NATIONAL HEALTH LABORATORY SERVICE

NATIONAL INSTITUTE FOR OCCUPATIONAL HEALTH

Pathology Division Surveillance Report

Demographic Data and Disease Rates for January to December 1977

Ntombizodwa Ndlovu

Tony Davies

Gill Nelson

Jill Murray

PO Box 4788
Johannesburg
2000

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

NIOH Report 10/2011

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.

National Institute for Occupational Health, PO Box 4788, Johannesburg, 2000, South Africa

ISSN 1812-7681

EXECUTIVE SUMMARY

During 1977, 3 423 cases came to autopsy at the NIOH. Of these, 68.7% were black men, 30.3% were white and 1.0% were coloured.

Overall disease rates (per 1000 autopsies) for 1977 are shown in Figure 1.

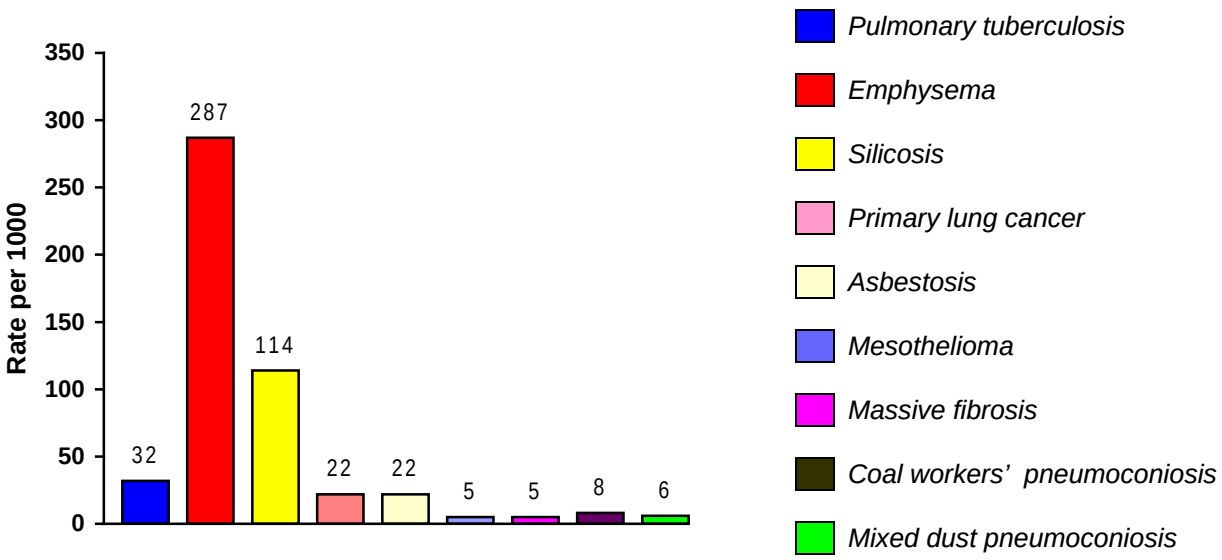

FIG 1 OVERALL DISEASE RATES FOR 1977

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

GLOSSARY

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

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 1977. 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 1977 is presented in Table 2-1.

TABLE 2-1 DISTRIBUTION OF AUTOPSIES BY YEAR AND POPULATION GROUP (1977)

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*	*30.4*	*33*	*1.0*	*3 423*
Total	*6 876*	*69.2*	*2 965*	*29.8*	*92*	*0.9*	*9 933*

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 1977. Autopsies of only the cardio-respiratory organs comprised 83.8% of all examinations.

TABLE 2-2 NUMBER AND PROPORTION OF AUTOPSIES BY TYPE AND POPULATION GROUP (1977)

Autopsy type	Black		White		Coloured		Total	
	N	%	N	%	N	%	N	%
Cardio-respiratory organs only	*2 232*	*94.9*	*603*	*58.0*	*32*	*97.0*	*2 867*	*83.8*
Full autopsy	*119*	*5.1*	*436*	*42.0*	*1*	*3.0*	*556*	*16.2*
Not stated	*0*	*-*	*0*	*-*	*0*	*-*	*0*	*-*
Total	*2 351*		*1 039*		*33*		*3 423*	

The age distribution of autopsies for 1977 is shown in Table 2-3 and Figure 2-1. The mean age at autopsy of black men was 32.9 years. The mean age of white men at autopsy was 58.1 years and for coloured men 53.2 years

TABLE 2-3 NUMBER AND PROPORTION OF AUTOPSIES BY AGE AND POPULATION GROUP (1977)

Age group (years)	Black		White		Coloured		Total	
	N	%	N	%	N	%	N	%
<20	*77*	*3.3*	*4*	*0.4*	*0*	*-*	*81*	*2.4*
20-29	*824*	*35.0*	*40*	*3.8*	*2*	*6.1*	*866*	*25.3*
30-39	*562*	*23.9*	*68*	*6.5*	*3*	*9.1*	*633*	*18.5*
40-49	*433*	*18.4*	*150*	*14.4*	*8*	*24.2*	*591*	*17.3*
50-59	*252*	*10.7*	*216*	*20.8*	*10*	*30.3*	*478*	*14.0*
60-69	*53*	*2.3*	*355*	*34.2*	*5*	*15.2*	*413*	*12.1*
70-79	*7*	*0.3*	*159*	*15.3*	*4*	*12.1*	*170*	*5.0*
80+	*1*	*0.0*	*45*	*4.3*	*1*	*3.0*	*47*	*1.4*
Unknown	*142*	*6.0*	*2*	*0.2*	*0*	*-*	*144*	*4.2*
Total	*2 351*		*1 039*		*33*		*3 423*	

