THE HEALTH STATUS OF CONSTRUCTION WORKERS

BY

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DEDICATION

This work is dedicated to all those construction workers around the world who have been ill, injured or have died as a result of their work in the construction industry. I hope that this work will be the beginning of an era where occupational health will be taken seriously and applied to make a difference to the quality of life of all construction workers.

This work is further dedicated to all Occupational Health Nurses in South Africa, who believe that the continued health of our workers is the future of our economy and country, and who continue to drive occupational health service delivery forward on a daily basis.

This work is also dedicated to my sons, Ashley and Calum Wheeler who have had to put up with their Mom working constantly; my partner, John, who has been the driving force and motivation and support for further study; my clients, colleagues, friends and staff who have supported me on this journey.

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ABBREVIATIONS

Acquired Immune Deficiency Syndrome	AIDS
Body mass index	BMI
Compensation Commissioner	CC
General Contractor	GC
Health and Safety Executive	HSE
Human immunodeficiency virus	HIV
International Labour Organization	ILO
Nelson Mandela Metropolitan Municipality	NMMM
New Partnership for Africa's Development	NEPAD
Noise induced hearing loss	NIHL
Occupational Health	OH
Occupational Health and Safety	OH&S
Occupational Health and Safety Act	OH&SA
Occupational Health Nurse Practitioner	OHN
Occupational Medicine Practitioner	OMP
Sexually transmitted infections	STIs
South Africa	SA
Tuberculosis	TB
United States of America	USA
World Health Organization	WHO

SUMMARY

The construction industry is considered to be an extremely dangerous working environment, and therefore the health status of construction workers needs to be considered prior, during and on leaving the industry. Occupational hazards relative to the construction worker are well researched internationally; however few countries undertake routine medical surveillance to identify the health status of the construction worker relative to these hazards. Employers have a higher duty of care to identify workers who could be a risk at work from non-occupationally related conditions such as hypertension and diabetes mellitus. Work could exacerbate these conditions, leading to absenteeism, poor performance and eventually leaving the industry due to ill health.

The dissertation explores, inter alia: the risks to which workers are exposed; the legal aspects; relevant literature regarding medical surveillance, and the use of a medical surveillance instrument used to determine the health status of 142 construction workers who consented to participate in the study.

The methodological approach used in this study was a quantitative-descriptive design, more specifically, using a randomised cross-sectional survey design.

The instrument used to determine health status included a full medical, occupational and social history, as well as a physical examination undertaken by Occupational Health Nursing Practitioners (OHNs). Findings indicate that most construction workers believe they are healthy. However only a small percentage of construction workers did not require referral for further investigation and / or treatment.

KEY WORDS: medical surveillance, construction industry, workers, health status

OPSOMMING

Die beroepsomgewing van die konstruksiebedryf word as uiters gevaarlik beskou, en om dié rede behoort konstruksiewerkers se gesondheidstatus in ag geneem word voor hulle in diens geneem word, gedurende hul dienstermyn asook wanneer hulle uit diens tree. Die risiko's van konstruksiewerkers se beroep word internasionaal goed nagevors, maar min lande onderneem roetine- mediese opnames wat konstruksiewerkers se gesondheidstatus met betrekking tot hierdie gevare identifiseer. Werkgewers staan onder 'n groter verpligting om arbeiders met nieberoepsverwante toestande soos hipertensie en suikersiekte te identifiseer wat by die werk 'n risiko is. Werk kan sulke toestande vererger, en dit kan daartoe lei dat werkers meer afwesig is, swakker presteer en eindelik die bedryf verlaat as gevolg van swak gesondheid.

Hierdie verhandeling handel onder andere oor: die gevare waaraan arbeiders blootgestel kan word; die regsaspekte daarvan; en verbandhoudende literatuur met betrekking tot mediese ondersoeke asook die gebruik van 'n medieseondersoek-instrument om die gesondheidstatus van 142 konstruksiewerkers te bepaal wat ingestem het om aan hierdie studie deel te neem.

Die metodologie wat in hierdie studie gebruik is, is kwantitatief-beskrywend, en meer spesifiek, deur die gebruik van 'n ewekansige deursneeondersoek.

Die instrument wat gebruik word om gesondheidstatus te bepaal, sluit in 'n volledige mediese, beroeps- en maatskaplike agtergrond, asook 'n liggaamlike ondersoek deur beroepsgesondheidsverpleërs (BGV's). Bevindinge dui daarop dat die meeste konstruksiewerkers meen dat hulle gesond is. Slegs 'n klein persentasie van die konstruksiewerkers het egter nié verwysing vir nadere ondersoek en/of behandeling nodig gehad nie.

SLEUTELWOORDE: mediese ondersoek, konstruksiebedryf, arbeiders, gesondheidstatus

CHAPTER 1

THE PROBLEM AND ITS SETTING

The Health and Safety Executive (HSE) (2002: 37) states that construction has a reputation for being a particularly unhealthy industry because its rate of work-related illness is one of the highest of all occupational groups. Health problems among this group are relevant because of the number of high-risk activities involved, and the peripatetic nature of the workforce. Ringen, Englund, Welch, Weeks and Seegal (1995: 255) state that construction workers build, repair, renovate, modify, and demolish structures. These activities involve work that may vary from fully mechanized activities to hard physical labour. Work sites are sometimes isolated locations and at other times they may be in the midst of heavy traffic. Furthermore, in the Netherlands there may be as many as 20 different tradesmen from as many as 18 different subcontractors on one construction site at any one time undertaking their own specialized section of work (Koningsveld and van der Molen, 1997: 3).

Construction workers are exposed to risks that differ markedly from general industry relative to occupational health and safety (OH&S). Workers are exposed to a variety of health hazards, namely: musculoskeletal strain from the adoption of uncomfortable working positions; noise, resulting in noise induced hearing loss (NIHL); skin diseases from close contact with irritant or sensitising materials; respiratory irritation from dusts, fumes and gases, as well as developing more serious lung diseases related to exposure to asbestos and other fibrogenic materials (Smallwood and Ehrlich, 2001: 10; Ringen et al., 1995: 256, Koningsveld and van der Molen, 1997: 6). It is because of the high number of incidence of accidents and fatalities throughout the world that the construction industry has often been incorrectly termed ‘inherently dangerous’. However it should rather be stated that the industry is a highly hazardous one where hazards may be identified, mitigated or eliminated (Smallwood and Haupt, 2000: 116).

Historically less effort has been directed towards health matters in the construction industry in favour of the more high profile, and perhaps more easily

solvable problem of OH&S (Gibb, Gyi and Thompson, 1999: 1; Smallwood and Ehrlich, 1997: 171). Reasons for this discrepancy or difference in emphasis include:

- That health is seen as a complex issue;
- That long term strategies are required;
- That benefits are not immediate and are consequently difficult to demonstrate;
- That exposure to hazards with different health risks can be multiple and vary in nature and level;
- That health has a low profile;
- The 'macho culture' inherent in the workforce;
- The mobile and temporary nature of the workforce, and
- A lack of health expertise within the industry.

Traditionally, many construction workers have been hired for contracts. Consequently they are not regarded as long-term workers (Haupt and Whiteman, 2003: 62; Smallwood and Ehrlich, 1997: 171). Only 11 to 18% of South African workplaces provided Occupational Health (OH) services in 1996, probably because this is more difficult to organise on temporary construction sites (Smallwood and Ehrlich, 1997: 171).

Construction managers are primarily concerned with costs and have been reluctant to add what are considered 'unprofitable overheads' by spending on OH services. Furthermore the strenuous nature of construction work has probably produced a 'healthy worker effect', a term developed to describe construction workers with health problems - whether occupationally induced or not, who tend to leave the industry. The costs of ill health are transferred from the employer to the worker or the state health services (Smallwood and Ehrlich, 1997: 172).

1.1 HISTORICAL REVIEW

According to Bond (1998) some of the earliest records regarding safety regulations in construction were drawn up almost 1700 years before Ramazzini. Hammurabi, King of Babylonia in 1700 B.C. considered it necessary to include a duty of care for the construction of a house to ensure it did not fall down, in his Building Code 229. The Code 229 states: *"If a builder builds a house for a man and do not make its construction firm and the house he has built collapse and cause the death of the owner of the house- that builder will be put to death".*

Schneider (2001: 1056) states that musculoskeletal injuries were recorded in the Edwin Smith Papyrus, which dates back to the time of Imhotep, who lived in about 2780 B.C. Imhotep was an administrator concerned with a major construction project, an architect and one of the most famous Egyptian physicians. This papyrus document describes cases that are likely to be musculoskeletal injuries during the building of the pyramids. The final case in the papyrus deals with "instructions concerning a sprain of the vertebra (in) his spinal column", and advises about treatment. However, as sections of the document are missing, the information is incomplete.

An awareness of the health hazards which workers are exposed to became apparent in the Roman Empire, where the life of a slave working in the lead industry was calculated in months rather than in years, and workers in the cinnabar (red mercuric sulphide) industry were encouraged to use a pig's bladder as a dust mask. During the middle ages the chapter house of the great Batalha monastery in Portugal collapsed twice during construction and was finally built by prisoners already condemned to death. During the Industrial Revolution there was a growing public awareness of management's responsibility for the safety of its workers. The first fine imposed on management (£5) was recorded in 1792, "*intended to operate as a caution to owners"* following the death of a worker in the cogs of a steam-wheel in a foundry. In 1785 the first real analysis of an accident was made following a dust explosion in a bakery by Count Morozzo, who stated in this final paragraph "it *is therefore of great importance that these facts should be universally known, that public utility may reap from them every possible advantage"* (Bond, 1998).

The foundation of current occupational medicine is primarily based on Ramazzini's teachings during the Industrial Revolution in Europe in the 18th and 19th centuries. At this stage it was made clear that no industry, whatever its scale or size, could be completely free of hazards to workers and health (Coetzee and Pretorius, 1997: A2.1). Bernadino Ramazzini, physician and professor of medicine in Padua and Modena recommended that physicians ask about the patient's occupation (Koh and Jeyaratnam, 2001: 6).

In South Africa the 'rewards and perils' of an increased trade in minerals progressively manifested themselves from an occupational health point of view. The first major incident on the path of formal large-scale industrialisation was the discovery of diamonds in 1870, which precipitated an onslaught of fortune hunters into the interior. The predominant work was undertaken by Africans, who were exposed to the harshest working conditions. Where new and unexpected health problems developed, working conditions were appalling and facilities or administrative regulation of them absent. In the 1950's, the mining industry along with the Council for Scientific Industrial Research (CSIR) established a research institute that became the National Research Institute for Occupational Diseases. This institute played an important role in making South African industries more aware of health. Their publications confirmed that conditions in factories left much to be desired. In 1976 the Erasmus Commission confirmed that there were clear health hazards in most industries. These were attributed to either ignorance or the possible evasion of responsibilities; a shortage of trained occupational health personnel and in many instances a lack of clear-cut legislation to enforce health requirements (Coetzee and Pretorius, 1997: A22.2-7).

1.2 THE CHOICE OF THE SUBJECT

The New Partnership for Africa's Development (NEPAD) has recommended that African leaders take responsibility for revitalizing and extending the provision of, inter alia, health services, with specific relevance to addressing Human Immunodeficiency Virus (HIV) and Auto Immune Deficiency Syndrome (AIDS), pulmonary tuberculosis (TB) and other communicable diseases. With respect to health issues, programmes need to be fast-tracked. NEPAD argues that harnessing and utilizing all of Africa's human resources could potentially lead to equitable and sustainable growth. NEPAD has set itself the goal of implementing national strategies for sustainable development by 2005 (Haupt, Smallwood, Tijhuis, Deacon and Major, 2003: 4).

According to the Labour Force Survey (September 2002), there are an estimated 500 000 construction workers in South Africa in both the formal and informal sectors (Haupt et al., 2003: 4, Eppenberger and Haupt, 2003: 78). Data obtained from the Workplace Skills Plans, submitted to the Construction Education and Training Authority (CETA), indicate that 60.0% of skilled workers are over the age of 40 years, and of these, approximately 50.0% are between 40 and 49 years old (Eppenberger and Haupt, 2003: 78). The assumption could be made, therefore, that there are approximately 250 000 construction workers over the age of 40 years.

Many experienced workers are older people, and demographic changes in the industry could potentially lead to an increase in the proportion of older workers available to undertake construction work. Diseases such as HIV and AIDS have the potential to reduce the overall labour force, shift the age structure due to mortality, change the skill composition of the labour supply resulting in an increase in labour turnover (Grainger and Mitchell, 2003: 73; Haupt et al., 2003: 4; Eppenberger and Haupt, 2003: 79). There is a resultant decline in the growth of new cohorts entering the labour market. The consequences of this are that the size of the older cohort relative to the size of the youngest cohort increases. Hard physical labour, static work, climatic influences, noise and dust are considerable burdens for construction workers. Moreover, injuries among construction workers comprised on average 9.0% (800) of all industrial injuries (8,900)

in South Africa, with fatalities on average for the same period representing 11.9% (86) of all industrial deaths (722) (Haupt et al., 2003: 4; Eppenberger and Haupt, 2003: 79).

The health problems experienced among South Africans' represent a mixed pattern that is typical of both developed and undeveloped countries. Workers requiring health care in general industry reflect a similar profile; namely smoking, alcohol and other drug abuse; sexually transmitted infections (STIs); chronic degenerative diseases, and other problems related to poverty, inadequate water sanitation, housing, and nutrition (Grainger and Mitchell, 2003: 73). Lost-days among construction workers is a concern for the industry. In particular the prevalence of diseases such as TB and HIV and AIDS exacerbate the situation in the South African construction industry. The resultant absenteeism, sick leave and disability pensions, medical care, pensions to surviving dependents, loss of productivity potentially affect the direct costs of construction companies. Attention is therefore required to improve the health, wellbeing, workplace environment, and safety of construction workers (Haupt et al., 2003: 4).

According to NEPAD the most obvious effects of health improvement on the working population are the reduction in lost working days due to sick leave and an increase in productivity. Knowledge gained as a consequence of this research will hopefully enable researchers, construction companies, and other stakeholders to conceptualize possible intervention strategies for improving the well being of all construction workers. This would contribute to their improved work performance and reduction in absenteeism or lost-days (Haupt et al., 2003: 4).

Construction-workers are the 'human capital' of the construction industry, and need particular care. This, related to the need for continuous improvement of skills (training), reduction of health risks and actualizing capacity and productivity (input/output) makes the construction worker appear as the centre of the construction industry. Figure 1.1 is a schematic representation of this concept (Haupt et al., 2003: 4).

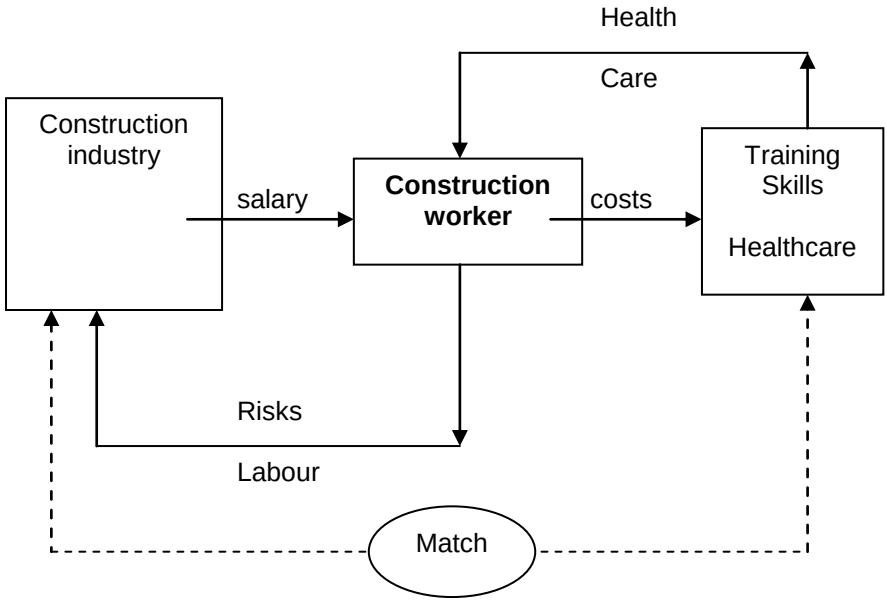


Figure 1.1 The central function of the construction worker in the construction industry (Haupt et al., 2003: 5).

