



**NATIONAL HEALTH
LABORATORY SERVICE**

NATIONAL INSTITUTE FOR OCCUPATIONAL HEALTH

Pathology Division Surveillance Report

Demographic Data and Disease Rates for January to December 1978

Ntombizodwa Ndlovu

Tony Davies

Gill Nelson

Jill Murray

*PO Box 4788
Johannesburg
2000*

e-mail: jill.murray@nioh.nhls.ac.za

NIOH Report 11/2011

http://www.nioh.ac.za/publications/publications_pathaut_reports.htm

ACKNOWLEDGEMENTS

We thank all the staff members of the NIOH Pathology Department, for their invaluable contribution to the autopsy service.

We also thank Lizet Vermaak for collating and Prof Tony Davies for editing the manuscript.

EXECUTIVE SUMMARY

During 1978, 3 367 cases came to autopsy at the NIOH. Of these, 66.7% were black men, 32.4% were white and 1.0% were coloured.

Overall disease rates (per 1000 autopsies) for 1978 are shown in Figure 1.

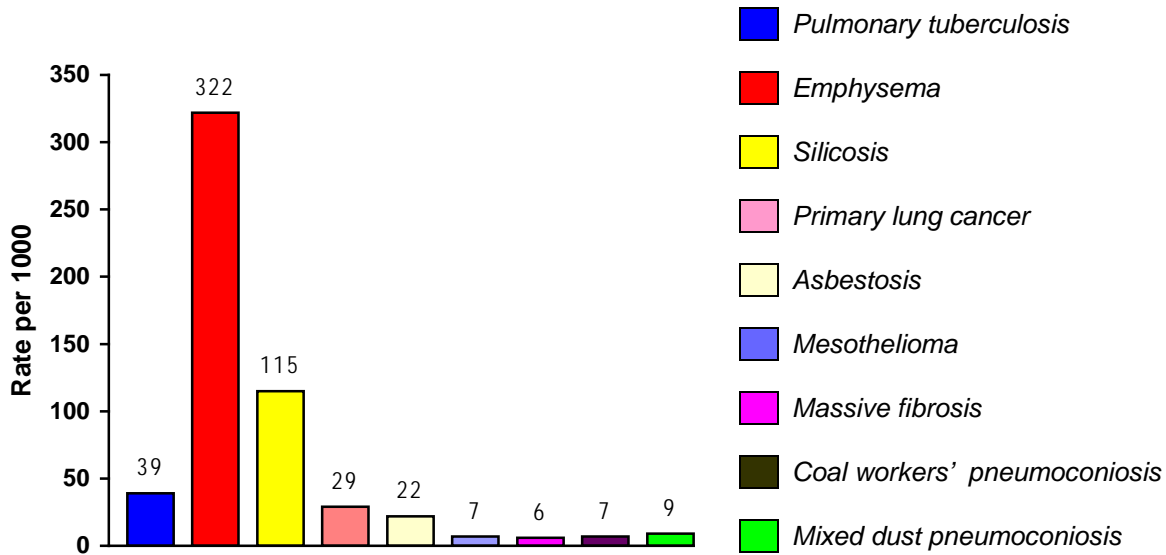


FIG 1 OVERALL DISEASE RATES FOR 1978

TABLE OF CONTENTS

EXECUTIVE SUMMARY	<i>i</i>
GLOSSARY	<i>iv</i>
SECTION 1: BACKGROUND	1
SECTION 2: DEMOGRAPHIC DATA	2
SECTION 3: ACTIVE TUBERCULOSIS	7
SECTION 4: SILICOSIS	9
SECTION 5: OTHER PNEUMOCONIOSES	
<i>Massive Fibrosis</i>	11
<i>Coal Workers' Pneumoconiosis</i>	11
<i>Mixed Dust Pneumoconiosis</i>	11
<i>Asbestosis and pleural plaques</i>	11
SECTION 6: EMPHYSEMA	12
SECTION 7: MESOTHELIOMA	14
SECTION 8: PRIMARY LUNG CANCER	15
SECTION 9: CLINICAL CAUSES OF DEATH	16

LIST OF TABLES

Table 2.1	<i>Distribution of autopsies by year and population group (1978)</i>	2
Table 2.2	<i>Number and proportion of autopsies by type and population group (1978)</i>	2
Table 2.3	<i>Number and proportion of autopsies by age and population group (1978)</i>	3
Table 2.4	<i>Number and proportion of autopsies by commodity and population group (1978)</i>	4
Table 2.5	<i>Number and proportion of autopsies by years of service and population group (1978)</i>	5
Table 2.6	<i>Mean age by commodity and population group (1978)</i>	6
Table 2.7	<i>Mean duration of service by commodity and population group (1978)</i>	6
Table 3.1	<i>Number of cases and prevalence of active PTB by commodity and population group (1978)</i>	8
Table 3.2	<i>Number of cases and prevalence of active PTB by age and population group (1978)</i>	8
Table 4.1	<i>Number of cases and prevalence of silicosis by commodity and population group (1978)</i>	9
Table 4.2	<i>Number of cases and prevalence of silicosis in the gold mining industry, by age and population group (1978)</i>	9
Table 4.3	<i>Number of cases and prevalence of silicosis in the gold mining industry, by years of service and population group (1978)</i>	10
Table 5.1	<i>Number of cases and prevalence of asbestosis by age and population group (1978)</i>	11