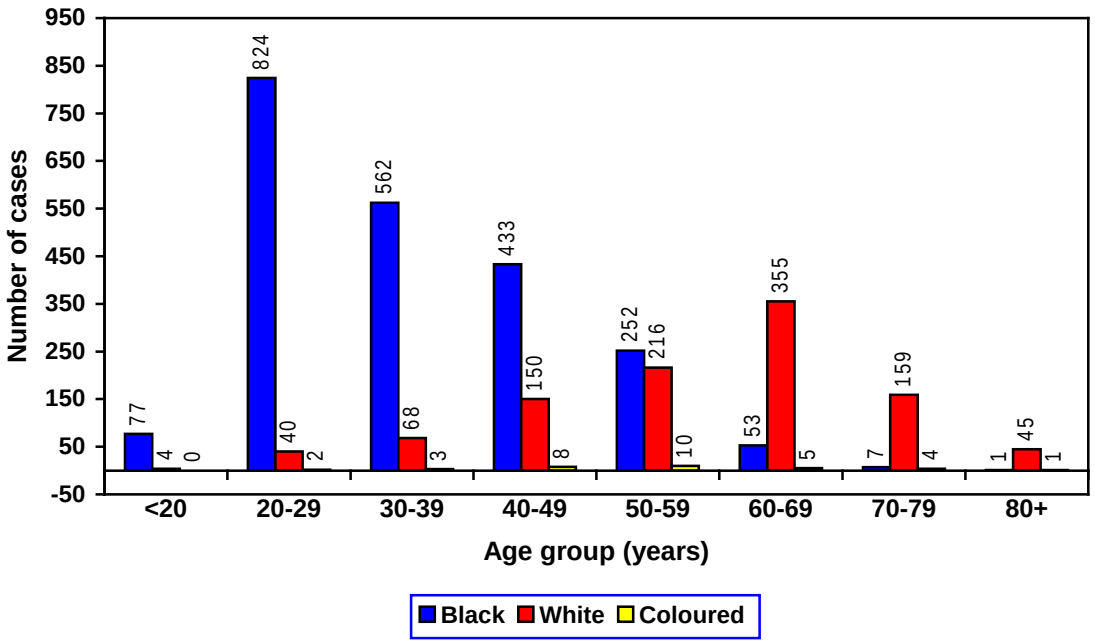

FIG 2-1 DISTRIBUTION OF AUTOPSIES BY AGE AND POPULATION GROUP (1977)

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 1977.

TABLE 2-4 NUMBER AND PROPORTION OF AUTOPSIES BY COMMODITY AND POPULATION GROUP (1977)

Commodity	Black		White		Coloured		Total	
	N	%	N	%	N	%	N	%
Gold	*1 700*	*72.3*	*822*	*79.1*	*2*	*6.1*	*2 524*	*73.7*
Platinum	*137*	*5.8*	*12*	*1.2*	*0*	*-*	*149*	*4.4*
Coal	*308*	*13.1*	*51*	*4.9*	*1*	*3.0*	*360*	*10.5*
Asbestos	*50*	*2.1*	*22*	*2.1*	*23*	*69.7*	*95*	*2.8*
Iscor	*29*	*1.2*	*58*	*5.6*	*0*	*-*	*87*	*2.5*
Diamond	*14*	*0.6*	*18*	*1.7*	*0*	*-*	*32*	*0.9*
Copper	*23*	*1.0*	*26*	*2.5*	*4*	*12.1*	*53*	*1.5*
Other	*19*	*0.8*	*4*	*0.4*	*0*	*-*	*23*	*0.7*
Unknown	*71*	*3.0*	*26*	*2.5*	*3*	*9.1*	*100*	*2.9*
Total	*2 351*		*1 039*		*33*		*3 423*	