The above figure further represents the need for matching the needs of both industry and construction workers with respect to risks/labour and training/skills/healthcare (Haupt et al., 2003: 5).

Gyi, Gibb and Haslam (1999: 202) undertook a study that investigated the quality of health data in the construction industry by interviewing senior managers. The study population included nine construction companies, among which seven undertook pre-employment medicals for their own (mostly white collar) workers. Only one of the seven contractors extended the requirement to subcontractors (usually skilled workers). Periodic screenings were undertaken by six of the nine companies, and only two of the monitored subcontractors on selected projects had an Occupational Health Nurse (OHN) on site. Overall findings from this study reported that little exists in terms of medical surveillance and health monitoring of workers, which in itself should be a major concern for the construction industry and its workers.

Approximately 35 000 construction workers undergo voluntary medical surveillance each year in the Netherlands. Subjective data is collected by questionnaire concerning their health status and working conditions, which is verified objectively by the Occupational Medicine Practitioner (OMP). Findings are published in an 'Atlas',

per profession and sector, for both the blue and white collar workers (van Duivenbooden, van der Molen, Broersen and Rővekamp, 1997: 31).

Little is known about OH in the South African construction industry. Health care is perceived to be the provision of primary health care and first aid services to workers (Smallwood and Ehrlich, 2001: 10).

In two separate South African studies, it was determined that a relatively low number of general contractors (GCs) conduct any form of medical surveillance to determine the existence and development of occupational disease (OD) (Deacon and Smallwood, 2001: 18, Wheeler and Smallwood, 1998: 153). In a study conducted among members of the South African Federation of Civil Engineering Contractors (SAFCEC) it was determined that health specific actions by their members were virtually zero, 55.6% never conducted pre-employment medicals, and 61.1% never conducted exit medicals (Smallwood and Wheeler, 1998: 153).

During routine contractual work, the researcher undertook medical surveillance for two GCs in the Nelson Mandela Metropolitan Municipality (NMMM). In May 2001, the researcher completed 31 baseline medicals on construction workers of which eight workers were identified with formerly undiagnosed or untreated hypertension, one of whom had symptoms of both diabetes mellitus and hypertension. There were also two workers identified with skin conditions unrelated to their occupation, which may well have been exacerbated by any chemical exposure during work undertaken. In June 2001, eight workers from another GC underwent medical surveillance; four (50.0%) of whom were identified with formerly undiagnosed or untreated hypertension. These workers were referred to the local clinic or their doctor for appropriate treatment.

1.3 STATING THE PROBLEM

The researcher has practiced as an Occupational Health Nurse Practitioner (OHN) since 1982, and in the construction industry since 1996. Construction projects included, inter alia, the undertaking of occupational health risk assessments in the plant yards of two large GCs in the Western Cape (WC); as occupational health advisor to a large construction company, and serving on the Master Builders Association (MBA) (Cape Peninsular) Occupational Health and Safety committee to assist with developing occupational health (OH) in the region, as community service. Furthermore, research undertaken by the researcher has reinforced the realization that the construction industry undertakes minimal occupational health and safety (OH&S) interventions; that workers have minimal access to occupational health (OH), and that a very small number of employers provide any form of OH care in the form of medical surveillance. The reasons given by contractors to the researcher when raised, have always been generally historical, i.e. its never been done, so why start now; who will pay; no money in the contract, and, its not legal to do medical surveillance in terms of current labour legislation.

As discussed in section 1.2, the most significant health problems identified between the GCs in the NMMM were the number of signs and symptoms of non-occupational diseases. Even though none of the workers were certified unfit, further interventions were required to maintain fitness. Even though in terms of legislation employers are not required to address non-occupational diseases, workers could eventually become too ill to work, and eventually leave the industry as maintained by Smallwood and Ehrlich (1997: 172). However, while performing normal duties the potential risk of injury is raised, specifically of fellow workers. For example, the uncontrolled diabetic patient who has a peripheral neuritis, which affects his feet, may not feel the edge of a scaffold and fall to his death, or a poorly managed hypertensive who has a myocardial infarction on the 18th floor while operating a paring hammer or chipping hammer could fall, causing his death and/or the death of other workers below, as well as the loss of equipment, time, and productivity.

Construction is an important sector in South Africa, and while one would perhaps expect the problems to be broadly similar to those encountered elsewhere, the conditions in the South African labour market, and the historical neglect of OH in construction indicate a need to undertake medical surveillance. However, medical surveillance is not done due to the perceived difficulties in expediting OH services, for example: the temporary nature of the sites; high labour turnover, and the prevalence of small sized contractors (Smallwood and Ehrlich, 2001: 12).

1.4 HYPOTHESES

H1 Construction activities entail exposure to OH related hazards and pose health risks to workers.

H2 Workers have signs and symptoms of general and chronic non-occupationally related diseases that have not as yet been diagnosed on medical examination.

H3 The medical surveillance tool identifies general and chronic non-occupationally related diseases that are present at the time that the medical examination is conducted.

H4 The identification of general and chronic non-occupationally related diseases results in increased absenteeism and reduced productivity.

H5 The current Labour and Occupational Health and Safety Legislation does not provide clear guidance to contractors relative to undertaking medical surveillance.

1.5 RESEARCH OBJECTIVES

The objectives of the research are to:

- Identify the OH related hazards and related OH risks in construction from literature;

- Investigate the current health status of construction workers using a medical surveillance instrument;

- Determine whether the medical surveillance instrument determines the prevalence of non-occupational diseases;

- Determine the referral requirements emanating from the medical surveillance in order to manage and control the progression of disease, reduce absenteeism and increase productivity;

- Identify the legal requirements relative to Labour and OH&S legislation and its specific relevance to the construction industry and;

- Formulate recommendations from the literature and findings with the view of possibly contributing towards the development of medical surveillance standards for the South African construction industry.

Considering the scant literature available on medical surveillance standards and practice, both nationally and internationally, a secondary objective of the research is to contribute to this existing literature and body of knowledge. Where there was a lack or absence of relevant literature the researcher has drawn from her previous research and published work.

1.6 RESEARCH METHODOLOGY

The methodological approach used in this study was a quantitative-descriptive design, more specifically, using a randomised cross-sectional survey design.

1.6.1 LITERATURE STUDY

An extensive literature study will be undertaken to determine the health hazards that construction workers are exposed to, medical surveillance practices in construction on a national and international level. Literature relevant to general industry and mining was also perused. References used for the literature study were obtained from South African OH Journals, leading international journals, books and articles. The questionnaires used in this research were developed from the literature studied.

1.6.2 EMPIRICAL STUDY

The descriptive research aim is achieved by means of an empirical study utilizing a survey method. Full descriptions of the OH risks and medical conditions with specific reference to their association have been done in this study.

1.6.3 PILOT STUDY

A pilot study was conducted among four workers of a NMMM contractor involved in installing thermal insulation, to test the suitability of the questionnaires. The results of the medical examinations have not been included in the study, as it was necessary to change the questionnaire as a result of the pilot study.

1.6.4 PERIOD OF DATA COLLECTION

Data collection for the study was undertaken between January and February 2003.

1.6.5 RESEARCH APPROACH

The research population of this study consisted of construction companies involved in the construction of the International Conference Centre (ICC) in Cape Town, Western Cape, and who were willing to participate in the research. The medical surveillance was conducted using construction workers who volunteered to participate in the programme (refer to Chapter 3: Research Design).

1.7 TERMINOLOGY: OPERATIONAL DEFINITIONS

Exposure means the measured or estimated amount of worker contact to a hazard (van der Merwe, 1998: 18). For example, the worker who works with silica sand for four hours each working day.

Hazard means a source of danger, or dangerous condition that has the potential to cause damage to property or equipment, work-related injury, disease or even death. Such injury is generally from a source of unwanted or excess energy (Haupt: 2001: 2; Van der Merwe, 1998: 18; Taylor, Easter and Hegney, 1998: 3).

Health is suggested as the degree or state of complete physiological, social and psychological well being of the worker, and not merely where there is an absence of disease or injury. This definition aligns with that specified by the World Health Organization (WHO) (Taylor et al., 1998: 3).

Health risk refers to a hazard to which a worker may be exposed that has the potential of having an adverse effect on health, property and the environment, such as asbestos dust (Haupt, 2001: 41; Van der Merwe, 1998: 18).

Medical Surveillance refers to a planned programme of periodic examinations (which may include clinical examinations, biological monitoring or medical tests) of workers by an OHN practitioner, or, in prescribed cases, by an occupational medicine practitioner (OMP) (LexisNexis Butterworths, 2003: 6).

Medical testing includes any test, question, inquiry or other means designed ascertain, or which has the effect of enabling an employer to ascertain, whether an worker has any medical condition, and where the worker has to complete an application form that provides information concerning their physical fitness (Benjamin: 2001: 15).

Occupational Health Nursing Practitioner means a trained nurse registered with the South African Nursing Council (SANC), who holds a qualification in OH recognised by the SANC (LexisNexis Butterworths, 2003: 6).

Occupational Medicine Practitioner (OMP) means a medical Doctor who holds a qualification in Occupational Health recognised by the South African (SA) Health Professions Council (LexisNexis Butterworths, 2003: 6).

Occupational Hygiene means the anticipation, recognition, evaluation and control of physical and chemical conditions at the workplace with respect to a particular type of exposure, such as noise, dusts, fumes (Van der Merwe, 1998: 18; LexisNexis Butterworths, 2003: 6).

1.8 CHAPTER DIVISION

This study is presented in 5 chapters as follows:

CHAPTER 1: Introduction and historical review: This chapter contains the statement of the problem and a summary of the research method.

CHAPTER 2**:** Literature Study: This chapter contains the literature study undertaken regarding the health status of construction workers, specifically regarding the impact of diseases (systemically) on the ability to undertake work, applicable legislation, related hazards and risks, and health related interventions/practices undertaken by management.

CHAPTER 3: Research Design: This chapter describes the research method used in this study.

CHAPTER 4: Data analysis and discussion of results: This chapter presents the descriptive results of the variables found as well as a detailed statistical analysis regarding the health status of construction workers.

CHAPTER 5: Conclusions and recommendations: This chapter contains the conclusions and recommendations that could serve as guidelines to the construction industry regarding medical surveillance requirements, and their specific health needs.

Bibliography

Annexures

1.9 REFERENCE TECHNIQUE

The Harvard method is utilized in recording the references.

1.10 SUMMARY

The construction industry has a reputation for being a particularly unhealthy industry because its rate of work-related illness is one of the highest of all occupational groups. Construction workers are exposed to risks that are substantially different from general industry relative to OH&S. Workers are exposed to a variety of health hazards, namely: musculoskeletal strain from the adoption of uncomfortable working positions; noise, resulting in noise induced hearing loss (NIHL); skin diseases from close contact with irritant or sensitising materials; respiratory irritation from dusts, fumes and gases, as well as developing more serious lung diseases related to exposure to asbestos and other fibrogenic materials.

Construction is an important sector in SA, and while one would perhaps expect the problems to be broadly similar to those encountered elsewhere, the conditions in the SA labour market, and the historical neglect of OH in construction indicate a need to undertake medical surveillance. However, this is not done due to the perceived difficulties in expediting OH services, namely the temporary nature of the sites, high labour turnover and the prevalence of small sized contractors.

Hypothesis and objectives were developed to determine whether there is a need to undertake medical surveillance. This need would be determined from available literature and current legislation. A medical surveillance instrument would be used to determine if workers do have any form of occupational or non-occupational conditions that would impact on their performance. Chapter 2 discusses the literature relative to the hypotheses and objectives.

CHAPTER 2

LITERATURE STUDY

2.1 INTRODUCTION

The construction industry exposes workers to many hazards, for example: chemicals; physical and emotional stressors; ergonomic and heavy physical work. All of these aspects impact on the health of the worker and ultimately the ability of the worker to perform daily tasks. Underlying chronic conditions may impact on the hazards causing a further exacerbation of illness and occupational disease (OD).

2.2 OCCUPATIONAL HEALTH HAZARDS IN CONSTRUCTION

Koningsveld and van der Molen (1997: 3) liken the construction industry to a 'travelling circus', with many workers having to spend many hours commuting to and from work, as well as having to stay in temporary accommodation far from home. The Health and Safety Executive (HSE) in the United Kingdom (UK) (2002: 37) states that both workers and employers need to be aware of the health risks relative to the construction industry, and how to make sure that they do not make people ill.

2.2.1 ERGONOMIC RISKS

Ergonomics is concerned with the design of systems in which people carry out work. The term ergonomics originates from the Greek words *ergon*, which means 'work' and *nomos*, which means 'law'. Ergonomics aims to ensure that human needs for safe and efficient working are met in the design of work systems (Bridger, 1995: 1; Gibb, Gyi and Thompson, 1999b: 77). Unsafe, unhealthy, uncomfortable or inefficient situations at work can be avoided by taking account of the physical and psychological capabilities of humans (Gibb et al., 1999b: 77).

Smallwood and Erhlich (1997: 174) maintain that a new building is by its very nature an ergonomic problem, as construction workers are required to work at floor and ceiling level, which results in kneeling, bending, reaching out, twisting and generally need to adopt uncomfortable positions to undertake their work. Gibb et al. (1999b: 23), further maintain that workers exposed to handling loads, such as lifting, carrying and pushing, repetitive handling work, static work or working at the extremes of the range of movements of the body increases the risk of injury to the worker. Examples of such work include:

- Pipe fitters and riggers who move and handling loads;
- Most activities in the building and civil fields;
- Scaffolding operations;
- Commissioning and de-commissioning of pipes and valves, and
- Carpenters and joiners in the erection and stripping of formwork.

Akkers (1999: 681) suggests that working conditions in the construction industry are challenging, the physical workload is heavy and there are many ergonomic problems. Construction workers complain frequently about the awkward and static postures, vibration and climate. Older workers are generally more likely to complain about their working conditions and health problems.

2.2.2 STRESS

Construction is a very stressful environment to work in (Smallwood and Ehrlich, 1997: 175; Akkers, 1999: 681). Causes are numerous and include aspects such as the physical environment, the actual organization itself, the way the organization is managed overall, interrelationships between workers, their own environment and the organization, as well as personal and social relationships and personal anxieties. Furthermore heart disease, depression and anxiety, low self-esteem and burnout are a number of the negative outcomes of such stress and stressors (Smallwood and Ehrlich, 1997: 175). In a study undertaken in Holland among twenty construction companies and among 35 000 workers, 50.0% of workers reported that they experienced considerable pressure at work and that measures were needed to reduce this high work pressure. A notable finding is

that very few of the employers interviewed in this same study were of the opinion that stress was a problem (Koningsveld and van der Molen 1997: 7).

A study undertaken in South Africa among workers on construction sites indicated that workers believed that the following steps should be undertaken to improve their health (in order of importance):

- Improve the general tidiness on site;
- Improve facilities such as toilets;
- Reduce the physical demands of the job;
- Provide more Personal Protective Equipment (PPE);
- Reduce dust levels;
- Increase lighting levels, and
- Reduce noise levels

These issues relate to the physical environment, with the exception of the provision of PPE (Smallwood and Ehrlich, 1999: 356).

2.2.3 HAZARDOUS MATERIALS

Construction workers often underestimate the dangers and complexity of hazardous materials in the workplace because many of the same materials are used at home. Materials enter the body in various ways, for example, they can be absorbed though the skin, or inhaled and in this way affect the workers health (Rűhl and Kluger, 1995: 335; Koningsveld and van der Molen, 1997: 7). Skin diseases are among the most widespread occupational health conditions (Gibb, Gyi and Haslam, 1999a: 769; Koningsveld and van der Molen, 1997: 7). The most common disease in Germany is allergic cement eczema caused by soluble chromium (IV) compounds in cement that can occur after years of exposure to cement (Rűhl and Kluger, 1995: 335; Berger, 1998: 1). In addition to the chromates, slaked lime in cement is further thought to be responsible for cement burns on the legs and feet of workers where cement has spilled into their protective wellington boots (Wheeler and Smallwood, 1998: 111; Gibb et al., 1999a: 771).