Table 6.1	<i>Number of cases and prevalence of emphysema by age and population group (1978)</i>	12
Table 6.2	<i>Number of cases and prevalence of emphysema by commodity and population group (1978)</i>	12
Table 6.3	<i>Number of cases and prevalence of emphysema by years of service and population group (1978)</i>	13
Table 7.1	<i>Number and proportion of mesothelioma cases by age and population group (1978)</i>	14
Table 7.2	<i>Number and proportion of mesothelioma cases by commodity and population group (1978)</i>	14
Table 8.1	<i>Number of cases and prevalence of primary lung cancer by age and population group (1978)</i>	15
Table 8.2	<i>Number of cases and prevalence of primary lung cancer by commodity and population group (1978)</i>	15
Table 9.1	<i>Clinical causes of death by population group (1978)</i>	16

LIST OF FIGURES

Figure 1	<i>Overall disease rates for 1978</i>	<i>i</i>
Figure 2.1	<i>Distribution of autopsies by age and population group (1978)</i>	3
Figure 2.2	<i>Distribution of autopsies by commodity and population group (1978)</i>	4
Figure 2.3	<i>Distribution of autopsies by years of service and population group (1978)</i>	5
Figure 3.1	<i>Distribution of active TB by site (1978)</i>	7
Figure 9.1	<i>Clinical cause of death as given by the clinicians who submit the organs to the NIOH (1978)</i>	16

GLOSSARY

Asbestosis	<i>Lung fibrosis caused by asbestos fibres</i>
Coal workers' pneumoconiosis	<i>Lung fibrosis caused by exposure to coal dust</i>
Emphysema	<i>Lung disease caused by the destruction of the alveolar walls</i>
Massive fibrosis	<i>Lung fibrosis caused by exposure to dust and measuring more than 1 cm in diameter</i>
Mesothelioma	<i>A malignant tumour of the pleural cavity of the lungs</i>
Miner	<i>A person who has worked in a controlled mine or works</i>
Mixed exposures	<i>The multiple dust types to which a miner may be exposed, having worked in several mining commodities in his lifetime</i>
Prevalence	<i>The number of cases in a defined population at a given time</i>
Silicosis	<i>Lung fibrosis caused by inhalation of silica dust; detected by the presence of silicotic nodules in the lung tissue</i>
Surveillance	<i>The ongoing and systematic collection, analysis and interpretation of data related to adverse health outcomes</i>

SECTION 1 – BACKGROUND

The Occupational Diseases in Mines and Works Act, 1973 (Act 78 of 1973) requires that the cardio-respiratory organs of a deceased person who has worked at a controlled mine or a controlled works be examined for the presence of occupational disease, regardless of the clinical cause of death and provided that the next of kin agrees. These examinations are performed by pathologists at the National Institute for Occupational Health (NIOH). A detailed report on each case examined is sent to the Medical Bureau for Occupational Diseases (MBOD). Cases certified as having a compensable disease are then referred to the Compensation Commissioner's office, where the payment for compensation is managed.

Since 1975, the pathological findings from the autopsy examinations have been recorded on the computerised PATHAUT database. PATHAUT comprises data from autopsy examinations and clinical files which include occupational histories. The database is unique and provides an important resource for both surveillance and research. These data are the only comprehensive surveillance data on occupational lung disease in the South African mining industry.

The data presented in this report summarise the PATHAUT system surveillance results, i.e. the results of the systematic collection, collation, and analysis of the pathology findings in the cardio-respiratory organs of mine workers. Data from PATHAUT are exported into, and analysed, using SAS v9.1.

This report describes autopsy cases examined during the year 1978. This and other annual reports can be accessed at www.nioh.ac.za.

Many of the cases had "mixed" exposures in that they had been employed in more than one commodity. For simplicity, cases are categorised according to the commodity in which most years of service were recorded, i.e. the commodity in which the miners had worked for the longest period.

All disease rates reported in this document are expressed per 1000. In all calculations, the denominators used are the total numbers of autopsies in specific commodities, age groups or population groups. Some of these rates must be viewed with caution, as the denominators are very small. This applies, for example, to those commodities where few workers are employed (such as manganese mining), and to the older age groups in some instances.

SECTION 2 – DEMOGRAPHIC DATA

The number of autopsies performed for 1978 is presented in Table 2-1.

TABLE 2-1 DISTRIBUTION OF AUTOPSIES BY YEAR AND POPULATION GROUP (1978)

Year of autopsy	Black		White		Coloured		Total	
	N	%	N	%	N	%	N	
1975	2 190	71.2	854	27.8	32	1.0	3 076	
1976	2 335	68.0	1 072	31.2	27	0.8	3 434	
1977	2 351	68.7	1 039	30.3	33	1.0	3 423	
1978	2 245	66.7	1 090	32.4	32	1.0	3 367	
Total	9 121	68.6	4 055	30.5	124	0.9	13 300	

It is important to note that a referral bias exists: there is a low autopsy rate for black men who have left employment at the mines, whereas the majority of white retired miners come to autopsy.

The pathologists at the NIOH perform two types of autopsy examinations. For men dying distant from Johannesburg, the cardio-respiratory organs are removed locally, preserved in formalin and sent to the NIOH. Full autopsies are undertaken on men who die close to Johannesburg.

Table 2-2 shows the distribution of autopsies by population group for 1978. Autopsies of only the cardio-respiratory organs comprised 82.2% of all examinations.