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

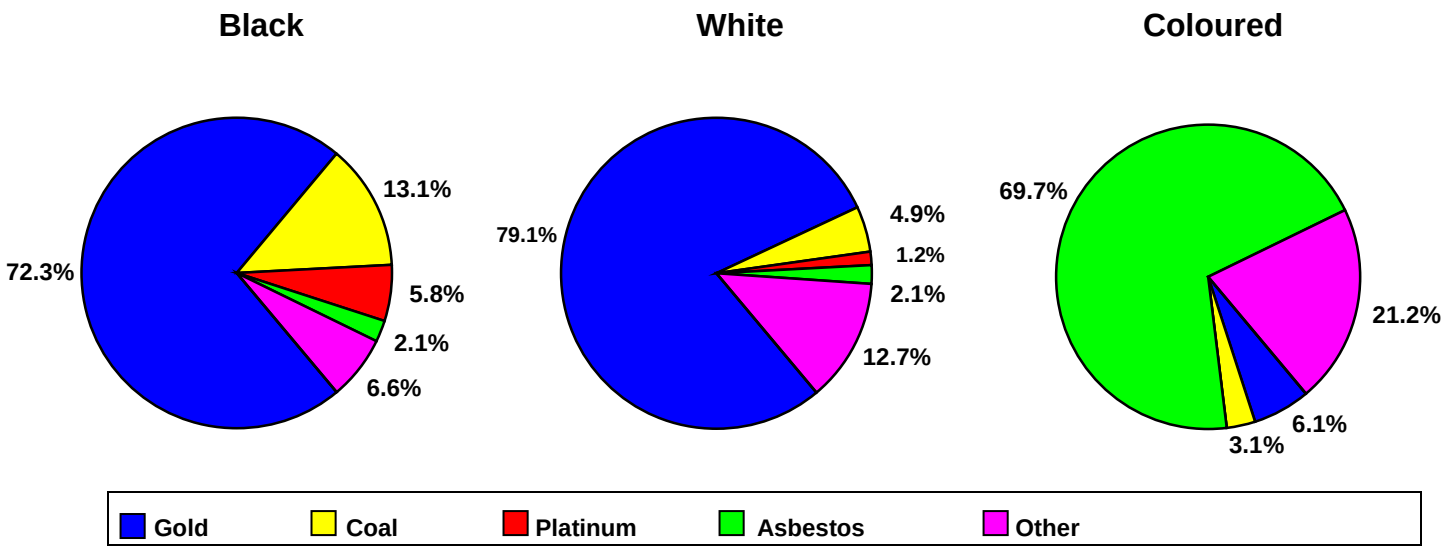

FIG 2-2 DISTRIBUTION OF AUTOPSIES BY COMMODITY AND POPULATION GROUP (1977)

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 (1977)

Years of service	Black		White		Coloured		Total	
	N	%	N	%	N	%	N	%
<1	*392*	*16.7*	*10*	*1.0*	*0*	*-*	*402*	*11.7*
1-5	*878*	*37.3*	*53*	*5.1*	*1*	*3.0*	*932*	*27.2*
6-10	*321*	*13.7*	*81*	*7.8*	*8*	*24.2*	*410*	*12.0*
11-15	*135*	*5.7*	*90*	*8.7*	*6*	*18.2*	*231*	*6.7*
16-20	*61*	*2.6*	*131*	*12.6*	*5*	*15.2*	*197*	*5.8*
21-25	*22*	*0.9*	*136*	*13.1*	*5*	*15.2*	*163*	*4.8*
26-30	*14*	*0.6*	*161*	*15.5*	*3*	*9.1*	*178*	*5.2*
31-35	*8*	*0.3*	*128*	*12.3*	*2*	*6.1*	*138*	*4.0*
36-40	*4*	*0.2*	*126*	*12.1*	*1*	*3.0*	*131*	*3.8*
41+	*0*	*-*	*80*	*7.7*	*1*	*3.0*	*81*	*2.4*
Unknown	*516*	*21.9*	*43*	*4.1*	*1*	*3.0*	*560*	*16.4*
Total	*2 351*		*1 039*		*33*		*3 423*	