There are a number of substances that could be carcinogenic, such as dichloromethane, formaldehyde and lead chromate. Embryotoxic chemicals, such as lead and its compounds are found in residential and steel structure renovation work. Mutagenic substances, such as toluene and neurotoxic substances such as ethanol and benzene are also found in the construction industry (Rűhl and Kluger, 1995: 337).

Separating agents are used to separate shuttering from partially or dried concrete. Separating agents contain mineral oils, aromatic and halogenated hydrocarbons, as well as active agents such as paraffin, natural and synthetic fatty acids. Health effects include skin sensitisation as well as damaging various organs due to the product penetrating the skin barrier. Oils and mists cause irritation of the respiratory and eye irritation because of the manner of application, which is usually by roller or brush (Rűhl and Kluger, 1995: 344-345).

Carbon monoxide is encountered from internal combustion engine exhausts, and carbon dioxide welding. Welding fumes, the parent metal, and its coatings together with the weld metal and rod coatings release fumes that can cause the flu-like illness, metal-fume fever (Wheeler and Smallwood, 1998: 111).

Specialised work is undertaken in construction that may expose workers to hazards, inter alia: concrete renovation; flooring and tiling, and painting and varnishing. Concrete renovation is undertaken when there has been concrete deterioration. The epoxy resins that are used are skin sensitizers that could lead to allergic skin conditions. Flooring work may involve sanding of stone that may contain silica, which could eventually lead to the worker developing silicosis. Tiling and adhesives can cause chromate eczema. Respiratory irritation can occur from the dust from the cement and the acetic acid from silicone rubber during polymerisation. Painting and varnishing is undertaken both internally and externally. The solvents used in varnishes and gloss paints often contain xylenes and ethylbenzenes that will cause skin and respiratory irritation, and are neurotoxic (Rűhl and Kluger, 1995: 347).

A large amount of time is spent outdoors but cold weather and wind may affect the musculoskeletal and respiratory system, with sunlight increasing the hazard of skin

disease. In fact conditions are often so poor that walkways have been suggested to be more suitable for mud fights than for efficient and safe work (Koningsveld and van der Molen, 1997: 4).

Table 2.1 indicates the health hazards related specifically to construction work as identified by Smallwood and Ehrlich (1997: 174), which includes the stresses/agencies on the body and the types of diseases that may develop as a result of the exposure to the various stresses and/or agencies.

Table 2.1 Construction related health hazards (Smallwood and Ehrlich, 1997: 174).

System	Stress/Agency	Illness/Disease
Musculoskeletal	Lifting/loads	Muscular pain syndromes
	Repetitive strain	Tenosynovitis
	Abnormal postures	Bursitis
	Whole body vibration	Osteoarthrosis
Sensory	Noise	Hearing loss
Skin	Cement (chromates)	Allergic contact dermatitis
	Rubber, epoxies	Irritant contact dermatitis
	Tar, Pitch	Acne, skin cancer
	Solar radiation	Keratoses, cancer
Respiratory	Silica	Silicosis, TB
	Asbestosis	Asbestosis, cancer
	Spray paints, woods, epoxies	Asthma
	Irritant dusts, welding fumes	Bronchitis
Psychosomatic	Physical stress	Headaches
	Psychological stress	Depression, fatigue and substance abuse
Nervous system	Lead	Peripheral and central neuropathy
	Organic solvents	Headaches, dizziness, mood disorder, dementia

Deacon and Smallwood (2002: 18) reported on the frequency at which GCs' workers used or encountered materials or substances that contained hazardous chemical substances (HCSs), as well as their perceived impact on the health of the worker. In this study, an importance index (II) was computed, with a minimum value of 0.0 and a maximum value of 4.0. Any material or substance with an important index (II) above 2.0 could be regarded as prevalent. However, even though some materials or

substances scored below the midpoint value of 2.0, and may not appear to have a substantial impact on the health of workers, the possibility of some potential impact exists (Refer to Table 2.2).

During research undertaken among South African GCs by Smallwood and Ehrlich (1997: 178), the majority of contractors surveyed rarely or never conducted any form of medical surveillance in the form of pre-employment or periodic screenings in order to determine existence of such conditions relative to the stressors/agencies.

Table 2.2 Workers' use of HCS-containing materials (adapted from Deacon and Smallwood, 2001: 18).

Frequency		Material/Substance	Perceived impact	
II	**Rank**		**Rank**	**II**
2.42	7	Concrete additives	1 =	2.22
2.08	11	Welding	1 =	2.22
3.39	4	Concrete dust	3	2.10
3.69	2	Cement mortar / plaster / screeds	4 =	1.90
2.15	10	Epoxies	4 =	1.90
1.69	12	Sealants (joint)	6	1.80
3.92	1	Concrete	7	1.78
3.54	3	Block/Brick dust	8	1.70
0.20	15	Asbestos dust	9	1.67
2.39	8	Paint	10	1.60
3.17	6	Shutter oil	11 =	1.44
2.17	9	Wood (treated)	11 =	1.44
3.25	5	Wood dust	13	1.38
0.55	14	Waterproofing (torch on)	14	1.33
1.08	13	Premix	15	1.25

2.2.4 OCCUPATIONAL INJURIES

Accident, injury and fatality rates in construction are higher than in most other industries. In 1991, the National Safety Council (NSC) in the United States of America found that construction injuries accounted for almost 11.0% of all work related injuries, and 30.0% of all fatalities (Eppenberger and Haupt, 2003: 79). In comparison, occupational injury rates in South Africa in all industries are high in comparison to the rest of the world. In 1993, the accident rate was 33.4 accidents per 1000 workers covered by the Compensation Fund (Grainger and Mitchell, 2003: 73).

Eppenberger and Haupt (2003: 79) suggest that serious occupational injuries involving death or disability increase with age, while less serious injuries decrease. The leading cause of injuries to construction workers of 44 years and older, were from falls. More specifically, 60.0% of all injuries among this group were from falls from ladders. These authors further suggest that balance and body weight may have been among the causes for such events. Other causes for the high injury rates are low levels of literacy and possibly the employment of unskilled migrant workers. Older workers are likely to have a lower education and be employed in unskilled positions, and therefore at higher risk of serious injury.

In a study conducted in South Africa, among 311 workers who had been injured while working on construction sites, 51.8% were among older workers (over 40 years of age) of which the older cohort were made up of unskilled and skilled workers. Findings reported that the highest number of injuries to older workers included 'bony injuries', such as fractures and tumours, followed by strains and torn ligaments. The most frequently injured body parts of older workers that were injured included eyes (17.6%), fingers (17.0%), and the trunk (13.3%) (upper body). Causes of injury to older workers included 'struck by', 'struck against', and as previously mentioned; 'falls onto different levels' (Eppenberger and Haupt, 2003: 83, 84).

2.3 MEDICAL TESTING AND LEGISLATION

There is no overarching occupational health services legislative framework or policy in South Africa. However, there are a number of Acts and Regulations that relate specifically to OH services, resulting in a complicated and sometimes an inconsistent system (Grainger and Mitchell, 2003: 74).

Much of the concern regarding medical testing has been transposed into legislation, mainly to protect the worker from being discriminated against. However, all parties are protected by having to follow specific legislated practice, such as the Codes of Good Practice in the Labour Relations Act, No. 66 of 1995, the Basic Conditions of Employment Act, No. 75 of 1997 and the Employment Equity Act, No. 55 of 1998.

The system in the UK is based on common law, developed over centuries from the decisions of the judges whose rulings created precedents for other courts to follow. These decisions were based on the 'custom and practice of the Realm'. The system of binding precedent means that any decisions of the House of Lords will bind all the lower courts unless the lower courts are able to argue that there are too many differences in the facts of the two cases (Carter and Howard, 1995: 25).

Under common law the employer has an obligation to take reasonable care of all workers. The duties of the employer are summarized as follows:

- The employer must take positive steps to ensure the safety of his workers in the light of the knowledge which he has or ought to have;
- The employer is entitled to follow current recognized practice unless in the light of common sense or new knowledge it is unsound;
- The employer must keep abreast of current knowledge and not be too slow in its application;
- If the employer has greater knowledge of the risk, the greater the precautions should be, and
- The employer must weigh up the risk (in terms of the likelihood of the injury and possible consequences) against the effectiveness of the precautions to be taken to meet the risk and the cost and inconvenience (Carter and Howard, 1995: 26).

2.3.1 HIGHER DUTY OF CARE

There is a higher duty of care on the part of the employer to any particularly vulnerable worker with a known pre-existing medical condition, defined as the 'egg shell skull' principle. An example of such a case (Paris v. Stepney Borough Council All ER 42) occurred where a labourer was employed who only had one eye. The employer failed to ensure that he was wearing eye goggles and as a result he injured the other eye and was blinded (Carter and Howard, 1995: 28).

In a case in South Africa (SA), (Wilson v. Birt (Pty) Ltd 1963 (2) SA: 508) in an action for damages arising out of personal injuries, it was the finding of Judge Harcourt that '*the defendant is obliged to take his victim as he finds him; once the variety of*

damage which has in fact taken place could reasonably have been foreseen, then the fact that the particular plaintiff is peculiarly prone to more excessive injury is not relevant to the decision of the defendant's liability'. This worker was hit on the head by a scaffold tube while the scaffold was being dismantled, resulting in the worker experiencing epileptic fits. However, medical evidence reported that the worker had had a previous stab injury to the head, resulting in the removal of a portion of the skull. When the blow from the scaffolding tube occurred there was displacement of the skull and its contents, producing further brain injury and epileptic fitting. Judge Harcourt determined that the dismantling of scaffolding is an intrinsically dangerous operation, due to the height from which parts are lowered and the subsequent force that must result when reaching the ground, or anything in the way. An aspect raised by this case is that one should avoid people needing to be overcautious at work. But equally, one must avoid giving licence to be unduly careless, and indeed, while some are unduly cautious "*imagining every path beset with lions*", others are of "*more robust temperament*" and "*fail to foresee or nonchalantly disregard even the most obvious dangers"*. Judge Harcourt quoted from the Law quarterly Review vol. 77: '*It may be said that a defendant who negligently injures a plaintiff into whose state of health he has made no enquiry, cannot be heard to say that he could not foresee that the plaintiff might be in poor health, which might aggravate his injury, indeed frailty of one kind or another is so common that it is quite on the cards that the victim of negligence will have some weakness. The fact that the weakness from which he suffers is a rare one need not affect the question, since the details of the occurrence need not be foreseeable*'. Compensation was awarded to the worker, but for only 50% of his claim as he was also found to be negligent. He knew the scaffolding was being dismantled, and still walked under it, without taking due care (SA Law Report, 1963: 510, 511, 516, 517).

In a further case to illustrate this point (Smith v. Leech Brain & Co. (1961) 3 AER: 1159), a worker received a small burn on his lip due to the negligence of the employers. At the time it was not thought to be significant. However, the worker was particularly prone to cancer and already had a pre-malignant condition. The burn caused the further development of the malignance and he died (SA Law Report, 1963: 516).

2.3.2 THE EMPLOYMENT EQUITY ACT (EEA), NO. 55 OF 1998

According to the EEA, medical testing of workers is prohibited, unless legislation permits or requires the testing; or it is justifiable in the light of medical facts, employment conditions, social policy, the fair distribution of worker benefits or the inherent requirements of a job (Benjamin, 2001: 13).

It is an ongoing concern that employers make decisions that may have a discriminatory effect on workers based on information derived from medical surveillance. As a result, provisions were made in the Employment Equity Act to regulate the conduct of medical testing, which includes any test, inquiry, question or completing a questionnaire used to ascertain whether a worker has a medical condition. Medical testing is prohibited unless the test:

- Is permitted or required by legislation;
- Is justifiable in the light of medical facts;
- Is justifiable because of employment conditions, social policy, or the fair distribution of worker benefits, and
- Is in terms of the inherent requirements of the job.

If any testing is required in terms of an employer's medical surveillance programme, including testing conducted at the commencement of employment or on termination of employment, it would be allowed (Benjamin, 2001: 15).

2.3.3 THE LABOUR RELATIONS ACT (LRA), NO. 66 OF 1995

The LRA regulates the fair dismissal of workers, and the Act recognises 'incapacity' as one of the grounds upon which a workers services may be terminated due to injury or illness. The latter, however, may only be done if the employer has followed a fair procedure and there is no alternative to dismissing the worker. In general a temporary illness would not be considered a fair reason for dismissal (Benjamin, 2001: 14).

Various cases are recorded regarding dismissal for incapacity, however, these are relative to permanent workers and no cases are evident from the construction industry. This is most likely because in construction the main contractor does not permanently employ the majority of construction workers. Furthermore, there is widespread use of labour-only subcontractors. It is common practice to transfer a poorly performing worker to a site where work is finishing off, and when the contract is completed, all the workers leave, and the employer has no further problems with the poor performer (telephonic interview, D. Cosgrove, Manager, MBA (Cape Peninsula), 5 March 2003).

Where illness has led to incapacity and dismissal among permanent workers, a number of organizations are involved, such as the Commission for Conciliation, Mediation and Arbitration (CCMA), (Butterworths, 2002: 63).

2.3.3.1 GENERAL DISMISSAL

The following case is an example of a general dismissal heard by the CCMA: a worker refused to obey his supervisor's instruction to work in a particular section because his arthritic condition made it difficult for him to perform the work he was required to do. This led to him receiving warnings and ultimately he was dismissed. The Commissioner of the CCMA held that the workers medical condition had provided good grounds for his objection, and the applicant was awarded compensation (Butterworths, 2002: 64).

2.3.3.2 DISMISSAL FOR INCAPACITY

The following are examples of cases heard by the CCMA regarding dismissal for incapacity: The Commissioner held that the dismissal of a security guard suffering from a stress-related disorder was justified, as the nature and extent of the disorder rendered him unfit due to the nature of his work. A worker with tuberculosis was dismissed because he had exhausted all his sick leave. However, the CCMA Commissioner awarded the applicant compensation of a years salary as the employer had not reminded the worker that he would have been entitled to a temporary medical boarding in terms of

the conditions of the company provident fund that was available to workers who had curable conditions (Butterworth's, 2002: 104).

A number of dismissal cases have been heard for absences relating to alcohol use, for example: A worker refused to admit he had a drinking problem and had refused assistance from his employer, and the dismissal was upheld by the CCMA. A worker was dismissed for repeated absences from work, and the employer proved that counselling had taken place. However, the worker had defaulted from treatment. The worker reported that he had consulted a traditional healer during his absences and that he had stopped drinking. This worker was reinstated subject to a final written warning against any offence relating to unauthorised absence, alcohol abuse or failing to co-operate with medical treatment for his condition (Butterworth's, 2002: 105).

2.3.4 THE BASIC CONDITIONS OF EMPLOYMENT ACT (BCEA), NO. 75 OF 1997

The BCEA places an emphasis on conditions of employment, arrangement of working time and the protection of workplace health and safety (Benjamin, 2001: 16).

The arrangement of working time is a factor that employers must take into account when identifying and assessing risks, specifically with those workers who undertake regular night work, and for those who are pregnant and breastfeeding. Those working night shift are required to undergo a medical examination when commencing night work, at appropriate intervals and that must cover hazards that the worker would be exposed to. Specific requirements that need to be covered are listed in the Code of Practice and include:

- Any difficulties adjusting to night work;
- The manifestation of any health problems;
- All psychological, social and emotional stresses as well as coping strategies;
- Insomnia or sleep deprivation;
- Any medication reliant on circadian rhythms for effectiveness, and
- Use of stimulants, sleeping pills and diet (Benjamin, 2001: 17).

There are also circumstances noted where it may be appropriate to advise the worker against shift work, namely those who are using certain medication reliant on circadian rhythms for effectiveness, as well as workers with gastro-intestinal or cardio-vascular disorders and epileptics. Pregnant or breastfeeding workers may not undertake hazardous work during pregnancy or for 6 months after the birth. This particular group must be offered alternative employment at the same terms and conditions of employment where possible. Workplace policies should encourage workers to report pregnancy as early as possible to facilitate the appropriate working conditions (Benjamin, 2001: 17).