TABLE 2-2 NUMBER AND PROPORTION OF AUTOPSIES BY TYPE AND POPULATION GROUP (1978)

Autopsy type	Black		White		Coloured		Total	
	N	%	N	%	N	%	N	%
<i>Cardio-respiratory organs only</i>	2 141	95.4	597	54.8	30	93.8	2 768	82.2
<i>Full autopsy</i>	104	4.6	493	45.2	2	6.2	599	17.8
<i>Not stated</i>	0	-	0	-	0	-	0	-
Total	2 245		1 090		32		3 367	

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The age distribution of autopsies for 1978 is shown in Table 2-3 and Figure 2-1. The mean age at autopsy of black men was 33.4 years. The mean age of white men at autopsy was 58.5 years and for coloured men 58.0 years

TABLE 2-3 NUMBER AND PROPORTION OF AUTOPSIES BY AGE AND POPULATION GROUP (1978)

Age group (years)	Black		White		Coloured		Total	
	N	%	N	%	N	%	N	%
<20	69	3.1	3	0.3	0	-	72	2.1
20-29	743	33.1	39	3.6	1	3.1	783	23.3
30-39	581	25.9	64	5.9	2	6.3	647	19.2
40-49	413	18.4	134	12.3	6	18.8	553	16.4
50-59	239	10.6	260	23.9	10	31.3	509	15.1
60-69	63	2.8	352	32.3	7	21.9	422	12.5
70-79	10	0.4	173	15.9	3	9.4	186	5.5
80+	3	0.1	58	5.3	3	9.4	64	1.9
Unknown	124	5.5	7	0.6	0	-	131	3.9
<i>Total</i>	2 245		1 090		32		3 367	

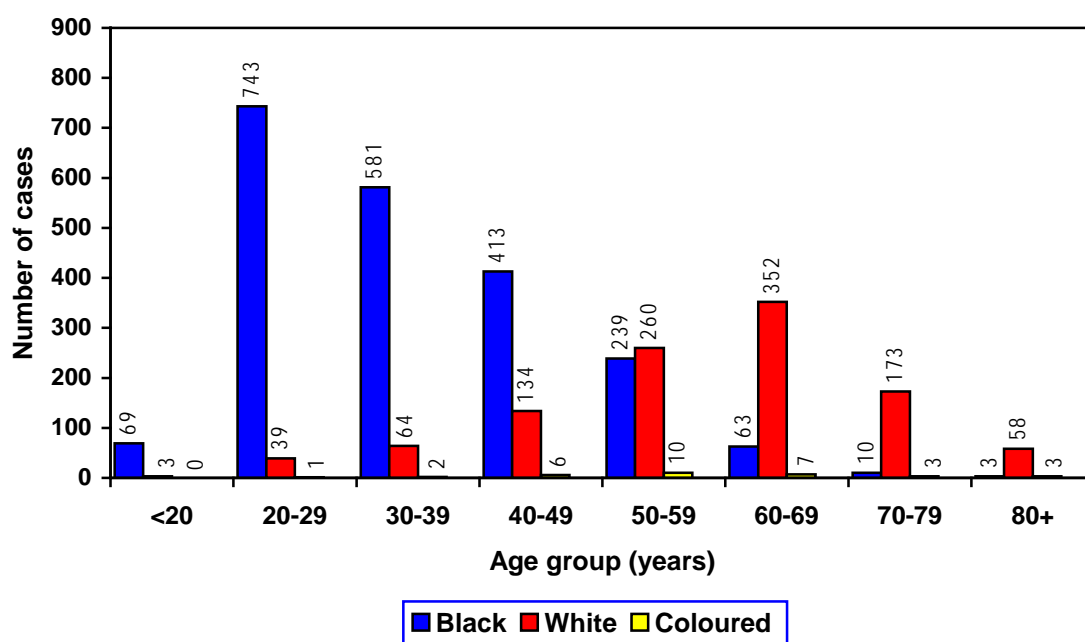


FIG 2-1 DISTRIBUTION OF AUTOPSIES BY AGE AND POPULATION GROUP (1978)

Cases were placed in categories according to the commodity in which they had worked for the longest duration (most exposure). Many men worked in a number of different mining commodities during their lifetimes and had “mixed” exposures. This was not taken into account in the analysis of exposure type (commodity).

Table 2-4 and Figure 2-2 show the distribution of autopsies by commodity and population group for 1978.

TABLE 2-4 NUMBER AND PROPORTION OF AUTOPSIES BY COMMODITY AND POPULATION GROUP (1978)

Commodity	Black		White		Coloured		Total	
	N	%	N	%	N	%	N	%
Gold	1 653	73.6	820	75.2	2	6.3	2 475	73.5
Platinum	161	7.2	11	1.0	0	-	172	5.1
Coal	255	11.4	65	6.0	0	-	320	9.5
Asbestos	39	1.7	26	2.4	27	84.4	92	2.7
Iscor	16	0.7	79	7.2	0	-	95	2.8
Diamond	22	1.0	11	1.0	1	3.1	34	1.0
Copper	19	0.8	28	2.6	1	3.1	48	1.4
Other	10	0.4	6	0.6	0	-	16	0.5
Unknown	70	3.1	44	4.0	1	3.1	115	3.4
Total	2 245		1 090		32		3 367	

NOTE: This table shows only those commodities where a total of 10 or more cases were received