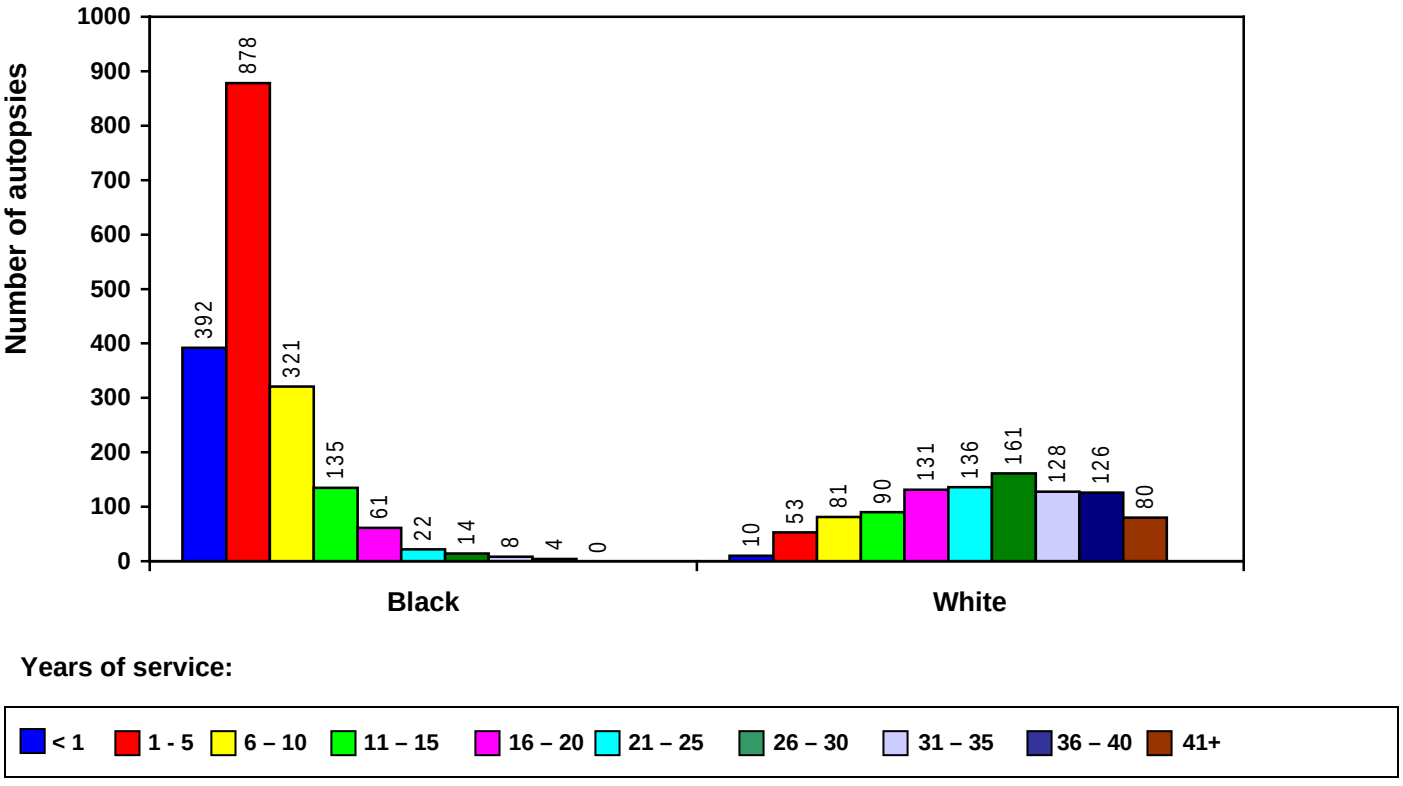

FIG 2-3 DISTRIBUTION OF AUTOPSIES BY YEARS OF SERVICE AND POPULATION GROUP (1977)

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 (1977)

Commodity	Black			White		
	N	Mean (years)	SD*	N	Mean (years)	SD*
Gold	*1 606*	*34.4*	*11.7*	*821*	*59.3*	*13.7*
Platinum	*119*	*31.1*	*10.2*	*12*	*46.0*	*15.2*
Coal	*298*	*36.8*	*12.0*	*51*	*52.5*	*16.3*
Asbestos	*43*	*41.4*	*14.9*	*22*	*54.9*	*14.2*
Iscor	*29*	*44.3*	*11.2*	*58*	*55.1*	*13.2*
Diamond	*12*	*36.7*	*8.0*	*17*	*55.8*	*14.6*
Copper	*23*	*39.6*	*14.3*	*26*	*53.5*	*14.4*
Other	*18*	*37.8*	*10.5*	*4*	*52.8*	*22.7*
Unknown	*62*	*38.0*	*12.4*	*26*	*58.2*	*15.5*
Total	*2 210*	*37.8*	*11.7*	*1 037*	*54.2*	*15.5*

** Standard deviation*

TABLE 2-7 MEAN DURATION OF SERVICE BY COMMODITY AND POPULATION GROUP (1977)

Commodity	Black			White		
	N	Mean (years)	SD*	N	Mean (years)	SD*
Gold	*1*	*5.2*	*5.6*	*816*	*26.9*	*11.3*
Platinum	*123*	*2.4*	*4.1*	*12*	*11.5*	*8.6*
Coal	*202*	*6.0*	*7.2*	*50*	*17.8*	*11.3*
Asbestos	*29*	*3.9*	*6.3*	*21*	*12.9*	*8.4*
Iscor	*20*	*13.5*	*10.3*	*39*	*19.1*	*8.8*
Diamond	*10*	*6.5*	*3.1*	*18*	*16.6*	*10.4*
Copper	*9*	*3.3*	*4.6*	*25*	*17.1*	*10.4*
Other	*14*	*4.2*	*5.3*	*4*	*24.7*	*12.6*
Unknown	*29*	*3.9*	*3.2*	*11*	*15.8*	*8.4*
Total	*1*	*5.4*	*5.7*	*996*	*18.0*	*10.0*

** Standard deviation*

SECTION 3 – ACTIVE TUBERCULOSIS

The distribution of active tuberculosis (TB) by anatomical site is presented in Figure 3-1 (n=180). Active pulmonary TB (PTB) was diagnosed in 3.2% (111) of all cases autopsied in 1977. Most of the men with PTB were black (73.9%; 82 cases), 22.5% (25 cases) were white and 3.6% (4 cases) were coloured.