2.3.5 THE OCCUPATIONAL HEALTH AND SAFETY ACT (OH&SA), NO. 85 OF 1993

Workers in South Africa enjoy a common law right to a safe work environment under the OH&SA (du Plessis, Fouché, van Wyk, 2001: 107). The OH&SA also places the common law duty of reasonable care on the employer (du Plessis et al., 2001: 167). The application of this Act is very wide, covering the public and private sector but excludes mines (du Plessis et al., 2001: 168,169; Grainger and Mitchell, 2003: 74). The Act places specific duties on both the employer and worker. The duties of the employer, inter alia, include the following:

- To provide as far as reasonably practicable, a working environment which is safe and without risk to the health of workers;
- Take reasonable steps to eliminate or mitigate any hazard or potential hazard to the OH&S of workers before resorting to personal protective equipment, and
- To establish what hazards to the OH&S of workers exist (du Plessis et al., 2001:168, 169).

Similarly, workers are expected to:

- Take due care of themselves as well as their fellow workers;
- To co-operate with any matters pertaining to safety, and most specifically
- To report any unsafe or unhealthy situation or any incident that may affect the individual's OH&S to the employer or OH&S representative (du Plessis, et al., 2001: 169).

Specific requirements relative to medical surveillance are required in terms of the OH&SA Regulations. Once the employer has determined the risks and hazards related to the work undertaken, a medical surveillance programme needs to be implemented. Such health programmes should aim at reducing the morbidity and mortality rates that are associated with occupational injuries and diseases that occur as a result of such exposure (Grainger and Mitchell, 2003: 74).

2.3.5.1 THE HAZARDOUS CHEMICAL SUBSTANCES REGULATIONS (HCSRs)

The HCSRs were promulgated in 1995, increasing the number of regulated substances from 2 to over 700. All the substances listed are known to be harmful to health and therefore specific requirements are required to protect workers from such exposure (Erhlich, 1995: 12). The onus is on the employer to identify the potential risk to the worker and to carry out a risk assessment to determine what medical surveillance and biological monitoring and testing is required. The risk assessment would include air analysis to determine actual levels in the atmosphere. The risk assessment is a judgement on the part of the employer as to whether the health of any worker could be harmed as a result of the exposure (Erhlich, 1995: 12).

Table 2.4 provides a number of the possible diseases that would exclude the worker from being exposed to any of the listed substances, and therefore result in the worker either not being employed to undertake such work, or be required to be removed from such an area.

2.3.5.2 THE ASBESTOS REGULATIONS

The revised Asbestos Regulations were promulgated in February 2002, and the employer is also required to undertake a health risk assessment, which includes air monitoring. Workers who are exposed to asbestos are required to undergo medical surveillance within 14 days after commencement of employment and thereafter intervals not exceeding 2 years (Harmse, 2002: 8, RSA: 2002: 12).

2.3.5.3 THE CONSTRUCTION REGULATIONS

The Construction Regulations are the latest set of Regulations to be published in South Africa, and were based on South African and international research and best practice and are relevant to the entire sector excepting the client who is building a single storey dwelling in which he is to reside (Smallwood, 2003: 1). Key aspects of the Regulations include explicit OH&S responsibilities for the client and the designer, but do not replace any of the aforementioned Regulations. In these Regulations, the principal contractor must provide a documented health and safety programme, which is applicable for the duration of the construction work based on the client's health and safety specification and the risks identified on site. The health and safety programme must be audited regularly to ensure implementation of all of its aspects (RSA, 2003: 3).

These Regulations are the first in the OH&SA to address ergonomics. The requirement is to identify, analyze, evaluate and address these hazards in the risk assessment that is fundamental to any construction process. Furthermore, in terms of any structure, the designer of the structure needs to ensure that during commissioning, due cognisance is taken of ergonomic design principles to minimize ergonomically related hazards in all phases of the structures life cycle (RSA, 2003: 2, 10, 12). Furthermore, in terms of this requirement, Smallwood (2003: 2) suggests that a structured approach is required when undertaking the risk assessment. The current level of accidents, injuries and occupational diseases suggests that risk assessment is not undertaken.

There are specific medical surveillance requirements mentioned in the Construction Regulations. Certificates of fitness are an annual requirement, to be completed by an occupational health practitioner (OHP). Certificates of fitness are required for the following instances:

- All workers who undertake roof work, are tower crane operators, or operate construction vehicles and mobile plant are required to be physically and psychologically fit, and
- Those workers who are required to work on suspended scaffolding require a certificate of fitness (RSA, 2003: 10, 24, 25; Smallwood, 2003: 2, 3).

Medical surveillance, including biological monitoring is still required in terms of the Hazardous Chemical Regulations for those workers who are exposed to listed chemicals. This includes, for example: workers engaged in form or support work, as they should not be affected by the use of solvents or oils or similar materials. Other Regulations are specifically referred to when demolition is to be undertaken, namely the Asbestos and Lead Regulations, which both require medical surveillance on exposed workers (RSA, 2003: 13, 17).

2.3.6 THE MINE HEALTH AND SAFETY ACT (MH&SA), NO. 29 OF 1996

The MH&SA is relevant to the construction industry as there are many mining companies who belong to industry associations such as the MBA. These types of industries would include sand, surface mines and the quarries/brickworks that supply the industry with their products. The requirements of the MH&SA are similar to the OH&SA. However, the requirements relative to medical surveillance are clearly stipulated and the owner or manager of the mine takes responsibility for the OH&S at the mine (du Plessis et al., 2001: 173). The mine manager or owner must take reasonable care of workers, relative to the health hazards identified and establish and maintain a system of medical surveillance as well as maintaining records for workers who have performed such work (du Plessis et al., 2001: 173).

2.3.7 COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASES ACT (COIDA), NO. 130 OF 1993

The COIDA provides for the payment of compensation in respect of occupational injuries and death as a result of severe injuries and occupational diseases that have '*arisen out of and in the course of the worker's employment*' (du Plessis et al., 2001: 145).

The COIDA provides a list of compensatable occupational diseases. Of importance to construction work is musculoskeletal overexertion strain due to repetitive work, tuberculosis related to silica inhalation and any pathological manifestation due to

chemical substances such as hydrocarbon compounds including organic solvents (Smallwood and Ehrlich, 1997: 173).

Each employer must be registered with the Compensation Commissioner (CC), and is assessed annually to determine the tariff payable (du Plessis et al., 2001: 147; Fouché, 1997: E8.1). The tariff of assessment that must be paid annually is calculated by the sub-group of industries involved, and their individual rating. The latter is determined by the number of claims submitted by the employer to the Commissioner. Employers are awarded merit rebates from the Commissioner if claims are kept between 0 and 24%. Similarly, if claims move above 65% the annual assessment will be raised (Fouché, 1997: E.8.1, E8.10).

No worker or dependant of a worker can claim damages from the employer of the injured or deceased worker, unless the accident resulting in the injuries is the result of the deliberate wrong doing of the employer. Where a third party is involved the worker can claim from the Commissioner and the third party, as well as claiming for increased compensation. The Commissioner in turn may sue the third party for recovery of compensation (du Plessis et al., 2001: 151). In terms of the COIDA, all accidents need to be reported as soon as possible to the office of the Commissioner. However, not all accidents that occur are as a result of negligence on the part of the employer, but are as a result of an underlying medical condition. The Commissioner rejects these cases.

2.4 MEDICAL SURVEILLANCE

Medical surveillance is the ongoing systematic collection, analysis and interpretation of health and exposure data (Welch and Roto, 1995: 421). Medical surveillance, or assessing the physical state of workers, is performed at various intervals in general industry, namely:

- Pre-placement, or pre-employment;
- Periodic intervals;
- Transfers to new positions;
- Return from absence due to significant injury or illness, and
- Leaving the company (exit medical) (Coetzee and Pretorius, 1997: F1.1; Pretorius, 1997: B1.4; Antti-Poika, 2001: 127).

Occupational health is defined by the International Labour Office (ILO) and the WHO, as 'the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations' (Koh, and Jeyaratnam (2001: 1, 2; Gibb et al., 1999a: 769). In the United Kingdom (UK) the definition of health used by the HSE is 'ill health includes acute and chronic ill health caused by physical, chemical or biological agents as well as adverse effects on mental health' (Gibb et al., 1999a: 769).

Work may well have an adverse effect on health, but may also be beneficial. The worker who is healthy is more likely to be productive. Those workers whose health is impaired are likely to be less productive, possibly a danger to themselves, other workers, and the community. Figure 2.1 illustrates the relationship between the different categories of diseases to be found in the workplace that require management by OH professionals.

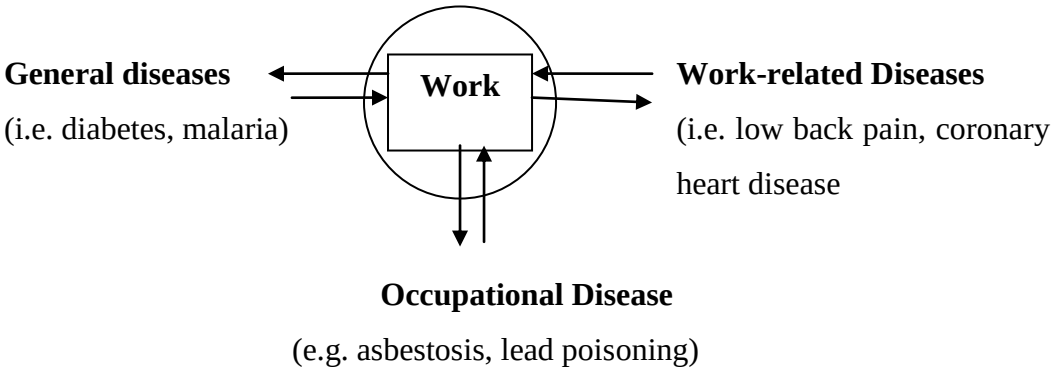


Figure 2.1 Categories of disease at the workplace (adapted from Koh and Jeyaratnam, 2001: 3).

A worker may suffer from a broad spectrum of diseases, like those prevalent in a specific community, such as diabetes, work-related diseases such as backache and occupational diseases such as asbestosis (Koh and Jeyaratnam (2001: 1,2).

Occupational diseases occur as a result of exposure to physical, chemical, biological or psychosocial factors in the workplace. Most occupational diseases occur exclusively among workers who are exposed to specific hazards, such as silica. However, these occupational diseases can occur among the general community as a consequence of contamination of the environment, for example, lead or pesticides. These aspects are illustrated in Table 2.3, which indicates the differences between occupational and work-related diseases. The WHO categorizes work-related diseases as 'multifactorial' in origin. They are diseases where workplace factors may be associated in their occurrence, but there may not be a specific risk factor in each case (Koh and Jeyaratnam, 2001: 1, 2).

Examples of work-related diseases include hypertension, ischaemic heart disease, psychosomatic illness, musculoskeletal diseases and chronic non-specific respiratory disease/chronic bronchitis. In the examples cited, work may be associated in the causation of or be an aggravating factor in a pre-existing condition (Koh and Jeyaratnam, 2001: 3, 4, 6).

Table 2.3 Differences between occupational and work-related diseases (Koh and Jeyaratnam, 2001: 6).

Work-related Diseases	Occupational Diseases
Occurs largely in the community	Occurs mainly among working populations
'Multifactorial' in origin	Cause-specific
Exposure at workplace may be a factor	Exposure at workplace is essential
May be notifiable and compensable	Notifiable and compensable

In South Africa, occupational diseases are not consistently reported. It is a well-known factor that there is significant under reporting of occupationally related disease (Grainger and Mitchell, 2003: 73).

2.4.1 THE PURPOSE OF MEDICAL SURVEILLANCE

Antti-Poika (2001: 129) states that the contents of a medical surveillance programme should be planned together by various professional groups in OH services, in collaboration with workers and the employer. In the planning of the contents, all available information on the working conditions, the health requirements inherent to the work, age and gender structure, sickness profile, results of earlier examinations and frequency of examinations are some of the aspects to be considered. The methodology used should be scientifically validated, correctly used and their results must be correctly interpreted. Antti-Poika (2002: 129) further states that since very few methods have been scientifically evaluated, and that one should also use methods based on common practical experience.

The purpose of a medical surveillance programme is to establish fitness and to identify unrecognised early disease or defects in both the occupational and non-occupational setting (Coetzee and Pretorius, 1997: F1.1; Botha, Huyser, Kriek, Putter, and Schonken, 1998: 24; Pretorius, 1997: B1.4; Rasmor and Brown, 2001: 347). A further purpose is to facilitate worker selection and placement, as employing a worker for a particular job is dependent on the physical, mental and emotional capabilities for performing that job (Clark, 2003: 578).

The initial examination serves as a baseline against which the results of all future examinations are compared (Welch and Roto, 1995: 422; Clark, 2003: 578). The goal of the pre-employment medical is also to identify any medical condition that puts a worker at risk from anticipated occupational exposures or job tasks (Clark, 2003: 578).

A further purpose of a medical surveillance programme is one of prevention, namely primary, secondary and tertiary prevention (Welch and Roto, 1995: 422; Clark, 2003: 578; Halperin, 1996: 322). Katzenellenbogen, Joubert, and Kariem (1997: 14), discuss a fourth, or essentially a first stage, namely that of primordial prevention.

Primordial prevention aims to curb the development of unhealthy lifestyle patterns among groups who have not yet developed unhealthy patterns, for example, cardiovascular disease. In many communities in South Africa there is cultural transformation and urbanisation, and whereas cardiovascular disease levels were low, such disease is on the increase. Appropriate health promotion should be provided to educate workers who fall into this category (Katzenellenbogen, et al., 1997: 14).

Primary prevention includes engineering controls such as product substitution, administrative controls or changes in work practices (Welch and Roto 1995: 422; Halperin, 1996: 322). In the disease process, the worker would be essentially clinically healthy. However, he may be at the pre-clinical stage of disease and health promotion would be aimed at, such as, for example, nutrition (Katzenellenbogen et al., 1997: 14; Halperin, 1996: 322). Worksite health promotion programmes have been shown to be very successful, and result in better blood pressure and weight control, smoking cessation, improved productivity, morale and reduced absenteeism (Clark, 2003: 576).

Secondary prevention includes early detection of a disease process, at a stage when the disease could be halted or slowed. Medical surveillance is secondary prevention (Welch and Roto, 1995: 422; Clark, 2003: 578; Halperin, 1996: 321). Workers would most likely have symptoms of clinical disease, and interventions would be aimed at prompt and appropriate treatment (Katzenellenbogen et al., 1997: 14; Clark, 2003: 581).

Tertiary prevention is the treatment of disease to delay progression or prevent disability (Welch and Roto, 1995: 422; Halperin, 1996: 322; Clark, 2003: 581). In many instances primary prevention measures used to prevent a problem from occurring in the first place could be used as tertiary prevention to prevent recurrence. Similarly, treatment of an existing chronic disease such as hypertension can be treated to prevent further health problems. Other tertiary prevention includes preventing the spread of communicable diseases and preventing complications of chronic conditions (Clark, 2003: 581).

The final purpose of the medical surveillance programme is to deal with the outcome or results, as the surveillance programme is designed to detect abnormalities and therefore should be alterable if an abnormality is found. Actions taken in this regard should focus on eliminating or reducing exposure, providing medical treatment of the individual, and when controls are not feasible or accommodation is not possible, removing the worker from the exposure. Furthermore, benefits are that an abnormal case is a sentinel event pointing to other at-risk workers so that secondary prevention can be used to trigger primary prevention (Welch and Roto, 1995: 422; Halperin, 1996: 322).

It is important to note that examinations for construction workers serve needs beyond purely medical ones. The educational, legal and socio-economic aspects of health examinations are equally important. They further serve as a point of ongoing contact between professionals and workers, who can exchange important OH&S related information. This is particularly important because in construction the work site is not fixed (Welch and Roto, 1995: 422).