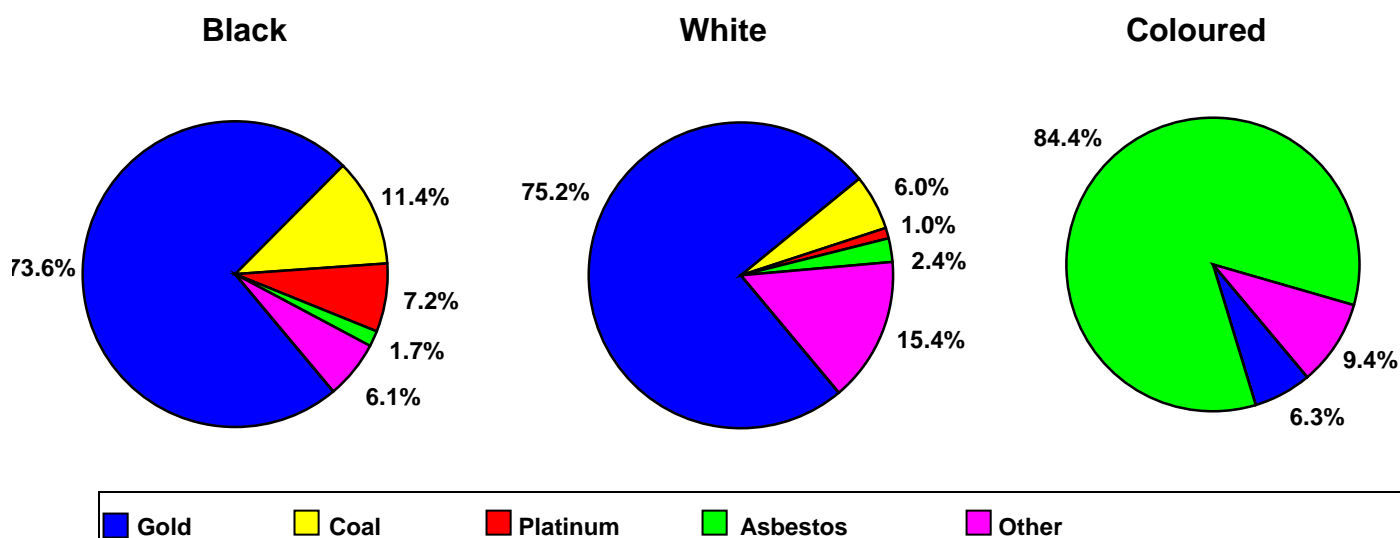
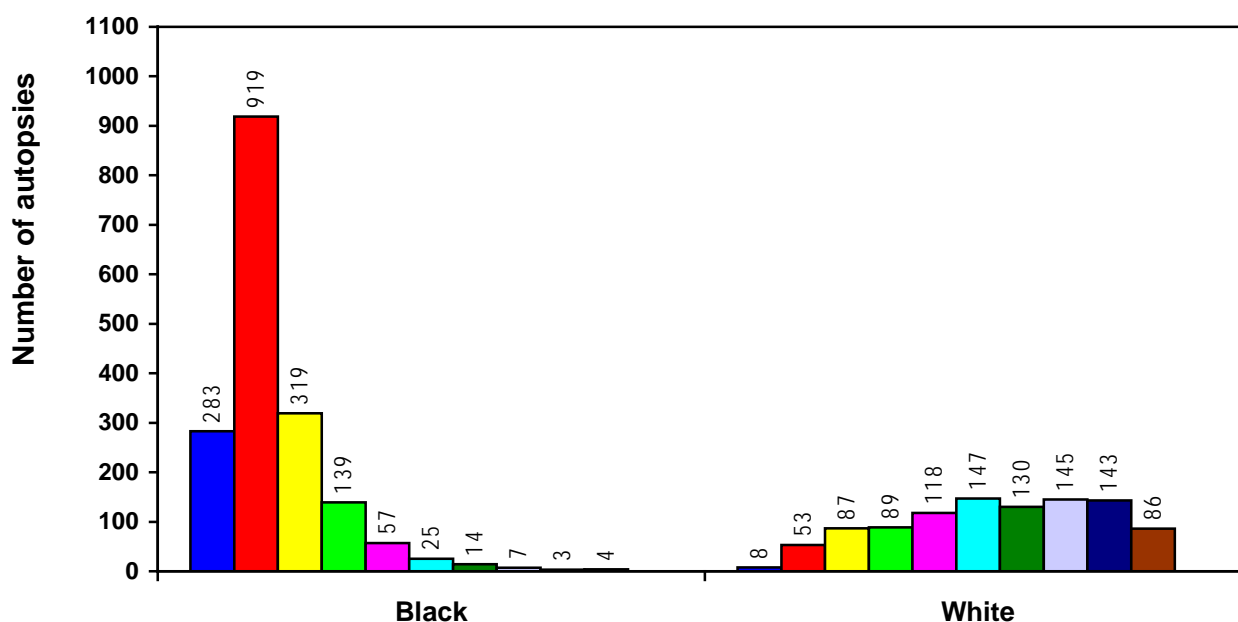


FIG 2-2 DISTRIBUTION OF AUTOPSIES BY COMMODITY AND POPULATION GROUP (1978)

Detailed information about the years in mining service by population group is presented in Table 2-5 and Figure 2-3.