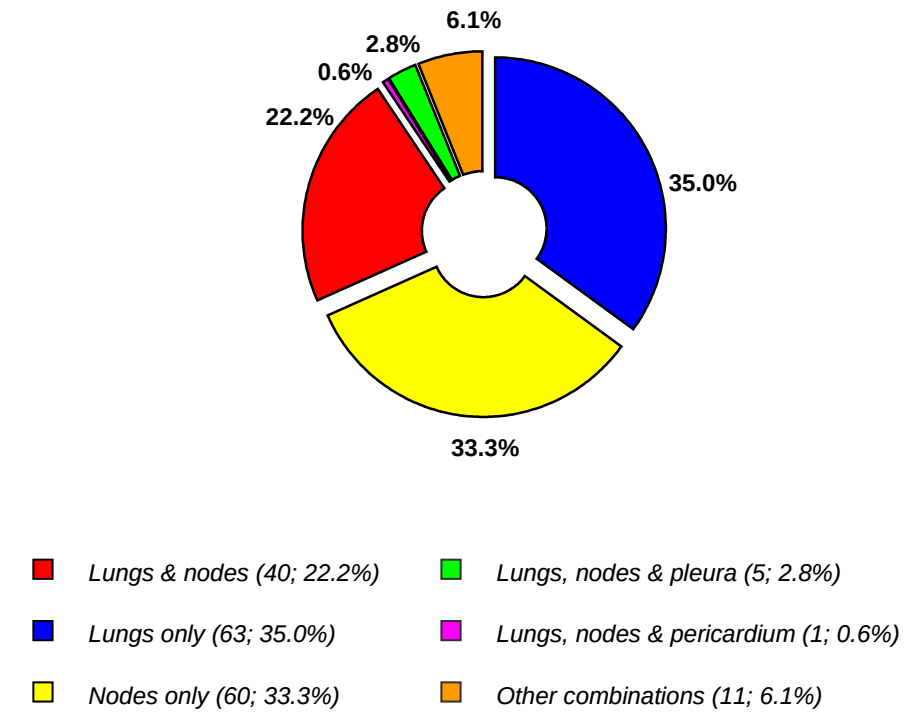

FIG 3-1 DISTRIBUTION OF ACTIVE TB BY SITE (1977)

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 1000. The majority of active PTB cases (72.1%) came from the gold mining industry (73.7% of all autopsy cases came from that commodity).

TABLE 3-1 NUMBER OF CASES AND PREVALENCE OF ACTIVE PTB BY COMMODITY AND POPULATION GROUP (1977)

Commodity	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
Gold	*57*	*34*	*23*	*28*	*0*	*-*	*80*	*32*
Platinum	*3*	*22*	*0*	*-*	*0*	*-*	*3*	*20*
Coal	*11*	*36*	*1*	*20*	*0*	*-*	*12*	*33*
Asbestos	*4*	*80*	*0*	*-*	*4*	*174*	*8*	*84*
Iscor	*2*	*69*	*0*	*-*	*0*	*-*	*2*	*23*
Diamond	*1*	*71*	*0*	*-*	*0*	*-*	*1*	*31*
Copper	*0*	*-*	*1*	*38*	*0*	*-*	*1*	*19*
Unknown	*4*	*56*	*0*	*-*	*0*	*-*	*4*	*40*
Total	*82*	*35*	*25*	*24*	*4*	*121*	*111*	*32*

The age distribution of cases with active PTB is shown in Table 3-2. Most of the cases were between 20-59 years (83 cases=74.8%).

TABLE 3-2 NUMBER OF CASES AND PREVALENCE OF ACTIVE PTB BY AGE AND POPULATION GROUP (1977)

Age group (years)	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
<20	*1*	*13*	*0*	*-*	*0*	*-*	*1*	*12*
20-29	*20*	*24*	*0*	*-*	*0*	*-*	*20*	*23*
30-39	*18*	*32*	*0*	*-*	*0*	*-*	*18*	*28*
40-49	*19*	*44*	*4*	*27*	*2*	*250*	*25*	*42*
50-59	*17*	*67*	*2*	*9*	*1*	*100*	*20*	*42*
60-69	*4*	*75*	*12*	*34*	*0*	*-*	*16*	*39*
70-79	*0*	*-*	*7*	*44*	*1*	*250*	*8*	*47*
80+	*0*	*-*	*0*	*-*	*0*	*-*	*0*	*-*
Unknown	*3*	*21*	*0*	*-*	*0*	*-*	*3*	*21*
Total	*82*	*35*	*25*	*24*	*4*	*121*	*111*	*32*

SECTION 4 – SILICOSIS

Silicotic nodules were found in the lungs of 390 cases (11.4% of all autopsies), 91.8% of which came from the gold mining industry. Of all cases of silicosis, occasional silicotic nodules were found in 29.2% of cases, a few in 10.8%, a moderate number in 6.4% and a large number in 1.0%. In 52.6% of the cases the severity of nodules 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 (1977)

Commodity	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
Gold	*73*	*43*	*284*	*345*	*1*	*500*	*358*	*142*
Platinum	*1*	*7*	*1*	*83*	*0*	*-*	*2*	*13*
Coal	*7*	*23*	*1*	*20*	*0*	*-*	*8*	*22*
Asbestos	*2*	*40*	*4*	*182*	*1*	*43*	*7*	*74*
Diamond	*2*	*143*	*2*	*111*	*0*	*-*	*4*	*125*
Copper	*0*	*-*	*2*	*77*	*0*	*-*	*2*	*38*
Iscor	*0*	*-*	*1*	*17*	*0*	*-*	*1*	*11*
Unknown	*4*	*56*	*4*	*154*	*0*	*-*	*8*	*80*
Total	*89*	*35*	*299*	*288*	*2*	*61*	*390*	*114*

