITH NO OTHER EXPOSURE) (Single)	NO. EXPOSED (WITH OTHER EXPOSURES) (Multiple)	TOTAL EXPOSURES
PRINTING	10	-	10
RADIOGRAPHER	2	-	2
RAILWAYS	101	49	150
RENOVATIONS/MAINTENANCE/LAGGING IN WORKPLACE	21	5	26
ROOFING	16	4	20
SHEETMETAL	14	11	25
SHIPS – BUILDING/REPAIRING/ON	75	57	132
SHOP FITTER	1	-	1
SITE VISITS/INSPECTIONS	8	7	15
SMELTING	1	-	1
STEELWORKS	13	8	21
STOREMAN	15	-	15
STOVES	2	-	2
SUGAR MILL	6	4	10
TANNERY	2	-	2
TELEPHONE TECHNICIAN	6	3	9
TILER	11	1	12
TOOLMAKER	4	2	6
TRADES ASSISTANT	17	3	20
TRANSPORTING ASBESTOS	14	6	20
TRANSPORTING ASBESTOS PRODUCT	15	2	17
TYRE FACTORY	10	4	14
WATERSIDE WORKER	94	13	107
WEIGHING TRUCKS	1	-	1
WELDER	22	9	31
WHITEWASH – GREECE/CYPRUS	4	1	5
WINE MAKING (FILTERS)	1	-	1
WITTENOOM (FORMER MINING AREA IN WA)	193	51	244
WOOD MACHINIST	3	-	3

SUMMARY OF ASBESTOS EXPOSURES

Asbestos exposure			
single	2,608		
multiple	400		
possible	274		
No apparent asbestos exposure	457		
No response to questionnaire	1099		
Total cases from 1/1/86 – 31/10/2000	4,838		
Proportion of respondents with	3,282	=	87%
asbestos exposure	3,752		

APPENDIX B

NOHSC
National Occupational Health & Safety Commission

AUSTRALIAN MESOTHELIOMA REGISTER NOTIFICATION

Please direct all correspondence to:
The Registrar
Australian Mesothelioma Register
National Occupational Health and Safety Commission
GPO Box 1577 CANBERRA ACT 2601
Telephone: 1800 252 226

Patient details - please supply ALL available information

SURNAME: ..... FIRST NAMES: .....

ADDRESS: .....

STATE: ..... POSTCODE: ..... GENDER: M / F DATE OF BIRTH: / /

IF DECEASED, DATE OF DEATH: / / PLACE OF DEATH:
.....

DATE OF INITIAL DIAGNOSIS: Month ..... Year: ..... HISTOLOGICAL: YES / NO

HOSPITAL DIAGNOSED: ..... PRIMARY SITE: .....

CLINICIAN'S NAME: ..... NAME OF LOCAL GP: .....

ADDRESS: ..... ADDRESS: .....

....

Please describe briefly main occupation(s) of patient's worklife.

OCCUPATION	INDUSTRY	YEAR
1.	1.	19 - 19
2.	2.	19 - 19
3.	3.	19 - 19

KNOWN ASBESTOS EXPOSURE: YES / NO
If "YES" please indicate circumstances and duration: .....
.....
.....

Details of person completing this form.

NAME: ..... SIGNATURE: .....

ADDRESS: ..... DATE: .....
Please circle the appropriate category: CLINICIAN PATHOLOGIST CANCER REGISTRY MEDICAL RECORDS ADMIN
DUST DISEASES BOARD OTHER: .....

Office Use Only
Date Received:

REGISTRATION NO:

LIST OF PUBLICATIONS FROM THE MESOTHELIOMA PROGRAM AND REGISTER

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