TABLE 2-5 NUMBER AND PROPORTION OF AUTOPSIES BY YEARS OF SERVICE AND POPULATION GROUP (1978)

Years of service	Black		White		Coloured		Total	
	N	%	N	%	N	%	N	%
<1	283	12.6	8	0.7	1	3.1	292	8.7
1-5	919	40.9	53	4.9	6	18.8	978	29.0
6-10	319	14.2	87	8.0	5	15.6	411	12.2
11-15	139	6.2	89	8.2	2	6.3	230	6.8
16-20	57	2.5	118	10.8	5	15.6	180	5.3
21-25	25	1.1	147	13.5	8	25.0	180	5.3
26-30	14	0.6	130	11.9	0	-	144	4.3
31-35	7	0.3	145	13.3	1	3.1	153	4.5
36-40	3	0.1	143	13.1	0	-	146	4.3
41+	4	0.2	86	7.9	3	9.4	93	2.8
Unknown	475	21.2	84	7.7	1	3.1	560	16.6
Total	2 245		1 090		32		3 367	



Years of service:

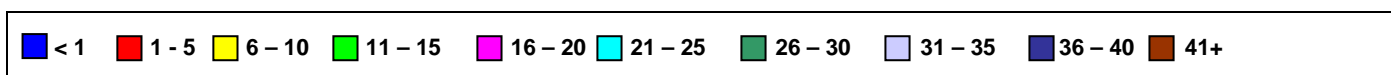


FIG 2-3 DISTRIBUTION OF AUTOPSIES BY YEARS OF SERVICE AND POPULATION GROUP (1978)

The mean age and duration of service by commodity type and population group for those cases for which information was available are shown in Tables 2-6 and 2-7.

TABLE 2-6 MEAN AGE BY COMMODITY AND POPULATION GROUP (1978)

Commodity	Black			White		
	N	Mean (years)	SD*	N	Mean (years)	SD*
Gold	1 554	34.5	11.5	819	60.0	13.7
Platinum	152	33.1	10.9	11	48.9	12.5
Coal	247	37.4	12.6	65	53.0	15.4
Asbestos	38	44.3	14.9	25	52.0	13.2
Iscor	16	42.9	12.1	79	57.3	11.3
Diamond	21	40.3	11.1	11	57.7	13.3
Copper	18	39.5	12.4	28	62.3	11.8
Other	10	29.9	10.6	79	57.3	11.3
Unknown	65	43.6	12.9	39	54.3	15.4
Total	2 121	38.4	12.1	1 156	55.9	13.1

* Standard deviation

TABLE 2-7 MEAN DURATION OF SERVICE BY COMMODITY AND POPULATION GROUP (1978)

Commodity	Black			White		
	N	Mean (years)	SD*	N	Mean (years)	SD*
Gold	1 387	5.5	6.0	809	27.2	11.6
Platinum	128	2.4	2.4	11	16.8	10.0
Coal	161	6.7	7.6	62	19.6	10.2
Asbestos	27	6.6	5.2	25	12.9	10.5
Iscor	7	9.6	8.4	40	19.5	9.8
Diamond	17	8.5	6.3	11	11.4	7.1
Copper	8	2.3	3.0	27	21.6	8.3
Other	10	3.4	6.3	3	10.3	2.9
Unknown	25	4.7	5.4	18	14.3	9.8
Total	1 770	5.5	5.6	1 006	17.1	8.9

* Standard deviation

SECTION 3 – ACTIVE TUBERCULOSIS

The distribution of active tuberculosis (TB) by anatomical site is presented in Figure 3-1 (n=178). Active pulmonary TB (PTB) was diagnosed in 3.9% (131) of all cases autopsied in 1978. Most of the men with PTB were black (75.6%; 99 cases), 20.6% (27 cases) were white and 3.8% (5 cases) were coloured.

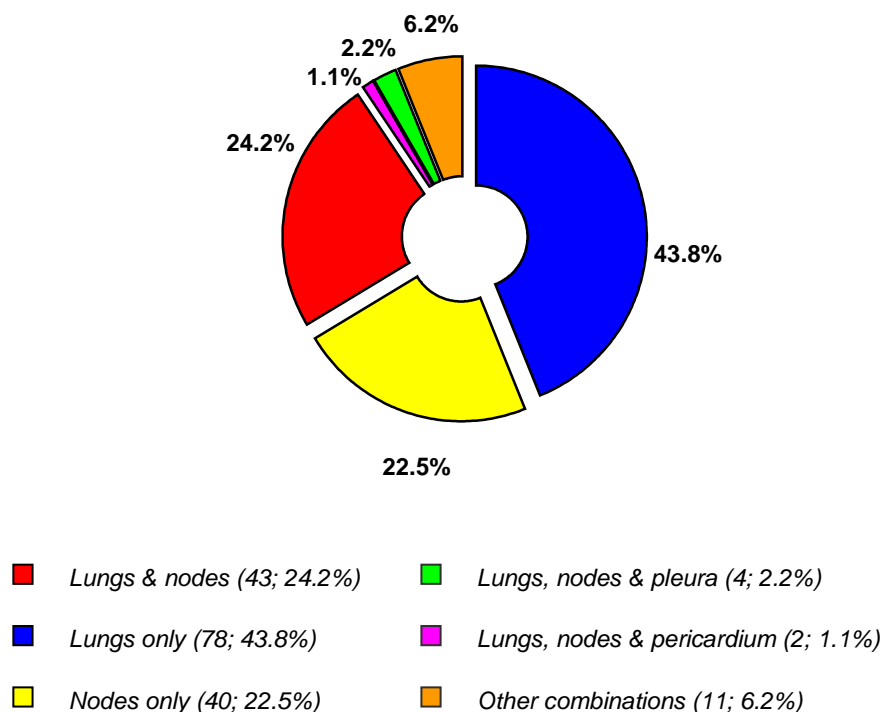


FIG 3-1 DISTRIBUTION OF ACTIVE TB BY SITE (1978)

The distribution of active PTB cases by commodity is shown in Table 3-1. The rates in this and subsequent tables and figures are expressed per 1 000. The majority of active PTB cases (70.2%) came from the gold mining industry (73.5% of all autopsy cases came from that commodity).