2.4.1.1 HEALTH PROMOTION

Medical surveillance offers an ideal opportunity to educate workers, as health problems identified during the intervention can be addressed immediately. For example workers identified with raised blood pressure who could be hypertensive can have their diet, exercise and stressors appropriately addressed to assist with the possible lifestyle changes that would be required if diagnosed hypertensive. Such education is termed ‘health promotion’. The WHO defines Health promotion as “the process of enabling

people to increase control over, and to improve their health", and is known to be one of the simplest methods of promoting health (Deacon and Smallwood, 2003: 1). Benefits of health promotion are cited in literature. In a study conducted in Australia among construction workers, the workers themselves believed that financial benefits included a better OH&S record (28.0%), improved productivity (27.0%), and a lowered absenteeism rate (30.0%). In the United States of America (USA), 87.0% of those businesses that implemented health promotion programmes designed to change lifestyle, realized at least a 5$ (US) saving in health care costs, absenteeism and accidents for every 1$ (US) spent. In South Africa (SA), research undertaken among GCs to determine frequency, extent and the benefits of health promotion supported the Australian study in terms of benefits. However, on average, only a number of topics were addressed on a monthly basis, and amongst others, concentrated on HIV and AIDS, sexually transmitted infections (STIs), and tuberculosis (TB) (Deacon and Smallwood, 2003: 134, 136).

2.4.2 DEMOGRAPHIC INFORMATION

Demographic information is required to sort information and identifying high-risk health problems. Such information would include the workers: name; date of birth address; marital status; race, and number of dependents (Rasmor and Brown, 2001: 348).

2.4.2.1 AGE

A fit 50-year-old may be more productive than a physically inactive, obese 18-year-old. Requirements of the task that the worker has to undertake can be affected by age. While age is only one of many factors that could affect the workers ability to undertake physical tasks, it should be noted that the maximal muscle strength of a 65-year-old male is approximately 75 to 80% of that at 20-years-old (Cox & Edwards, 1995: 13). Knowing the leading causes for morbidity and mortality in different age groups is important and can be helpful in the health promotion, and identifying worker or occupational risk (Coetzee and Pretorius, 1997: F1.3).

According to the South African (SA) Health Review, premature adult mortality in SA has been high as a result of poverty-related diseases such as tuberculosis and diarrhoea, injuries and emerging chronic diseases such as hypertension and diabetes mellitus. The AIDS pandemic, however, is now changing this pattern. The predominating cause of deaths among males is caused by injury, followed by tuberculosis, which causes death at all ages. Stroke, ischaemic heart disease, diabetes mellitus and cancers play an important role in the 45 to 59 year age group (Bradshaw, Masiteng and Nannan, 2000: 111).

In Germany, a cross sectional study of construction workers was undertaken that involved various trades and unskilled / blue collar workers between the ages of 40 to 64 years. This study supports the findings of Bradshaw et al. (2000: 111). The workers were examined as part of routine OH surveillance programmes between 1986 and 1998, and followed up between 1992 and 1994. White collar or office workers were used as the control group. At the initial examination the mean age varied between 47.9 years and 51.0 years with most having worked in the industry for an average of 30 years. Nearly a third of all of the males examined during the initial phase had an increased diastolic blood pressure of greater than 95mm Hg. However, the construction workers had a higher prevalence of musculoskeletal and skin abnormalities. The follow up study revealed that 141 males had died and 340 had been retired as a result of disabilities, 40.0% due to diseases of the musculoskeletal system and 24.0% due to cardiovascular disease (Volker, Rothenbacher, Brenner, Fraisse, Zschenderlein, Daniel, Schuberth and Fliedner, 1996: 686-689).

The frequency of medical surveillance should increase with age, because of the likelihood of developing illnesses or disease whether occupationally related or not. In a survey of twelve major petroleum companies in the USA the frequency of examination varied from annually for those aged 60 and over to biennially for those between 50 and 60 (Lai and Lee, 2001: 382).

2.4.2.2 GENDER

According to the Center to Protect Workers Rights (CPWR), 10.0% of all construction workers in the United States of America are women. Approximately 2.5% of these work as skilled tradeswomen. There are a number of issues that affect women in the construction industry, namely, ill-fitting PPE designed mainly for men; lack of adequate sanitary facilities; ergonomic concerns, as tools and equipment designs are inappropriate for women, as are the loads handled, and reproductive hazards, although these affect both male and female workers (Sweeney et al., 2000: 228, 229).

In a study undertaken among female construction workers in India, women were undertaking various forms of work, such as assisting the mason; making and supplying mixtures; sand sieving, carrying bricks and water. Complaints about health problems experienced included, inter alia, hand and palm pain (63.3%) and lower back (60.0%) and shoulder pain (26.7%). Other health problems experienced were gynaecological (36.7%), cardiovascular (23.3%), headaches (13.3%) and skin diseases (12.0%). Respiratory problems were only experienced by 2.6% of this group (Sen and Basu, 1997: 20).

2.4.3 COLLECTING DATA IN OCCUPATIONAL HEALTH

For many workers their first interaction with the OHN is at the pre employment medical (Clark, 2003: 578). Medical surveillance begins with a comprehensive health history interview. However, the researcher has found no literature that differentiates between the clinical history taken in the primary health care setting and in the occupational setting. The difference lies in the fact that during the occupational setting there is no ‘chief complaint’; the ‘chief complaint’ being the reason why the worker would visit the clinic or personal doctor. The assessment instrument has been developed universally to ensure a systematic approach to the collection of data and assists the OHN gather all-important information for a variety of purposes. The OH history collects subjective information on what workers say about themselves. The history is combined with objective data obtained from the physical examination and an outcome regarding

the health and well being of the worker is made (Rasmor and Brown, 2001: 347). The primary goals when obtaining the OH history are to:

- Establish rapport with workers and promote co-operation;
- Collect demographic data about workers;
- Establish the workers level of fitness;
- Evaluate both occupational and non-occupationally related conditions;
- Evaluate occupationally related exposures and risks;
- Matching the worker to the job, and
- Provide linkages and referrals for workers whenever appropriate (Rasmor and Brown, 2001: 348; Coetzee and Pretorius, 1997: F1.1).

Other components of the health history are:

- Medical history - including present illnesses, injuries and previous surgery;
- Social and family history, and
- Occupational history and exposures (Koh and Jeyeratnam, 2001: 10).

2.4.4 ESTABLISHING RAPPORT WITH THE WORKER

In order to establish rapport with the worker, cognisance should be taken of the setting in which the interview is conducted, which should be as comfortable as possible. However, the space provided to undertake medical surveillance is often small and barren, with stark wall colours and uncomfortable seating. Workers are most likely to talk honestly and openly to the OHN if they are comfortable in a clean, welcoming environment (Seidel, Ball, Dains and Benedict, 1995: 14; Rasmor and Brown, 2001: 348). There should preferably not be any bulky furniture between the worker and OHN, which assists with the creation of rapport. It is further recommended to maintain eye contact and a conversational tone of voice, which assures the worker of a caring and concerned attitude (Seidel et al., 1995: 14; English, 2002: 199). South Africa is a multicultural environment and in the Eastern and Western Cape, Xhosa people are the majority and therefore certain cultural issues or behaviours need to be taken into consideration. According to Elion and Strieman, (2003: 53) and English (2002: 196), such cultural issues could include the lack of eye contact, as it is tradition in the Xhosa culture not to make eye contact as a sign of respect to the other person. It is also likely

that a junior worker would sit down as soon as possible, as a further sign of respect. In a study undertaken by English (2002: 196) in the construction industry involving different cultures (English, Afrikaans and Xhosa speaking workers), problems arose because of a misunderstanding of specifically the differences between the traditional Western and Xhosa cultures. The environment must offer privacy to ensure confidentiality. Room temperature, lighting and noise levels all contribute to worker comfort, as well as running water and bathroom facilities (Rasmor and Brown, 2001: 348).

The assessment of the worker by the OHN begins when the worker walks through the door, with the recording of information and making mental notes. Establishing rapport with the worker is a critical step, as many workers are unfamiliar with the role of the OHN (Rasmor and Brown, 2001: 348). These authors have suggested that this is an appropriate time to market the function of the OHN and the role of the medical surveillance programme in injury and illness care. In addition, the time could be an opportunity to identify any health education needs. It is not uncommon for the OHN to be the first to identify a workers hypertension. While this may seem basic, it is related to establishing a working relationship with the worker. Assessment tools have been developed universally to ensure a systematic approach and to help the OHN gather important information. The medical surveillance tool allows for the collection of information in a systematic way, while contributing to an increased proficiency in critical thinking and of pattern recognition (Rasmor and Brown, 2001: 348).

Courtesy is important and the worker should be greeted by name if possible. The OHN should introduce herself by stating who she is and what her role is (Swash, 1995: 2; Sweidel et al., 1995: 15). Xhosa speaking workers should be greeted in the Xhosa language, and the full background information provided (English, 2002: 199). For many workers, their first introduction with the OHN is at the initial pre employment medical (Clark, 2003: 578). Swash (1995: 3) believes that there is no one technique of history-taking applicable in all situations. The approach would possibly change according to where the history is taken, the state of the client as well as the time available. While history taking should never become a stereotyped routine, a standardised approach may be useful for special purposes and a valuable means of avoiding omissions.

2.4.4.1 THE INTERVIEW

The interview setting for the collection of data should be warm, friendly and open, and the environment interruption free. Open-ended questions allow the worker to yield information relative to their current and past health problems, their lifestyle and any health concerns they may have. Closed questions are effective for reviewing systems, because of the specificity of the information to be collected. It is important for the OHN to listen to the worker, interrupting only to clarify points. 'Why' questions should be avoided as they could appear to be accusing and place the worker on the defensive. Examples of such questions are 'Why did you wait so long before getting help?' Leading questions should be avoided as they imply that one answer is better than another, or that the interviewer disapproves, such as 'You don't drink alcohol, do you?' To obtain a precise and non-judgemental answer this type of question could be phrased 'How much do you drink per week?' Multiple questions should be avoided to avoid confusion and inaccurate responses. An example of a multiple question would be 'How many brothers and sisters do you have and have any of them had cancer or tuberculosis?' (Rasmor & Brown, 2001: 348, 349).

2.4.5 FITNESS FOR WORK

Kew and Ehrlich (2001: 389) state that the concept "fitness for work" implies that an occupation has inherent health requirements that need to be met by a worker in a specific occupation in order to minimise the risk of injury or disease. Medical surveillance assists in identifying work related risks and maintaining a healthy work force (Rasmor and Brown, 2001: 347). Medical fitness is relevant when illness or injury reduce performance or affect health and safety at the workplace and is specifically relevant for hazardous tasks for which medical standards exist, such as working with asbestos or silica. Fitness should be judged in relation to the work being undertaken as many medical conditions and minor health conditions have minimal implications for work. This should not prevent employment, as medical fitness is not an end in itself - it is a status that needs to be maintained (Cox and Edwards, 1995: 23; Kew and Ehrlich, 2001: 389).

2.4.6 MEDICAL HISTORY

The taking of the medical history includes questions related to diagnosed medical conditions and any surgical procedures, which can affect the workers current health status and work performance. The workers underlying diabetes mellitus, for example, may contribute to delayed wound healing and peripheral neuropathies, which is important if the worker is injured. When obtaining a medical history it is important to cover the major categories, previous accidents and injuries, previous hospitalisations ,surgeries, allergies, and past and present medication (Rasmor and Brown, 2001: 349). A systemic history of all the body systems needs to be included (Coetzee and Pretorius, 1997: F1.4).

The bulk of the review is conducted as a brisk closed questioning session. Where the worker answers 'yes', there needs to be further enquiry in order to ascertain duration and severity of the complaint. Further enquiry helps to label whether the condition or problem experienced is of a minor or more serious nature, and can ensure proper and timely investigation of significant problems (Rasmor and Brown 2001: 349, 351, 354; Turner and Blackwood, 1997: 9). Symptoms should be described in chronological order of onset, duration, what has happened, such as whether the problem is constant or periodic, the frequency, if worsening or improving, precipitating or relieving factors and associated symptoms. Where pain is involved, the site of the pain, whether there is any radiation, the character (ache, stabbing, and dull) and severity should also be recorded (Turner and Blackwood, 1997: 7). Seidel et al., (1995: 16) suggest that nothing in the workers experiences are likely to be isolated, and aspects raised need to be integrated with other information such as the medical and family history.

2.4.7 FAMILY HISTORY

The family history should be taken as part of the workers personal history. This indicates any familial diseases such as coronary heart disease and diabetes mellitus. Other diseases such as Huntington's chorea may only appear in mid-life (Coetzee and Pretorius, 1997: F1.3).

2.4.8 OCCUPATIONAL HISTORY AND EXPOSURES

The occupational history includes information about the workers working history, and any previous exposure to actual or potential health hazards. The occupational history is the key to early diagnosis, appropriate management and the prevention of occupational injury and diseases. Knowing where the worker originates from, or where they have worked can identify potential health problems, for example living in areas where there is natural and mined blue asbestos, such as in the Northern Cape (Coetzee and Pretorius, 1997: F1.3; Rasmor and Brown, 2001: 351). Rasmor and Brown (2001: 351) cite Rogers (1994), who states that workers' prior occupational exposure may have a significant effect on their susceptibility to occupational disease with any further exposures to the same health hazards. The occupational history can provide the OHN with clues to any present illnesses, in assessing workers' risks and counselling needs relative to hazards in the workplace.

The worker needs to be asked about every job since leaving school. As workers may have had numerous jobs this could become a repetitive and tedious process. A shortened approach using a tabular format may be of some use in listing all previous jobs (Rasmor and Brown, 2001: 347; Swash, 1995: 32; Koh and Jeyaratnam, 2001: 8).

2.4.9 SOCIAL HISTORY

The social history provides information relative to the workers lifestyle, frequency and intensity of exercise, hobbies, as well as relaxation interests. Hobbies give insight into personality and could indicate exposure to activities that could affect the workers health, such as lead in pottery, and deafness from sports such as shooting (Coetzee and Pretorius, 1997: F1.3; Rasmor and Brown, 2001: 352).

Physical activity is important, and forms part of a primary prevention programme for those susceptible to developing diabetes mellitus, general obesity, cardiovascular disease and certain cancers (WHO: 2002: 2). In research undertaken in China, USA and Finland, lifestyle changes, which included an increase in physical activity, continuous education and an appropriate diet, achieved a reduction of almost two-thirds in the

progression of diabetes mellitus over a period of time. While this measure may be difficult to implement, the WHO (2003: 2) suggests that this should be considered – particularly in the poorest areas of the world where resources are severely limited.

2.4.9.1 ALCOHOL AND OTHER SUBSTANCE USAGE

A high intake of alcohol increases the risk of developing cardiovascular disease, and the claim that moderate intake of alcohol reduces the risk of coronary heart disease is controversial (Phoon, 2001: 73). Alcohol use is common in South Africa, with 45.0% of adult men and 17.0% of adult women using alcohol. Almost 50.0% of victims of homicide and fatal traffic collisions have been found to have had raised blood alcohol levels and almost 22.0% of arrestees have been reported to be under the influence of alcohol at the time of arrest (Bradshaw et al., 2000: 122). In research undertaken in the United Kingdom, it was found that even 'safe' levels of alcohol (below 80mg/100ml) were been shown to impair ability to negotiate a test course with artificial hazards, and when this was combined with the use of marijuana the effect is much greater than if the one drug was used alone (Smith and Lipsedge, 1995: 399).

Smallwood (1997: 188) reported on the report of the Department of Health and Human Services of the USA, which stated that workplace drug and alcohol use is highest among construction workers and food preparation workers. In this report, 17% of both workers and their supervisors stated that they had used illicit drugs and/or alcohol at work in the last 30 days. The effects of alcohol and drug usage are increased absenteeism, frequent accidents and injuries, and are the cause of more breakages. Furthermore, workers who use alcohol and drugs demoralize fellow workers and undertake theft to support drug use (Smallwood, 1997: 199; Smith and Lipsedge, 1995: 399). In a South African study undertaken by Smallwood (1997: 199) among members of the MBA (Cape Peninsula), contractors maintained that drug and other substance abuse constituted a problem based on appearance and behaviour of workers, observations and symptoms. Among this group mandrax and marijuana predominated among the drugs or illegal substances used, and 48.2% of contractors believed that their workers used alcohol before work, 29.6% during working hours and 22.2% during lunchtime.