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 (1977)

Age group (years)	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
20-29	*3*	*5*	*0*	*-*	*0*	*-*	*3*	*5*
30-39	*13*	*31*	*3*	*61*	*0*	*-*	*16*	*35*
40-49	*32*	*108*	*24*	*214*	*0*	*-*	*56*	*137*
50-59	*18*	*106*	*49*	*318*	*0*	*-*	*67*	*206*
60-69	*4*	*125*	*123*	*409*	*1*	*1000*	*128*	*383*
70-79	*0*	*-*	*69*	*479*	*0*	*-*	*69*	*473*
80+	*0*	*-*	*15*	*455*	*0*	*-*	*15*	*441*
Unknown	*3*	*32*	*1*	*1000*	*0*	*-*	*4*	*42*
Total	*73*	*43*	*284*	*345*	*1*	*500*	*358*	*142*

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 (1977)

Years of service	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
<1	*2*	*8*	*0*	*-*	*0*	*-*	*2*	*8*
1-5	*15*	*22*	*1*	*36*	*0*	*-*	*16*	*22*
6-10	*21*	*80*	*7*	*127*	*0*	*-*	*28*	*88*
11-15	*11*	*98*	*12*	*203*	*0*	*-*	*23*	*135*
16-20	*5*	*116*	*23*	*225*	*0*	*-*	*28*	*193*
21-25	*4*	*235*	*39*	*364*	*0*	*-*	*43*	*347*
26-30	*2*	*333*	*54*	*383*	*0*	*-*	*56*	*381*
31-35	*1*	*200*	*62*	*512*	*1*	*1 000*	*64*	*504*
36-40	*1*	*500*	*58*	*479*	*0*	*-*	*59*	*476*
41+	*0*	*-*	*27*	*351*	*0*	*-*	*27*	*351*
Unknown	*11*	*37*	*1*	*167*	*0*	*-*	*12*	*39*
Total	*73*	*43*	*284*	*345*	*1*	*500*	*358*	*142*

SECTION 5 – OTHER PNEUMOCONIOSES

MASSIVE FIBROSIS

There were 16 (0.5%) cases of massive fibrosis (1 black, 15 white). Eleven cases of massive fibrosis were from the gold mining industry. Two cases were from the coal mining industry, one from Iscor and in two cases the industry was not stated.

COAL WORKERS' PNEUMOCONIOSIS

There were 28 (0.8%) cases of coal workers' pneumoconiosis, all of which were from the coal mining industry.

MIXED DUST PNEUMOCONIOSIS

There were 20 (0.6%) cases of mixed dust pneumoconiosis. These cases came from the gold (n=12), coal (n=2), copper (1) as well as from Iscor (n=3). In two cases the industry was not stated.

ASBESTOSIS AND PLEURAL PLAQUES

There were 76 cases of asbestosis of which 72.4% (n=55) had slight and 27.6% (n=21) moderate fibrosis. Of these, 51 (67.1%) had worked in the asbestos mining industry at some time in their lives. There were 10 cases that had asbestos plaques and 6 (60.0%) 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 (1977)

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	*6*	*11*	*1*	*15*	*0*	*-*	*7*	*11*
40-49	*12*	*28*	*1*	*7*	*7*	*875*	*20*	*34*
50-59	*9*	*36*	*6*	*28*	*7*	*700*	*22*	*46*
60-69	*2*	*38*	*9*	*25*	*2*	*400*	*13*	*31*
70-79	*1*	*143*	*2*	*13*	*4*	*1 000*	*7*	*41*
80+	*0*	*-*	*1*	*22*	*0*	*-*	*1*	*21*
Unknown	*5*	*35*	*0*	*-*	*0*	*-*	*5*	*35*
Total	*36*	*15*	*20*	*19*	*20*	*606*	*76*	*22*

SECTION 6 – EMPHYSEMA

There were 984 cases of emphysema, the extent of which was mild in 75.6% (n=744), moderate in 23.0% (n=226) and marked in 1.4% (n=14). 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 (1977)

Age group (years)	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
<20	*2*	*26*	*0*	*-*	*0*	*-*	*2*	*25*
20-29	*22*	*27*	*0*	*-*	*0*	*-*	*22*	*25*
30-39	*78*	*139*	*14*	*206*	*0*	*-*	*92*	*145*
40-49	*91*	*210*	*75*	*500*	*1*	*125*	*167*	*283*
50-59	*86*	*341*	*146*	*676*	*6*	*600*	*238*	*498*
60-69	*18*	*340*	*261*	*735*	*3*	*600*	*282*	*683*
70-79	*3*	*429*	*120*	*755*	*4*	*1 000*	*127*	*747*
80+	*1*	*1 000*	*34*	*756*	*1*	*1 000*	*36*	*766*
Unknown	*16*	*113*	*2*	*1 000*	*0*	*-*	*18*	*125*
Total	*317*	*135*	*652*	*628*	*15*	*455*	*984*	*287*

The majority of men with emphysema were from the gold mining industry (73.4%, n=722) (Table 6-2).