TABLE 3-1 NUMBER OF CASES AND PREVALENCE OF ACTIVE PTB BY COMMODITY AND POPULATION GROUP (1978)

Commodity	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
Gold	71	43	21	26	0	-	92	37
Platinum	6	37	1	91	0	-	7	41
Coal	14	55	0	-	0	-	14	44
Asbestos	3	77	2	77	5	185	10	109
Iscor	0	-	0	-	0	-	0	-
Diamond	1	45	0	-	0	-	1	29
Copper	0	-	1	36	0	-	1	21
Other	2	200	1	167	0	-	3	188
Unknown	2	29	1	23	0	-	3	26
Total	99	44	27	25	5	156	131	39

The age distribution of cases with active PTB is shown in Table 3-2. Most of the cases were between 20-59 years (96 cases=73.3%).

TABLE 3-2 NUMBER OF CASES AND PREVALENCE OF ACTIVE PTB BY AGE AND POPULATION GROUP (1978)

Age group (years)	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
20-29	17	23	0	-	0	-	17	22
30-39	20	34	2	31	0	-	22	34
40-49	23	56	3	22	1	167	27	49
50-59	22	92	5	19	3	300	30	59
60-69	8	127	5	14	0	-	13	31
70-79	1	100	10	58	1	333	12	65
80+	0	-	1	17	0	-	1	16
Unknown	8	65	1	143	0	-	9	69
Total	99	44	27	25	5	156	131	39

SECTION 4 – SILICOSIS

Silicotic nodules were found in the lungs of 388 cases (11.5% of all autopsies), 87.6% of which came from the gold mining industry. Of all cases of silicosis, occasional silicotic nodules were found in 44.8% of cases, a few in 30.5%, a moderate number in 21.1% and a large number in 3.7%. The four cases the severity of silicosis was not stated.

The distribution of cases with silicosis by commodity and population group is presented in Table 4-1.

TABLE 4-1 NUMBER OF CASES AND PREVALENCE OF SILICOSIS BY COMMODITY AND POPULATION GROUP (1978)

Commodity	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
Gold	66	40	274	334	0	-	340	137
Platinum	5	31	2	182	0	-	7	41
Coal	6	24	3	46	0	-	9	28
Asbestos	0	-	1	38	5	185	6	65
Copper	0	-	8	286	0	-	8	167
Iscor	0	-	5	63	0	-	5	53
Other	0	-	2	333	0	-	2	125
Unknown	4	57	7	159	0	-	11	96
Total	81	36	302	277	5	156	388	115

Although the silicosis rates increased with increasing age in both black and white men, the age distribution of cases with silicosis differed between the two population groups (Table 4-2).

TABLE 4-2 NUMBER OF CASES AND PREVALENCE OF SILICOSIS IN THE GOLD MINING INDUSTRY, BY AGE AND POPULATION GROUP (1978)

Age group (years)	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
20-29	2	3	0	-	0	-	2	3
30-39	16	36	2	45	0	-	18	37
40-49	26	93	14	152	0	-	40	107
50-59	18	115	48	264	0	-	66	195
60-69	1	26	108	383	0	-	109	337
70-79	0	-	73	518	0	-	73	507
80+	0	-	28	560	0	-	28	538
Unknown	3	30	1	1 000	0	-	4	40
Total	66	40	274	334	0		340	137

Silicosis was diagnosed in men who were young (<40 years) and in men who were exposed to silica for a few years (< 10 years) (Table 4-3).

TABLE 4-3 NUMBER OF CASES AND PREVALENCE OF SILICOSIS IN THE GOLD MINING INDUSTRY, BY YEARS OF SERVICE AND POPULATION GROUP (1978)

Years of service	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
<1	3	15	0	-	0	-	3	15
1-5	9	12	1	40	0	-	10	13
6-10	18	68	5	86	0	-	23	71
11-15	13	121	12	214	0	-	25	153
16-20	4	98	25	260	0	-	29	210
21-25	3	150	36	340	0	-	39	307
26-30	2	154	43	398	0	-	45	372
31-35	1	200	48	364	0	-	49	358
36-40	0	-	67	486	0	-	67	479
41+	0	-	36	434	0	-	36	419
Unknown	13	49	1	91	0	-	14	51
<i>Total</i>	66	40	274	334	0		340	137

SECTION 5 – OTHER PNEUMOCONIOSES

MASSIVE FIBROSIS

There were 20 (0.6%) cases of massive fibrosis (2 black, 17 white, 1 coloured). Fifteen cases of massive fibrosis were from the gold mining industry. One case was from the coal mining industry, 1 from the asbestos mining industry and in 3 cases the industry was not stated.

COAL WORKERS' PNEUMOCONIOSIS

There were 25 (0.7%) cases of coal workers' pneumoconiosis of which 24 were from the coal mining industry and the remaining 1 from the gold mining industry.

MIXED DUST PNEUMOCONIOSIS

There were 29 (0.9%) cases of mixed dust pneumoconiosis. These cases came from the gold (n=26), copper (n=1), diamond (n=1) and iron industry (1).