It is the researchers experience that when questioned about the use of other substances many workers are honest and state that they use drugs, most often marijuana (dagga). Visible signs such as the dark yellow stains on the inner palm are visible if the worker smokes marijuana through the upper third of the neck of a broken bottle top, or 'pipe'. If the worker has not been forthcoming with drug use, and these signs are evident, the information is then normally provided. Marijuana affects memory, attention span and perception. This has implications for those workers involved with operating complicated heavy equipment and operating signals. One 'joint' of marijuana can cause significant impairment of skills for up to 10 hours (Smith and Lipsedge, 1995: 402).

Use of alcohol, type and quantity of units per week or month need to be recorded. For example, the worker drinks 3 quarts of beer every Friday and Saturday (Coetzee and Pretorius, 1997: F1.4).

2.4.9.2 SMOKING

Smoking is associated with lung cancer, cardiovascular disease, diabetes mellitus and most other respiratory diseases of a chronic nature. It is not clear as to what substance in cigarettes is directly responsible, however, carbon monoxide and nicotine are thought to be the most likely causal agents. Nitrogen oxides, arsenic, cadmium and various other substances have also been incriminated (Phoon, 2001: 64; WHO, 2002: 3). Phoon (2001: 65) states that recent studies suggest that myocardial infarction is substantially more among manual and unskilled workers, although this is only partially explained by a relatively higher incidence of smoking in that specific group.

There is a very high prevalence of tobacco smoking among men (42.0%) in South Africa, and a lower prevalence of 17.0% among women. In the Eastern Cape 46.0% of men smoke and 11.0% of women, and in the Western Cape, 49.0% of men smoke and 29.0% of women (Bradshaw et al., 2000: 120,121).

2.4.10 REVIEW OF SYSTEMS

Smallwood and Erhlich (1997: 184) undertook a survey among metropolitan based GCs who were either members of the Building Industries Federation South Africa (BIFSA) or the South African Federation of Civil Engineering Contractors (SAFCEC). Respondents were required to indicate whether they were aware if workers suffered from various ailments, inter alia, colds and flu (97.9%); back ailments (72.9%); muscle and joint ailments (62.6%); eye problems (60.4%); chest illness (58.3%), and TB (56.3%). Employers were clearly aware that workers experienced health problems. The majority of employers (83.3%) responded that workers encountered health hazards. This survey revealed that only 4.2% of this sample frame undertook any form of medical surveillance at pre-employment level, and 6.2% at periodic intervals to determine the existence of health problems or occupational diseases.

2.4.10.1 THE DERMATOLOGICAL SYSTEM (SKIN)

Davies and Rycroft (1995: 102) and Todd and Carman (2001: 359) state that skin diseases (dermatoses) are common. The distinction between occupational and non-occupational dermatoses is often difficult, largely because the majority of occupational dermatoses and a sizable proportion of non-occupational dermatoses have similar clinical appearances. These dermatological conditions are termed eczema or dermatitis. In a study conducted on behalf of the National Center for Health statistics in the United States, it was found that nearly one-third of a 20 000 general population sample examined were found to have some skin pathology that would have required evaluation at least once by a doctor. The most common of these conditions were acne vulgaris, tinea, benign and malignant tumours, seborrhoeic eczema, atopic eczema, contact dermatitis and psoriasis (Davies and Rycroft, 1995: 102). Todd and Carman (2001: 359) state that while dermatological disease rarely causes serious illness, it causes disability, misery and decreases worker efficiency. As workers may fear retrenchment, they work without complaint often in great discomfort. Kew and Ehrlich (2001: 416) suggest that if a history of or presence of skin conditions is liable to be aggravated by working conditions, this may preclude employment in a particular category of work.

According to the CPWR (1998: 41), the Bureau of Labor Statistics list various conditions under the category 'skin diseases or disorders', such as oil acne, chrome ulcers, chemical burns or inflammations, tinea, contact dermatitis, eczema and various rashes caused by primary irritants, sensitizers or poisonous plants. Concrete widely used in the construction industry is a mixture of Portland cement (calcium, silica, iron and alumina), sand, aggregate and water.

Photosensitive dermatoses, vitiligo, and workers who have fair skin may need to be restricted from outdoor work unless sufficient protection is provided by clothing or sunscreens (Davies and Rycroft, 1995: 107; Todd and Carman, 2001: 361). Workers who are immuno-compromised, with diabetes mellitus or have HIV or AIDS are more liable to develop severe skin infections. However, those that are being treated for skin infections can continue to work once the symptoms have settled without any impairment or disability. Workers who have contact eczema/dermatitis will respond to removal from the irritant or allergen, and therefore would only be able to continue working with the substance once recovered, and then may require to be moved into alternative work if the skin has been sensitized (Todd and Carman, 2001: 365).

In the South African mining industry workers frequently report problems relating to their feet. Reasons given include the heavy physical work, occlusive footwear, excessive sweating and prolonged open wet conditions, with their feet being wet for extensive periods of time. This causes softening of the horny layer of the skin and the feet may appear a soggy white colour. Furthermore these workers are often identified with fungal infections in the moist web spaces between the toes (Todd and Carman, 2001: 373).

According to Rycroft and Davies (1995: 105), if conditions had been clear for an extended period of time without the need of treatment, the dermatoses needed not necessarily be considered a significant influence on fitness for work. Many forms of the aforementioned common dermatoses are benign in the normal worker. However, there are certain activities where they become less benign, such as exposure to chromate, epoxy resins, or powerful irritants. Workers suffering from seborrhoeic eczema are more susceptible to contact irritants and may be in response to hot environments. Workers who have psoriasis specifically with hand involvement will find that any work

involving heavy manual labour, such as scaffolding, or contact with irritants will irritate this condition.

2.4.10.2 VISUAL ACUITY

Older workers are likely to have presbyopia, a change that occurs in the eye as it ages, more specifically during the mid-40s. This results in the worker being unable to focus on close items without the use of spectacles. Photophobia, or intolerance to light can occur as a symptom of various eye conditions, including acute glaucoma, trauma or injury to the eye, and uveitis (Merck 1999d: 2). Certain eye conditions can also cause headaches, closed angle glaucoma, and eye strain from not wearing glasses such as myopia (long sightedness), where the individual has difficulty in focusing on close objects, similar to presbyopia, but is not age related (Occuvision, 2003: 2).

Workers who have defective vision are more liable to have accidents in hazardous situations. People with monocular (single vision), defective vision, restricted visual fields, or diplopia (double vision) should be restricted from working on ladders of scaffolding where they will fall if they overstep the boundaries. Other areas where workers should be restricted from work would include around or operating moving machinery, heavy plant, cranes, hoists or fork-lift trucks, as all require good peripheral vision for driving, and for the control and manipulation of the loads they carry (Diamond and Munton, 1995: 90; Kew and Ehrlich, 2001: 415).

Colour perception is required in a small number of occupations. Assessment of colour vision is necessary if normal colour vision is required for the job. The pseudo-isochromatic tests, such as the Ishihara plates are most commonly used to determine whether a worker is colour blind. More specifically, colour critical occupations are those where differentiation is required to determine warning systems, cables and wiring, and coding of pipes (Diamond and Munton, 1995: 94-95).

2.4.10.3 THE CARDIOVASCULAR SYSTEM (CVS)

Approximately 25.0% of all deaths in developed countries are due to coronary heart disease (CHD) (Baxter and Petch, 1995: 270). There are many risk factors for CHD of non-occupational origin, which include hypertension (high blood pressure), smoking, diet, hypercholesterolaemia (raised cholesterol) and obesity. These risk factors can work in a synergistic way with occupational exposure, which increases the risk of developing this disease. Most forms of hypertension are termed primary, or essential hypertension. This term is used when the cause of the hypertension is unknown. Secondary hypertension is classified as hypertension with a known cause, which could arise from kidney disease; stress; sedentary lifestyle; smoking and excessive alcohol use; hypercholesterolaemia, and arteriosclerosis (Merck, 2003: 10).

Naik and Eloff (1998: 24) cite Kristensen (1989) who reviewed the relationship between chemical and non-chemical factors and cardiovascular disease (CVD). Non-chemical factors included shift work, noise, physical activity, stress, temperature and vibration. However, only occupational stress has been shown to directly affect the cardiovascular system through its influence on blood pressure. Exposure to various chemicals, such as carbon monoxide has been shown to have an effect at or above the standard occupational levels. Chemical exposure has further been associated with a significant 35.0% increase in ischaemic heart disease in a National Institute of Safety and Health (NIOSH) study of bridge and tunnel workers in New York City (Naik and Eloff, 1998: 24).

The WHO (2003: 1) indicates that poor adherence of treatment regimens is an increasing problem worldwide. Studies undertaken by the WHO indicate that in Gambia, China and the USA only 27.0%, 43.0% and 51.0% respectively adhere to their medication regimen for hypertension. In the USA, UK and Venezuela, only 30.0%, 7.0% and 4.5% of treated hypertensives respectively were adequately controlled. In the Sudan, only 18.0% identified as not adhering to, in comparison with 96.0% who adhered with their treatment. In SA, a retrospective study on hypertensive workers was undertaken on a goldmine, where it had been identified that 8.8% of worker complement were known hypertensives. Of these, 54.0% were non-adherent with the management

programme available at work across all age groups. Most of the workers were identified as hypertensive during routine medical surveillance. Newly diagnosed workers were required to visit the OH clinic weekly until the blood pressure measurements had stabilized. Workers applying for work found with elevated blood pressure were not accepted, based on the WHO criteria. However, workers on treatment with stable blood pressure were accepted (Viljoen, 1996: 24).

Untreated hypertension carries the risk of sudden disability or death from heart attack or stroke. Identification of hypertension may require cessation of work (that is, replacement of the worker) where a serious accident risk exists. Well-controlled hypertension may be risk-free, especially if diet or mild diuretics assist with maintaining control. Control of the disease with more powerful drugs may carry the risk of hypotension, resulting in giddiness and tiredness, and limited effort-tolerance. Workers with controlled hypertension can manage most working activities. However, work that requires frequent postural changes may prove problematic due to altered central and peripheral vascular responses. Very heavy physical work and exposure to very hot conditions with high humidity may result in postural hypotension. These effects may prove dangerous to the workers health, or increase the associated accidental risk. Where this occurs, the worker should be restricted from undertaking such tasks (Baxter and Petch, 1995: 268, 270, 280).

2.4.10.4 THE RESPIRATORY SYSTEM

The respiratory system has been divided into the upper and lower systems because of the disorders that affect them and the effects of the disorders in the occupational setting. The upper respiratory system or tract covers disorders of the ear, and the lower respiratory system covers the lungs.

2.4.10.4.1 THE UPPER RESPIRATORY SYSTEM

Disorders of the ear can affect the workers fitness for work in several ways. Hearing difficulty, tinnitus, ear discharge and balance disturbances, and auditory disorders, particularly noise induced hearing loss (NIHL) have become common

problems throughout industry (Sinclair and Coles, 1995: 60; Rampal and Ismail, 2001: 286).

NIHL is a sensorineural (affecting the sensory nerves) hearing loss, specifically among workers who are exposed to prolonged exposure to noise levels of 85 to 120 dBA (decibels), initially at 4kHz, and then spreading to the lower and higher frequencies as exposure continues. It is the most significant problem facing workers in noisy workplaces (Rampal and Ismail, 2001: 294, 297; Merck, 1999a: 1). The damaging effects depend on the overall intensity of noise, total duration of exposure, frequency characteristics of the noise, and the susceptibility of the individual worker. Such hearing loss may be permanent or transient, depending on the type of exposure. Temporary threshold shift (TTS) is a temporary form of hearing loss (such as one experiences after having listened to a live band or loud music at a party) occurs with exposure, but recovery begins immediately following cessation of exposure. However, if the worker does not wear hearing protection and continues to be exposed to such noise levels, there is no further recovery and the worker can be said to have NIHL following audiometric testing (hearing tests). NIHL could occur from as little as 1 month after continual exposure, and affects the 4kHz frequency level initially, and then the other frequencies with continued exposure (Rampal and Ismail, 2001: 294, 297).

Presbycusis is a further form of sensorineural hearing loss that can occur with age, and affects lower frequencies than NIHL. However, those with this form of loss have major difficulty understanding conversation when there is background noise (Merck, 1999d: 1).

Ear discharges are commonly from bacterial or fungal infection of the middle or external ear, with some forms of otitis externa being closely aligned with an eczematous dermatitis, which in turn could affect fitness for work in a number of ways. The worker could be concerned regarding his appearance, and not be able to use hearing protection or the telephone if required. Otitis media can further cause both a conductive and sensorineural loss, which will affect the ability to hear (Sinclair and Coles, 1995: 61).

Those who suffer from hearing loss, either from congenital problems or occupational exposure, may not be compatible with particular tasks at work where good communication are required, or the safety of the affected worker or colleagues may be at

risk. However, there are very few cases in general industry where the hearing loss causes a severe enough disability to preclude employment. Tinnitus is present in approximately half of those who have major hearing difficulties, and may be associated with psychological upsets, including insomnia. This condition could be severe and incapacitating, especially when job performance is heavily dependent upon personal skills. This condition could preclude further employment in a noisy environment, even when wearing hearing protection while working in a noisy area. Tinnitus can be, but is not always a permanent condition (Sinclair and Coles, 1995: 60, 61, 65; Rampal and Ismail, 2001: 305).

Fitness for work for those who suffer from dizziness or balance disturbances have either acute disorienting episodes that occur without warning, or those who have some warning and whose episodes are not dangerously disorienting. While the individual is unlikely to die from this condition, the likelihood is possible of a serious injury or death resulting from acute and unexpected disorientation. Dizziness is also a result of other underlying chronic disorders, such as cardiovascular disease (CVD). This may impact on the individuals' capacity to work. Workers who have such disorders should possibly be restricted from working near or on potentially hazardous machinery, at heights, potentially dangerous environments, in moving environments, diving, and any job with high levels of responsibility for the safety of others (Sinclair and Coles, 1995: 82, 83).

2.4.10.4.2 THE LOWER RESPIRATORY SYSTEM

The lungs are uniquely vulnerable to environmentally induced disease, despite quite formidable defence mechanisms. Respiratory diseases pose many special problems at work that differ according to the nature of the disorder and the workplace (Scarisbrick and Hendrick, 1995: 286).

In a review of epidemiological studies that attempted to quantify the risk of cancer among highway maintenance workers and roofers exposed to bitumen, it was determined that there was a greater risk of cancer of the lung among roofers (Esterhuizen, 2000: 11).

Acute respiratory illnesses cause short-term sickness with quick recovery. Workers who suffer from asthma may need to be protected, as some experience difficulties when required to work in very dusty or smoky atmospheres, and when there are exposures to extreme temperatures or heavy manual work (Scarisbrick and Hendrick, 1995: 289, 290).

Tuberculosis is one of the most common respiratory infections in the United Kingdom with 4000 to 5000 new cases annually, half occurring among those of working age. The disease remains an important cause of morbidity and even mortality when diagnosis is delayed or patients are non-compliant with medication. It is unnecessary to restrict the worker from working once the initial 2 to 3 weeks of chemotherapy have been completed. Tuberculosis has become common in those who are HIV positive, and those with AIDS. Contact with individuals without HIV infection has increased the reservoir of tuberculosis infection in the population at large. This is a major problem in Africa and is an emerging health issue in industrialized countries (Scarisbrick and Hendrick, 1995: 289, 290, 291).

According to Churchyard and Corbett (2001: 155), TB case rates have risen progressively in Africa over the past decade, and have increased almost fourfold – even in those countries in which the incidence rates had previously been declining. The intensity of exposure to tuberculosis infection is by far the most important factor affecting tuberculosis incidence rates in a community. Estimated transmission rates are usually referred to as a percentage, representing the percentage of the population that can expect to be infected with tuberculosis during a one-year period. Currently the population of Cape Town in the Western Cape Province has what would be considered a high annual risk of infection – greater than 3.0%. In comparison, the risk of tuberculosis infection among gold miners is at least 10.0% per year. For healthy individuals the lifetime risk of tuberculosis disease following tuberculosis infection has been estimated at 10.0%. The most significant factors, specifically among the mining group are: age at infection (or re-infection), silica exposure, silicosis and HIV infection. Alcohol use and smoking are also risk factors, but poorly defined (Churchyard and Corbett, 2001: 159, 160).