TABLE 6-2 NUMBER OF CASES AND PREVALENCE OF EMPHYSEMA BY COMMODITY AND POPULATION GROUP (1977)

Commodity	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
Gold	*198*	*116*	*522*	*635*	*2*	*1 000*	*722*	*286*
Platinum	*17*	*124*	*5*	*417*	*0*	*-*	*22*	*148*
Coal	*67*	*218*	*25*	*490*	*0*	*-*	*92*	*256*
Asbestos	*10*	*200*	*15*	*682*	*10*	*435*	*35*	*368*
Diamond	*2*	*143*	*8*	*444*	*0*	*-*	*10*	*313*
Copper	*2*	*87*	*18*	*692*	*2*	*500*	*22*	*415*
Iscor	*11*	*379*	*38*	*655*	*0*	*-*	*49*	*563*
Other	*0*	*-*	*3*	*750*	*0*	*-*	*3*	*130*
Unknown	*10*	*141*	*18*	*692*	*1*	*333*	*29*	*290*
Total	*317*	*135*	*652*	*628*	*15*	*455*	*984*	*287*

TABLE 6-3 NUMBER OF CASES AND PREVALENCE OF EMPHYSEMA BY YEARS OF SERVICE AND POPULATION GROUP (1977)

Years of service	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
<1	*30*	*77*	*1*	*100*	*0*	*-*	*31*	*77*
1 – 5	*88*	*100*	*14*	*264*	*1*	*1 000*	*103*	*111*
6-10	*52*	*162*	*33*	*407*	*2*	*250*	*87*	*212*
11-15	*35*	*259*	*47*	*522*	*1*	*167*	*83*	*359*
16-20	*15*	*246*	*75*	*573*	*2*	*400*	*92*	*467*
21-25	*6*	*273*	*94*	*691*	*2*	*400*	*102*	*626*
26-30	*7*	*500*	*109*	*677*	*2*	*667*	*118*	*663*
31-35	*4*	*500*	*89*	*695*	*2*	*1 000*	*95*	*688*
36-40	*1*	*250*	*98*	*778*	*1*	*1 000*	*100*	*763*
41+	*0*	*-*	*64*	*800*	*1*	*1 000*	*65*	*802*
Unknown	*79*	*153*	*28*	*651*	*1*	*1 000*	*108*	*193*
Total	*317*	*135*	*652*	*628*	*15*	*455*	*984*	*287*

SECTION 7 – MESOTHELIOMA

There were 17 cases of mesothelioma in 1977.

TABLE 7-1 NUMBER AND PROPORTION OF MESOTHELIOMA CASES BY AGE AND POPULATION GROUP (1977)

Age group (years)	Black		White		Coloured		Total	
	N	%	N	%	N	%	N	%
20-29	*1*	*20.0*	*0*	*-*	*1*	*33.3*	*2*	*11.8*
30-39	*1*	*20.0*	*1*	*11.1*	*0*	*-*	*2*	*11.8*
40-49	*1*	*20.0*	*0*	*-*	*1*	*33.3*	*2*	*11.8*
50-59	*0*	*-*	*2*	*22.2*	*1*	*33.3*	*3*	*17.6*
60-69	*1*	*20.0*	*6*	*66.7*	*0*	*-*	*7*	*41.2*
70-79	*1*	*20.0*	*0*	*-*	*0*	*-*	*1*	*5.9*
80+	*0*	*-*	*0*	*-*	*0*	*-*	*0*	*-*
Unknown	*0*	*-*	*0*	*-*	*0*	*-*	*0*	*-*
Total	*5*		*9*		*3*		*17*	

The distribution of mesothelioma by commodity and population group is presented in Table 7.2. Eight (47.1%) had worked in the asbestos mining industry.

TABLE 7-2 NUMBER AND PROPORTION OF MESOTHELIOMA CASES BY COMMODITY AND POPULATION GROUP (1977)

Commodity	Black		White		Coloured		Total	
	N	%	N	%	N	%	N	%
Gold	*1*	*20.0*	*3*	*33.3*	*0*	*-*	*4*	*23.5*
Asbestos	*3*	*60.0*	*2*	*22.2*	*3*	*100.0*	*8*	*47.1*
Unknown	*1*	*20.0*	*4*	*44.4*	*0*	*-*	*5*	*29.4*
Total	*5*		*9*		*3*		*17*	

SECTION 8 – PRIMARY LUNG CANCER

Seventy seven cases of primary lung cancer were found at autopsy, 23.4% of which were in black, 72.7% in white and 3.9% in coloured men. Most of the cases were small cell lung carcinomas (42.9%; n=33), followed by squamous lung carcinoma (33.8%; n=26), large cell lung carcinoma (14.3%; n=11), broncho-alveolar carcinoma (5.2%; n=4) and adeno carcinoma (3.9%; 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 (1977)

Age group (years)	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
30-39	*1*	*2*	*0*	*-*	*0*	*-*	*1*	*2*
40-49	*5*	*12*	*3*	*20*	*0*	*-*	*8*	*14*
50-59	*10*	*40*	*12*	*56*	*2*	*200*	*24*	*50*
60-69	*2*	*38*	*26*	*73*	*0*	*-*	*28*	*68*
70-79	*0*	*-*	*14*	*88*	*1*	*250*	*15*	*88*
80+	*0*	*-*	*1*	*22*	*0*	*-*	*1*	*21*
Unknown	*0*	*-*	*0*	*-*	*0*	*-*	*0*	*-*
Total	*18*	*8*	*56*	*54*	*3*	*91*	*77*	*22*