ASBESTOSIS AND PLEURAL PLAQUES

There were 73 cases of asbestosis of which 65.8% (n=48) had slight, 32.9% (n=24) moderate and 1.4% (n=1) had marked fibrosis. Of these, 55 (75.3%) had worked in the asbestos mining industry at some time in their lives. There were 28 cases that had asbestos plaques and 15 (53.6%) of these had asbestosis. Note that the parietal pleura (the site where plaque formation usually occurs) is seldom submitted with the lungs.

The distribution of asbestosis by age and population group is shown in Table 5-1.

TABLE 5-1 NUMBER OF CASES AND PREVALENCE OF ASBESTOSIS BY AGE AND POPULATION GROUP (1978)

Age group (years)	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
20-29	1	1	0	-	0	-	1	1
30-39	1	2	1	16	0	-	2	3
40-49	12	29	3	22	5	833	20	36
50-59	9	38	7	27	8	800	24	47
60-69	4	63	6	17	4	571	14	33
70-79	2	200	2	12	3	1 000	7	38
80+	0	-	1	17	0	-	1	16
Unknown	3	24	1	143	0	-	4	31
Total	32	14	21	19	20	625	73	22

SECTION 6 – EMPHYSEMA

There were 1 084 cases of emphysema, the extent of which was mild in 74.3% (n=805), moderate in 24.9% (n=270) and marked in 0.8% (n=9). The distribution of emphysema by age and population group is presented in Table 6-1.

TABLE 6-1 NUMBER OF CASES AND PREVALENCE OF EMPHYSEMA BY AGE AND POPULATION GROUP (1978)

Age group (years)	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
20-29	29	39	1	26	0	-	30	38
30-39	55	95	11	172	1	500	67	104
40-49	94	228	68	507	3	500	165	298
50-59	94	393	194	746	5	500	293	576
60-69	26	413	275	781	5	714	306	725
70-79	3	300	146	844	1	333	150	806
80+	1	333	45	776	2	667	48	750
Unknown	23	185	2	286	0	-	25	191
Total	325	145	742	681	17	531	1 084	322

The majority of men with emphysema were from the gold mining industry (72.9%, n=790) (Table 6-2).

TABLE 6-2 NUMBER OF CASES AND PREVALENCE OF EMPHYSEMA BY COMMODITY AND POPULATION GROUP (1978)

Commodity	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
Gold	213	129	575	701	2	1 000	790	319
Platinum	15	93	5	455	0	-	20	116
Coal	56	220	40	615	0	-	96	300
Asbestos	11	282	12	462	14	519	37	402
Diamond	6	273	7	636	0	-	13	382
Copper	3	158	16	571	0	-	19	396
Iscor	8	500	59	747	0	-	67	705
Other	0	-	4	667	0	-	4	250
Unknown	13	186	24	545	1	1 000	38	330
Total	325	145	742	681	17	531	1 084	322

TABLE 6-3 NUMBER OF CASES AND PREVALENCE OF EMPHYSEMA BY YEARS OF SERVICE AND POPULATION GROUP (1978)

Years of service	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
<1	15	53	1	125	1	1 000	17	58
1 – 5	82	89	18	340	3	500	103	105
6-10	52	163	45	517	4	800	101	246
11-15	37	266	52	584	1	500	90	391
16-20	20	351	78	661	2	400	100	556
21-25	8	320	107	728	4	500	119	661
26-30	4	286	100	769	0	-	104	722
31-35	2	286	109	752	0	-	111	725
36-40	3	1 000	112	783	0	-	115	788
41+	3	750	67	779	1	333	71	763
Unknown	99	208	53	631	1	1 000	153	273
<i>Total</i>	325	145	742	681	17	531	1 084	322

SECTION 7 – MESOTHELIOMA

There were 23 cases of mesothelioma in 1978.

TABLE 7-1 NUMBER AND PROPORTION OF MESOTHELIOMA CASES BY AGE AND POPULATION GROUP (1978)

Age group (years)	Black		White		Coloured		Total	
	N	%	N	%	N	%	N	%
30-39	0	-	0	-	1	25.0	1	4.3
40-49	5	71.4	0	-	2	50.0	7	30.4
50-59	1	14.3	6	50.0	1	25.0	8	34.8
60-69	0	-	3	25.0	0	-	3	13.0
70-79	1	14.3	2	16.7	0	-	3	13.0
80+	0	-	1	8.3	0	-	1	4.3
<i>Total</i>	7		12		4		23	

The distribution of mesothelioma by commodity and population group is presented in Table 7.2. Nine (39.1%) had worked in the asbestos mining industry.

TABLE 7-2 NUMBER AND PROPORTION OF MESOTHELIOMA CASES BY COMMODITY AND POPULATION GROUP (1978)

Commodity	Black		White		Coloured		Total	
	N	%	N	%	N	%	N	%
<i>Gold</i>	1	14.3	6	50.0	0	-	7	30.4
<i>Asbestos</i>	3	42.9	2	16.7	4	100.0	9	39.1
<i>Iscor</i>	1	14.3	0	-	0	-	1	4.3
<i>Other</i>	0	-	1	8.3	0	-	1	4.3
<i>Unknown</i>	2	28.6	3	25.0	0	-	5	21.7
<i>Total</i>	7		12		4		23	

SECTION 8 – PRIMARY LUNG CANCER

Ninety six cases of primary lung cancer were found at autopsy, 15.6% of which were in black, 81.3% in white and 3.1% in coloured men. Most of the cases were squamous lung carcinoma (44.8%; n=43), followed by small cell lung carcinoma (26.0%; n=25), adeno carcinoma (16.7%; n=16), large cell lung carcinoma (9.4%; n=9) and broncho-alveolar carcinoma (3.1%; n=3).