2.4.10.5 THE GASTROINTESTINAL TRACT (GIT)

According to Harries and Wyke (1995: 231) there have been very few studies on the influence of diseases of work on the GIT or liver. Peptic ulceration, oesophageal reflux, a hiatus hernia, and liver disease affect many workers. Ingestion of small quantities of chemicals can occur when workers consume food and fluids without cleaning hands, and general poor hygiene. Gastroenteritis with possible hepatic and renal effects has been reported following the ingestion of hexavalent chromates (Aw and Harrington, 2002: 280). Paced work and shift work is known to cause high levels of stress with an aggravation of the GIT. However, it has yet to be determined what effects the contribution of diet, alcohol intake, smoking, stress and irregular mealtimes have on the incidence of digestive disorders (Aw and Harrington, 2002: 280). Workers with a history of or with liver disease should be protected where possible from workplace exposure to hepatotoxins, unless there is good clinical and laboratory evidence that previous liver disease has been resolved. Workers with colostomies and ileostomies should avoid heavy lifting or excessive bending as the stoma may be damaged (Aw and Harrington, 2001: 279).

Non-occupational causes of gastritis include the chronic use of aspirin, excessive alcohol and smoking. Further, construction workers exposed to sewage may have a higher prevalence of gastrointestinal disorders (Aw and Harrington, 2002: 280, 282).

Asbestos cement workers have been shown to have a slightly increased risk of colorectal cancer, at the proximal point. General exposure not only affects the pleura (lining of the lungs) but also the peritoneum (lining of the abdominal contents) (Aw and Harrington, 2001: 281).

Peptic ulceration is the most important organic gastrointestinal disease in many Western countries, with up to 10.0% of males being affected at some time. The risk of developing peptic ulceration is greater for workers in highly physical jobs in comparison to those doing sedentary work. Smoking increases the susceptibility to ulcer disease. It impairs healing, and increases the risk and rapidity of recurrence and the likelihood of

the worker requiring surgery. It is advisable that patients with peptic ulceration do not smoke (Harris and Wyke, 1995: 232,). The most common complaint of workers with peptic ulceration is epigastric pain, less common is vomiting, gastric perforation and perforation. Treatment is known to relieve symptoms and heals ulceration, but does not prevent further ulceration (Harris and Wyke, 1995: 232). Psychological stress created from paced work and also working shifts is known to cause ulcers (Aw and Harrington, 2002: 280).

There are no work restrictions required for workers with peptic ulceration. However, even though there is no clear relation between peptic ulceration and stress, some individuals may show symptoms during periods of stress and this may require long-term maintenance treatment (Harries and Wyke, 1995: 232, 235).

According to Harries and Wyke (1995: 231) oesophageal reflux is experienced at some time by 10.0% of Americans. If appropriately positioned during a barium meal most people over 40 could be shown radiographically to have a hiatus hernia. Very few of these have symptoms and the relationship between hiatus hernia and reflux is not clear. Bending worsens oesophageal reflux and heartburn, especially when the worker has to undertake tasks that involve heavy lifting. Other types of work that may produce symptoms include lifting and carrying heavy loads, pulling or pushing of heavy loads, and work that may involve working in confined spaces, and crouched or stooped positions.

Hepatitis *A* is caused by an enterovirus (HAV) transmitted by the faecal-oral route and affects mainly children and about 20.0% of those over 16 years of age. Adults in communities with poor sanitation are at highest risk. Serological evidence of previous infection is found in 45.0% of adults, and increases with age from less than 20.0% in people younger than 30 to almost 60.0% in those over 45. Most cases do not give a history of jaundice. This disease has an excellent prognosis, a mortality of less than 0.15% and no progression to chronic liver disease and no carrier state (Harries and Wyke, 1995: 236, 237).

Hepatitis *B* is transmitted to susceptible individuals via the hepatitis virus (HBV) in blood, blood products or body fluids and secretions from an infected individual. Drug

addiction, tattooing, acupuncture, dental treatment and homosexual practices are recognized means of transmission. Horizontal transmission may result from sexual contact or sharing of personal items such as razors or toothbrushes. Mortality from acute hepatitis *B* among adults aged 15 to 64 is approximately 0.6% for men and tends to increase with age. In the UK, about 3.0% have had exposure to HBV, and about 10% of mainly males progress to the carrier state. There is no evidence of transmission of hepatitis *B* by casual contract in the workplace or from contaminated food, water, airborne or faecal-oral routes (Harries and Wyke, 1995: 238, 239).

2.4.10.6 THE GENITO-URINARY SYSTEM (GU)

Occupational bladder cancer was one of the earliest known occupational cancers, and specific to the construction industry. Those who work with coal tar and derived products have a raised risk of bladder cancer (Esterhuizen, 2000: 11). Genito-urinary disorders may present in a non-specific manner, with the worker being asymptomatic, with testing indicating abnormal clinical or laboratory manifestations, which suggest a primary renal abnormality or a systemic disease associated with renal pathology, such as hypertension (Merck, 1999b: 1).

Symptoms that relate to urinary infection are very common, often symptomless, and not considered serious unless there is an underlying anatomical abnormality. Occurrence is less frequent in males. However, this increases sharply after the age of 60 due to lower urinary tract, especially prostatic problems. Complications of kidney disease include hypertension and this condition could be difficult to control, with side effects from treatment affecting fitness for work (Veys and Gokal, 1995: 309, 311; Merck, 1999b: 2).

Haematurea can be detected on screening the urine using simple testing (dipstix). If the worker has no pain the slight presence of blood may indicate renal or prostatic disease. Haematurea with dysuria is usually associated with bladder infections. Bladder pain is generally caused by bacterial cystitis, is suprapubic and may be associated with agonizing or minimal pain. Kidney pain is usually felt in the side or back between the 12^{th} rib and the iliac crest, possibly radiating into the epigastrium (Merck, 1999b: 2).

Workers with asymptomatic renal disease may have hypertension and subsequently abnormal urine findings. The presence of protein in the urine is predominantly found in most renal diseases. It can also be found incidentally, and is not pathological or serious unless found on a regular basis when testing the urine. Glucosurea is most commonly from hyperglycaemia in the diabetic worker, or if the blood glucose levels are normal, could indicate renal disease. Ketones are present in the urine if the worker has not eaten for some time, or starving/fasting, in uncontrolled diabetes mellitus, and sometimes if the worker is under the influence of alcohol. The presence of ketones is not related to any kidney diseases. White blood cells in the urine test suggest bacterial infection anywhere in the body, with the presence of nitrates indicating bacteria in the bladder (Merck, 1999c: 5, 6). Urobilinogen found in the urine is indicative of mild liver disease. However, bilirubin in the urine is indicative of early liver disease such as acute viral hepatitis (Merck, 1999c: 2).

AIDS is the acronym for Acquired Immune Deficiency Syndrome, caused by the human immunodeficiency virus or HIV. The HIV 'hijacks' the CD4 cell, which is the most important defensive cell in the body, rendering it unable to defend the body. Everybody responds differently to HIV infection, with some remaining healthy and active for 10 to 20 years with no sign of immune depression, while others will develop AIDS defining illness within 5 to 7 years. Various reasons for the different response are due to the strain or type of HIV, along with the dose, as well as the general health status of the individual at the time of the infection. Those who already have chronic diseases such as malaria and TB, and those who have in addition, a reduced health status due to malnutrition; poverty, and recurrent infections will experience an increased rate of deterioration than the healthy individual who becomes infected (van Dyk, 2001: 4, 7, 16).

Bradshaw et al. (2000: 115) report that the findings of the South African Demographic and Health Survey undertaken in 1998 reported that the prevalence of sexually transmitted infections as a co-factor in the spread of HIV was high. In this report 12% of men reported that in the previous 3 months they had experienced painful urination or had genital ulcers. Rural males were found to be less likely to use a condom with a partner other than their spouse. According to the 2000 Annual Report of the

NMMM, AIDS ranked 8th among the ten most prevalent causes of death with the most significant age groups affected being 15 to 30 years (95 deaths), and the 30 to 60 year old group (170 deaths).

2.4.10.7 THE CENTRAL NERVOUS SYSTEM (CNS)

Neurological disorders cover a wide range of disease and functional disabilities, and are an important cause of disability in modern Western society. It has been suggested that approximately 6.0% of the population have a long-standing neurological illness. Neurological diseases are mainly age related. Mortality and morbidity vary by condition. Those conditions that occur below 65 years of age that have prolonged morbidity have greater relevance to work ability. Non-work-related causes for neurological disease are far greater than occupational causes. Proven occupational causes are peripheral neurotoxins and the neurobehavioural effects of exposure to organic solvents. It is important to know whether the worker would be working with such substances that could exacerbate a pre-existing non-occupationally related neurological disease (Harrington and Gibberd, 1995: 114).

Given the aforementioned it is most likely that the worker with a neurological disorder would be seen on return to work from sick leave. In these circumstances the clinical assessment would include assessing the workers ability to return to the job held before the illness began, or in the case of the new worker, whether the worker is able to perform the job applied for.

The WHO definition of epilepsy is "a chronic brain disorder of various aetiologies characterized by recurrent seizures due to excessive discharge of cerebral neurones". The prevalence of active epilepsy has been found to be between 5 to 10 cases per 1000 persons, and among the most common of serious medical conditions (Brown and Shorvon, 1995: 144). The South African Epilepsy League (SANEL) estimates the prevalence of epilepsy at above 1%. Kies (1998: 14) states that this rate concurs with research undertaken by Shorvon (1988) who stated that epilepsy is twice as prevalent in developing countries as in developed countries.

Some of the common causes of adult onset are: genetic propensity; head trauma; hypertensive vascular disease; tumours; systemic diseases; toxic or iatrogenic (from drugs, alcohol), and drug withdrawal. A person who has had a single seizure is not considered an epileptic. The risk of seizure recurrence is much higher in the first weeks after an initial attack. The longer the time period that passes without a second seizure, the less the overall risk of subsequent recurrence. This is particularly important in the workers safety at work (Brown and Shorvon, 1995: 144, 146, 147; Kies, 1998: 14).

Kies (1988: 16) believes that there is a tendency to discriminate against epileptics. In an international survey undertaken by Fraser it was determined that 15.0% to 50.0% of epileptics were unemployed, and that a norm of 20.0% was internationally acceptable. The findings of surveys undertaken by SANEL in Soweto and other deprived communities in Gauteng, found there were a 91.0% and 79.0% rate of unemployment respectively. When Kies (1998: 16) surveyed employers he found that 26.0% of respondents would not employ an epileptic mainly because they were concerned about the possibility of the workers being injured.

The Employment Commission of the International Bureau of Epilepsy has provided principles of good practice for employing people with epilepsy. These principles state that if seizures had been absent for two years, the worker should be allowed to drive. This is also the case in South Africa. Therefore the worker should be allowed to occupy any position (Kies, 1998: 16). If the epilepsy is poorly controlled each situation needs to be assessed according to its merits. Workers who have the occasional seizure or are poorly controlled should be restricted from climbing or working at heights, working around unguarded machinery, from operating dangerous machinery, working near fire or water, working for long periods alone and/ isolated and driving. Hand-held power tools that are fixed on the ‘on’ position could pose a hazard (Kies 1998: 16; Brown and Shorvon, 1995: 153).

Headaches are probably the most common form of pain to limit work. Pain is often mild and due to tension and resolved by the use of mild analgesics. Causes of headaches can be varied. The prevention of eyestrain, smoke, unpleasant smells and inadequate ventilation makes headaches more likely to occur. Noise may also precipitate headaches (Harrington and Gibberd, 1995: 123, 124).

Migraines are generally familial and begin during childhood. Many factors at work can precipitate migraine, such as: missing meals; alcohol use, and environmental factors such as temperature and humidity. Psychological factors are less important in migraine than in stress and tension headaches (Harrington and Gibberd, 1995: 130, 131).

2.4.10.8 THE MUSCULOSKELETAL SYSTEM

Musculoskeletal disorders are difficult to diagnose. Pain is hard to measure and quantify objectively. According to Schneider (2001: 1060), this may be the reason that there are very few studies looking at the prevalence of musculoskeletal disorders based on medical surveillance. This is the situation in the construction industry where workers rarely, if ever, get any form of medical surveillance through their job.

Demographic changes and loss of interest among younger individuals to look for a career in the construction industry has meant that there has been an increase in the proportion of older workers in the construction industry. Older workers therefore have a limited ability to choose another occupation or to transfer into another field of work (Arndt et al., 1996: 686).

The CPWR (1998: 38) state that musculoskeletal disorders, for example, sprains and strains, are the most common type of nonfatal injury in the construction industry, with overexertion or lifting too much at one time being the most common occurrence. The back is the most affected body part in comparison to all other body parts injured in the construction industry in the United States of America (CPWR, 1998: 37).

Holmström et al., reviewed musculoskeletal injuries among construction workers in Sweden (Schneider, 2001: 1062) and the risk factors that may contribute to their injury rates. This study reported that musculoskeletal symptoms were much more prevalent among construction workers than office workers, and that there was a clear relationship to heavy work and vibration; exposures; frequent use of handheld tools; repetitive work, and awkward postures. Stress and few resources showed an association with lower back pain; age; smoking; height; poor physical fitness, and less leisure time

and diminished muscle strength. These factors were also associated with musculoskeletal disorders. This finding was similar to the study conducted by Arndt et al. (1996: 686), where construction workers were compared to office workers. Increased musculoskeletal problems were identified as being significantly greater among construction workers than office workers in the baseline study and in the follow up study 40.0% of the construction workers who were retired through disability was due to musculoskeletal disorders.

Some of the well-documented disorders in the literature include 'carpet layer's knee', attributed to the large amount of kneeling and mainly from those groups that lay carpeting and flooring. Concrete reinforcement workers, studied in the 1970's by Wickström et al., showed high rates of lumbago and sciatica, attributed to the amount of forward bending required. The risk of developing musculoskeletal injuries is cited to be as high as 50.0% higher than all other workers, and the exact relationship between exposures and injuries is complex and often multifaceted. Schneider (2002: 1063) suggests that these injuries are to are to a greater degree related to the work that construction workers perform.

Carpel tunnel syndrome, although neurological in nature is linked to occupations where work is highly repetitive and/or forceful in nature, where the wrist is kept in an awkward position for extended periods of time. Carpenters appear to have the highest rate of carpel tunnel syndrome. Rates appear to be underreported, with only 2.12% reporting this condition. This figure is still significantly higher that the reported national average for male and female workers at 1.3% (CPWR 1998: 39).

2.4.10.9 THE ENDOCRINE SYSTEM

Diabetes mellitus is generally poorly understood among employers and often the workers' medical advisors. However, if well managed and adherent to treatment regimes, diabetics can undertake most forms of work and should not be discriminated against (Vaile and Pyke, 1995: 219; Kew and Ehrlich, 2001: 414).

Despite advances in the control and management of diabetes mellitus this condition remains poorly understood and there is a lack of published research on the work experience of diabetics in general, or in particular situations. There are two types of diabetes mellitus:

- Insulin dependent (IDDM) or type 1 diabetes mellitus. The cause is essentially unknown, but may result from viral damage to the pancreatic islet beta cells, or as an auto-immune response. Although IDDM can occur at any age, most diagnosed cases are under 20 years of age.
- Non-insulin dependent diabetes mellitus (NIDDM), or type II diabetes mellitus has a strong genetic component, but most of the time the cause is unknown. Those affected are generally over 30 years of age and about 45.0% of type II diabetics are considered NIDDM.

The WHO (2002: 1) predicts that a diabetic epidemic is underway and will become one of the world's main disablers and killers within the next 25 years. The WHO further estimate that 177 million people were diabetic in 2000, and that the number of deaths attributed to diabetes mellitus is approximately 4 million per year, this constituting around 9.0% of the global total.

Bradshaw et al. (2000: 111), state that the South African death statistics registered in 1995 places diabetes mellitus as a cause among 3.1% of males in the 45-59 year age group, and 6.8% of females in the same group.