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 (1977)

Commodity	Black		White		Coloured		Total	
	N	Rate	N	Rate	N	Rate	N	Rate
Gold	*12*	*7*	*48*	*58*	*1*	*500*	*61*	*24*
Platinum	*1*	*7*	*1*	*83*	*0*	*-*	*2*	*13*
Coal	*2*	*6*	*1*	*20*	*0*	*-*	*3*	*8*
Asbestos	*0*	*-*	*2*	*91*	*2*	*87*	*4*	*42*
Copper	*1*	*43*	*0*	*-*	*0*	*-*	*1*	*19*
Iscor	*0*	*-*	*3*	*52*	*0*	*-*	*3*	*34*
Other	*1*	*53*	*0*	*-*	*0*	*-*	*1*	*43*
Unknown	*1*	*14*	*1*	*38*	*0*	*-*	*2*	*20*
Total	*18*	*8*	*56*	*54*	*3*	*91*	*77*	*22*

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 (17.4%) overall. Black men had the highest proportion of unnatural causes of death (90.2%). In 4.3% of all cases, the cause of death was not stated.

TABLE 9-1 CLINICAL CAUSES OF DEATH BY POPULATION GROUP (1977)

System	Black		White		Coloured		Total	
	N	%	N	%	N	%	N	%
Respiratory	*167*	*7.1*	*147*	*14.1*	*10*	*30.3*	*324*	*9.5*
Cardio-vascular	*121*	*5.1*	*467*	*44.9*	*7*	*21.2*	*595*	*17.4*
Central Nervous System	*177*	*7.5*	*53*	*5.1*	*3*	*9.1*	*233*	*6.8*
Gastro-intestinal	*169*	*7.2*	*80*	*7.7*	*4*	*12.1*	*253*	*7.4*
Genito-urinary	*34*	*1.4*	*33*	*3.2*	*0*	*-*	*67*	*2.0*
Haematological	*17*	*0.7*	*8*	*0.8*	*0*	*-*	*25*	*0.7*
Unnatural	*1 377*	*58.6*	*148*	*14.2*	*2*	*6.1*	*1 527*	*44.6*
Miscellaneous	*200*	*8.5*	*45*	*4.3*	*6*	*18.2*	*251*	*7.3*
Not stated	*89*	*3.8*	*58*	*5.6*	*1*	*3.0*	*148*	*4.3*
Total	*2 351*		*1 039*		*33*		*3 423*	

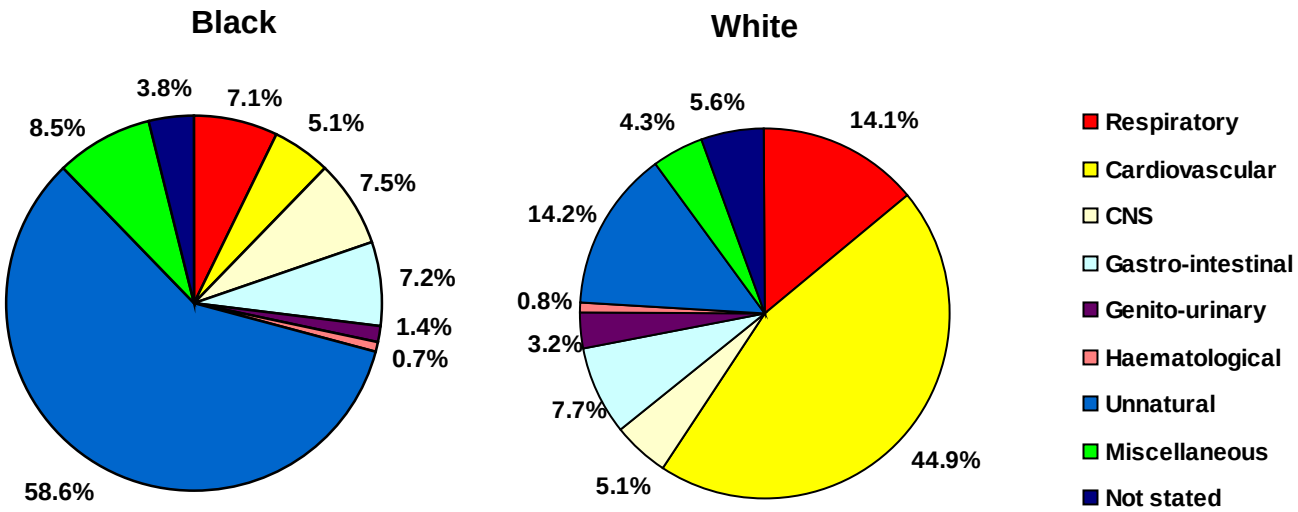

FIG 9-1 CLINICAL CAUSES OF DEATH AS STATED BY THE CLINICIANS WHO SUBMIT THE ORGANS OF THE DECEASED TO THE NIOH (1977)