The distribution of primary lung cancer by age and population group is presented in Table 8-1.

TABLE 8-1 NUMBERS OF CASES AND PREVALENCE OF PRIMARY LUNG CANCER BY AGE AND POPULATION GROUP (1978)

Age group (years)	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
40-49	4	10	3	22	2	333	9	16
50-59	8	33	13	50	0	-	21	41
60-69	1	16	34	97	1	143	36	85
70-79	0	-	21	121	0	-	21	113
80+	0	-	7	121	0	-	7	109
Unknown	2	16	0	-	0	-	2	15
Total	15	7	78	72	3	94	96	29

The distribution of primary lung cancer by commodity and population group is presented in Table 8-2. The majority of cases came from the gold mining industry.

TABLE 8-2 NUMBER OF CASES AND PREVALENCE OF PRIMARY LUNG CANCER BY COMMODITY AND POPULATION GROUP (1978)

Commodity	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
Gold	8	5	60	73	1	500	69	28
Platinum	1	6	0	-	0	-	1	6
Coal	2	8	3	46	0	-	5	16
Asbestos	2	51	2	77	1	37	5	54
Diamond	0	-	2	182	0	-	2	59
Copper	0	-	0	-	0	-	0	-
Iscor	1	63	7	89	0	-	8	84
Other	0	-	0	-	0	-	0	-
Unknown	1	14	4	91	1	1000	6	52
Total	15	7	78	72	3	94	96	29

SECTION 9 – CLINICAL CAUSES OF DEATH

Table 9-1 and Figure 9-1 show the clinical causes of death as stated in the accompanying documents submitted with the cardio-respiratory organs, by population group. Diseases of the cardio-vascular system were the most frequent (19.5%) overall. Black men had the highest proportion of unnatural causes of death (59.9%). In 3.0% of all cases, the cause of death was not stated.

TABLE 9-1 CLINICAL CAUSES OF DEATH BY POPULATION GROUP (1978)

System	Black		White		Coloured		Total	
	N	%	N	%	N	%	N	%
Respiratory	145	6.5	158	14.5	15	46.9	318	9.4
Cardio-vascular	158	7.0	490	45.0	8	25.0	656	19.5
Central Nervous System	148	6.6	70	6.4	1	3.1	219	6.5
Gastro-intestinal	146	6.5	77	7.1	1	3.1	224	6.7
Genito-urinary	32	1.4	24	2.2	0	-	56	1.7
Haematological	25	1.1	20	1.8	0	-	45	1.3
Unnatural	1 345	59.9	150	13.8	2	6.3	1 497	44.5
Miscellaneous	199	8.9	48	4.4	5	15.6	252	7.5
Not stated	47	2.1	53	4.9	0	-	100	3.0
Total	2 245		1 090		32		3 367	

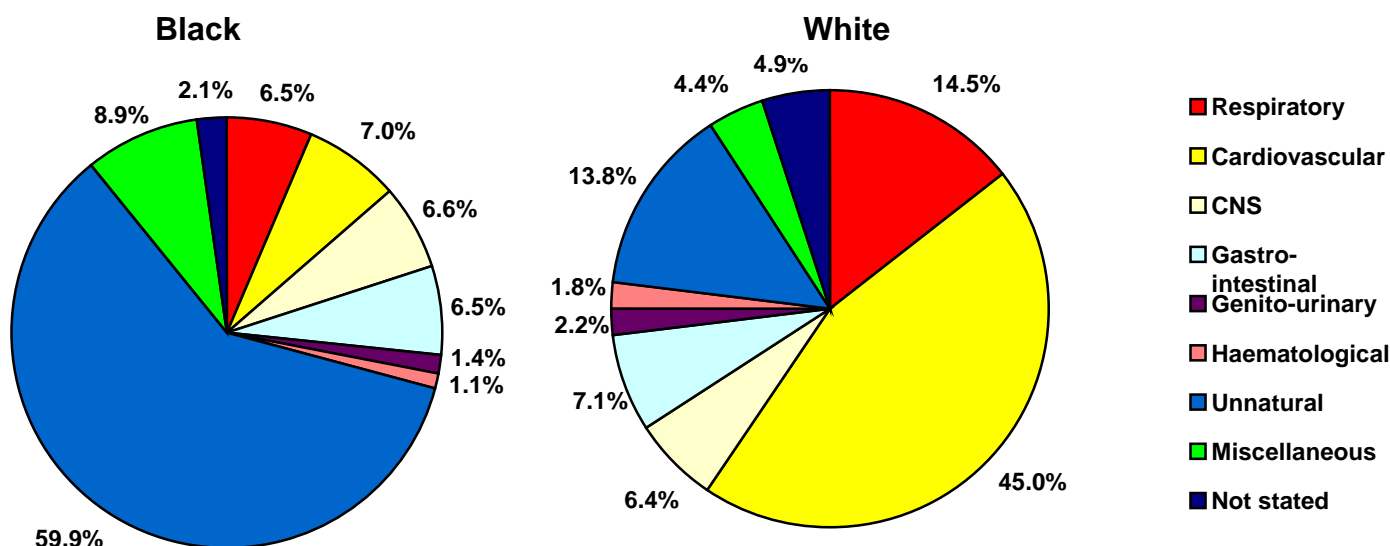


FIGURE 9-1 CLINICAL CAUSE OF DEATH AS STATED BY THE CLINICIANS WHO SUBMIT THE ORGANS OF THE DECEASED TO THE NIOH (1978)