The risk of hypoglycaemia and visual impairment may legitimately restrict poorly controlled IDDM from jobs where safety or great physical effort is an important factor, or where sudden loss of consciousness would be dangerous. In the construction industry this would be applicable to workers who drive large vehicles with load, or where workers may be at risk to themselves, such as where there is moving machinery, and if required to work on scaffolding (Vaile and Pyke, 1995: 219, 222, 223). It is important to determine the overall health status of the diabetic worker. This means that there should be no sight-threatening retinopathy, severe peripheral or autonomic neuropathy, any advanced ischaemic disease or any renal disease (Vaile and Pyke, 1995: 219, 222, 223). According to Costa (2003: 87) shift work is a contraindication for workers with IDDM.

NIDDM is generally managed with diet or diet and oral hypoglycaemic medication. The diagnosed NIDDM is generally obese and therefore the role of diet is to reduce body weight. If the worker with NIDDM is well controlled and managed, there should be no reason why any form of work should not be undertaken and be productive (Vaile and Pyke, 1995: 221, 223).

2.4.11 THE PHYSICAL EXAMINATION

The general principles of examining a patient are applied, namely: to develop rapport with patients to gain their confidence; to obtain all relevant information to make a full assessment; obtain general information to determine how the patient copes (as a whole), and to understand the patients own ideas about problems, major concerns, by listening attentively (Turner and Blackwood, 1997: 1).

In the OH setting the ability to undertake a full physical examination is often extremely limited, due to the lack of privacy and physical resources such as an examination couch, toilet, or basin.

The physical assessment is extremely important, especially at the pre-employment phase, as it establishes a baseline for health status against which all future health will be evaluated. The assessment must be a thorough and meticulous examination and all findings must be clearly and legibly recorded. The examination must include obtaining of the following objective data:

- Height and weight;
- Pulse rate;
- Blood pressure, and
- Urinalysis (Coetzee and Pretorius 1997: F1.4-5).

It is important to use the same systematic scientific approach when conducting a physical examination, namely:

- Inspection;
- Palpation;

- Percussion, and
- Auscultation (Turner and Blackwell, 1997: 25).

2.4.11.1 MINIMUM STANDARDS OF FITNESS FOR WORK

The primary reason for undertaking medical surveillance is to ensure that workers are able to perform their tasks effectively and without risk to themselves or fellow workers health and safety (Cox and Edwards, 1995: 6). The assessment should preferably be undertaken in terms of functional capacity. Cox and Edwards (1995: 12) suggest that the following requirements relative to the task be undertaken:

- Work demands include the physical aspects (such as, for example, mobility needs, strength for certain activities; lifting/carrying; climbing, balancing; stooping / bending; postural constraints; reach requirements; dexterity / manipulative ability); intellectual / perceptual demands, and types of skill involved in the tasks to be undertaken;
- Work environment would include the physical aspects; risk factors such as, for example, fumes / dust, chemical or biological hazards, and working at heights;
- Organizational / social aspects could include stress levels whether there is a requirement to work in small groups or alone;
- Temporal aspects include the need to work shifts, day or night work or what arrangements have been made regarding work pauses and breaks;
- Ergonomic aspects relative to the workplace itself (such as requirement to climb stairs, access for the disabled), lighting, type of equipment or controls to be used, and
- Travel is necessary if places of work are not where the worker resides.

The workers' ability to perform physical work is dependent on the ability of muscle cells to transform chemically bound energy from food into mechanical energy, which in turn, depends on the intake, storage and mobilization of nutrients, and the chain of activities in the body to facilitate energy provision. This is further influenced by internal, external and environmental factors, which influences work performance both directly and indirectly. Aspects include: training and adaptation; general state of health; gender; body size; age; attitude and motivation; stress; workload and schedules, and the environment (heat, cold, humidity, air velocity, noise etc.) (Cox and Edwards, 1995: 12).

Standards that determine the workers fitness to work, or what constitutes fitness are not clearly defined in the literature, probably because there are too many variables that need to be considered. Various industries have specifics, such as job categories that would need to be taken into account when determining workers fitness, such as drivers and the mines.

Furthermore, the OH&SA Construction Regulations stipulate that the designer must provide the principle contractor with relevant information about the design that may affect construction work, for example, design loading of the structure. Special measures would include maximum working loads on scaffolding, which could include the weight of workers on such structures. Taking the work to be done into account, the designer could stipulate that the principal contractor must ensure that workers of certain weight are selected to work on scaffolding in order to prevent overload and subsequent collapse (RSA, 2003: 12). Tables 2.4 and 2.6 summarize the physical requirements and the elimination factors that should be taken into consideration when undertaking medical surveillance, assessing a workers suitability or continued fitness to work, and what means are utilized to assess fitness for work.

Table 2.4 Summary of elimination factors for job selection purposes (adapted from Cox et al., 1995).

WORK ENVIRONMENT	SYMPTOMS/CONDITIONS	ELIMINATION FACTORS
1. Noise Zone 85-105dB >105dB	• Tinnitus, • Deafness	• Previous compensation for NIHL • Tinnitus • Pagets Disease
2. Vibration	• Amputation with prosthetic limb • Circulatory disorders • Chronic lower back problems	• Peripheral Vascular Disease (PVD) • Raynaud's Syndrome • Poorly controlled IDDM
3. High temperatures (above WBGT of 32)	• Epilepsy • Kidney disease • Asthma • Water retention • Severe obesity or emaciation	• Hypertension • Angina • Diuretic therapy • PVD • Previous hyperthermia • Severe Eczema or psoriasis • IDDM • Gross obesity
4. Dust	• Asthma • Allergies to dust	• Asthma • Obstructive/restrictive respiratory conditions
5. Chemical Hazards (includes fumes, vapours, gases)	• Enlarged liver, any liver disease • Dizziness • Chronic skin conditions	• Cirrhosis or any liver pathology • Asthma • Chronic Eczema or Psoriasis
6. High Voltage Electricity	• Epilepsy	• Epilepsy • Pacemaker in situ
7. Radiation <5mSv to >5mSv	• Most chronic skin problems	• Chronic eczema and Psoriasis
8. Rough Terrain	• Lower limb amputations	• Amputations with prosthesis
9. Manual or repetitive work (confined/crouched positions)	• Bowel diseases • Severe herniae • Upper/lower limb amputations • Arthritis • Bleeding conditions	• Inflammatory bowel disease • Rheumatoid arthritis • Haemophilia • Chronic lower back conditions/previous surgery • Sickle cell anaemia
10. Climbing	• Any limb amputation • Epilepsy	• Amputations with prosthesis • Epilepsy
11. Working at heights	• Continuous dizziness • Blindness • Epilepsy	• Vestibular disease • Epilepsy • Blindness of one or both eyes • Poorly controlled hypertension or IDDM
12. Lead	• Liver disease • Asthma	• Cirrhosis of the liver • Asthma

Furthermore the strenuous nature of construction work has probably produced a 'healthy worker effect', a term developed to describe construction workers with health problems (whether occupationally induced or not), who tend to leave the industry. Consequently, those who are chronically ill or poorly controlled by way of medication are generally not seen (Smallwood and Ehrlich, 1997: 172).

2.4.12 TESTS USED IN MEDICAL SURVEILLANCE

This section covers the main aspects relative to testing and examining the worker during the medical examination, and is not a definitive guide on how to conduct testing. Lai and Lee (2002: 378) state that medical surveillance generally includes a range of ancillary tests, for example, urinary dipstix, biological monitoring, or blood glucose.

In the OH setting, there is an ethical difference between a general clinical consultation and medical surveillance. In the former, workers would visit the OHN as they would visit the public clinic or Doctor with a specific complaint. Certain diagnostic procedures would be undertaken, with workers knowing that there will be an outcome that may have some limitations or possible adverse effects; for example, a finger prick test to determine blood glucose levels. This test could be used to determine whether the worker should be referred to the OMP or private service provider for further testing necessary to confirm the diagnosis. If this were the case, consent would be obtained from the worker, and all of the aspects relative to disease or specific condition and the disease or conditions effects on fitness for work would be discussed. The consent form would include the workers permission to discuss the condition with the employer (if necessary), should the worker work at heights, the employer would need to change occupation either temporarily or permanently. During medical surveillance, workers are assumed to be healthy, and when screened a holistic approach is taken. The OHN must determine the existence of asymptomatic or current disease, and then refer the worker to the appropriate service provider or OMP for diagnosis and treatment.

Tests used in medical surveillance should be of high sensitivity and specificity so that adverse effects of exposure or disease relative to the nature and degree of exposure, for example, to hazardous chemical substances can be identified. Many conventional

tests have a low sensitivity in detecting early organ damage and could produce false negative results. This possibility could cause complacency and lead to ignoring symptoms; delayed referral; delayed diagnosis, and lack of timeous and appropriate treatment. Other tests have a low specificity that could produce false positive results and cause healthy workers to be classified as unhealthy. This situation could result in workers experiencing undue anxiety and additional tests, as well as unnecessary job changes (Stanton and Jeebhay, 2001: 280; Lai and Lee, 2001: 381).

Lai and Lee (2001: 379) cite Wilson and Jungner's principles on which screening must be based as follows. The condition:

- Should be important;
- Amenable to treatment, and
- Have a recognisable latent or asymptomatic stage.

Tests used should be:

- Prevalent;
- Sensitive;
- Specific;
- Easily conducted, and
- Be relatively affordable.

2.4.12.1 HEIGHT AND WEIGHT

The measurement of the weight of the worker cannot be stressed enough, as future weight comparisons, with drastic loss could indicate the presence of various diseases, such as TB, AIDS and cancer (Coetzee and Pretorius 1997: Fl.5). Height is measured using a tape measure, and weight is measured using a commercially available scale.

There are a number of overlapping reasons as to why the measurement of these parameters is necessary. Macdonald and Mathews (1995: 174) discuss a study of military recruits who were followed up over a period of 20 years, the results showed that those whose height was above 182cm and weighed over 82kg were more likely to

experience back problems. Obesity is measured by means of the 'Body Mass Index' (BMI) and is used to determine if a worker is able to undertake specific work, especially if there is exposure to very high temperatures, do heavy physical work, or where mobility is required (Kew and Ehrlich, 2001: 414).

BMI is measured with the weight in kilograms (kg) divided by the workers height in metres^2. The interpretation of the BMI is as reported in Table 2.5

Table 2.5 Interpreting the body mass index (BMI) (adapted from Botheroyd and McIver, 1995: 467).

Readings (kg/m^s)	**Implications**
18 or less	Underweight
19 – 25	Healthy
26 – 30	Overweight, the individuals health could suffer and weight loss should now be considered
31-40	Obese and the individuals health is at risk, and weight loss should seriously be considered
42 or above	Very obese and the individuals health is seriously at risk – immediate weight loss is essential

2.4.12.2 VISUAL ACUITY

Testing visual acuity is performed using the Snellen chart, with the worker standing 6 metres from the chart, and colour vision using the Ishihara Colour Plates. The equal dilation and constriction of the pupils is checked with a torch (Coetzee and Pretorius, 1997: Fl.5; Turner and Blackwood, 1997: 116). Kew and Ehrlich (2001: 415) suggest that visual acuity is normal if the reading is 6/6 in each eye, with or without optical assistance. They further suggest that recommend a lower limit of 6/18 binocular (corrected) vision, with a minimum of 6/24 in the weaker eye.

Visual fields should be full and the balance between the two eyes normal. A normal visual field refers to at least 50 degrees nasal and 70 degrees temporal vision (Cox et al., 1995: 90; Kew and Ehrlich, 2001: 415; Turner and Blackwood, 1997: 117).

2.4.12.3 EARS, NOSE, MOUTH AND THROAT EXAMINATION

The upper respiratory tract is examined separately from the lower respiratory system, and is undertaken using an otoscope to inspect the pinnae, external canal and tympanic membrane. The otoscope can be used to inspect the mouth and throat. A manual examination is undertaken to palpate the head and neck for lymph glands or areas of tenderness.

2.4.12.4 IDENTIFYING DERMATOLOGICAL PROBLEMS

All skin lesions need to be identified and described in detail, specifically the distribution of lesions, and their size. Clinical manifestations may be recurrent, and the worker may have had previous episodes identified while taking the medical history (Todd and Carman, 2001: 368). The skin is normally examined by observation of the body. Once again the OHN is guided by the history provided by the worker and the physical evidence of, for example: amputations; scarring, and lesions.

2.4.12.5 CARDIOVASCULAR AND RESPIRATORY SYSTEMS

The cardiovascular and respiratory systems are examined together. The precordium should be inspected, and apex beat of the heart palpated and the position of the heart measured. Further examination of the respiratory system should observe any physical signs of cyanosis, clubbing, and the pattern and rate of respiration. Both sides of the chest should also be percussed for resonance, and then auscultated using a stethoscope to determine breath sounds (Turner and Blackwell, 1997: 78, 80, 85).

The radial pulse is taken, to determine rate and rhythm, which should be regular with a normal waveform. The blood pressure is taken in the sitting position, using an anaeroid baumanometer. If the worker is anxious, the resulting reading could be negatively affected, and in such circumstances the blood pressure should be repeated at the end of the examination or after the worker has relaxed for about 10 minutes (Turner and Blackwell, 1997: 52). Capriotti et al. (2000: 338) and SmithKline Beecham (1999: 74) define hypertension as a systolic blood pressure greater than or equal to 140 mm Hg or diastolic pressure greater or equal to 90 mm Hg. Prolonged blood pressure higher

than 140/90 mm Hg over a period of time will ultimately cause target organ damage. When determining the fitness of the worker, where the measured blood pressure is raised, it is important that the OHN take cognisance of various aspects. These include, factors such as individual lifestyle, BMI, alcohol and smoking habits and reported previous history, as they have a significant implication in the management of the condition. This information needs to be noted in the referral letter.

2.4.12.6 THE GASTRO INTESTINAL TRACT

Workers generally identify the existence of gastro intestinal problems experienced during history taking, and examination of the abdomen should include palpation of each quadrant of the abdomen to determine any tenderness or rigidity. Palpation of the liver, spleen and kidneys should be undertaken and workers examined for the existence of inguinal or umbilical herniae (Turner and Blackwood, 1997: 90, 91).

2.4.12.7 THE GENITO-URINARY SYSTEM

Examining (palpating) the kidneys is undertaken when examining the abdomen. The urine is tested using commercially available Dipstix strips that should preferably be able to measure at least 10 of the products that are excreted in the urine. The Dipstix should be able to measure, for example, the levels or presence of glucose; protein; ketones; urobilinogen, and blood. The principals related to the use of Dipstix must be adhered to, for example, expiry date, and adequate storage. The urine sample must be observed for appearance and the physical presence of cells. Cells floating in the urine could be pus cells if there is an infection in the bladder or kidneys. Urine colour is important, the dehydrated workers urine will be a dark bronze, and the well-hydrated workers urine is pale yellow. It is important that the worker should observe the urine testing and the discarding thereof after completion. The reason for this transparent manner of examination of a specimen is attributed to the increasing belief that samples are used for HIV and AIDS testing. OHNs may inadvertently perpetuate myths and contribute to poor understanding of the HIV and AIDS pandemic.

2.4.12.8 THE MUSCULOSKELETAL SYSTEM

Workers are assessed from the moment they enter the examination area, and observed undertaking routine tasks such as walking, sitting and undressing (Swash, 1995: 244). The physical examination would take its cue from the history provided, especially where mention is made of previous injury, continual pain of inflammatory or possibly mechanical origin. The spinal column is examined with the patient standing, to determine if the normal S-shaped curve is present. Movements of the cervical (neck), thoracic and lumbar spine are assessed for limitation or pain. The sacroiliac joints, shoulders, arms and hands need to be assessed for range and freedom of movements (Swash, 1995: 249, 250, 253; Turner and Blackwood, 1997: 44).

2.4.12.9 THE CENTRAL NERVOUS SYSTEM (CNS)

The CNS is another area where the physical examination takes its lead from problems raised during the taking of the medical history. For example, if the worker complains of lower backache, with pain radiating down his legs (sciatica) the examiner commences the examination of the workers legs and lumber spine (Swash, 1995: 268). In the well worker the examination conducted would essentially verify that the motor and sensory systems are functioning well, by confirming equal muscle strength of arms and legs, no muscle wasting, normal reflexes, and gait (observed).

The worker is also assessed for normal mental functioning and their emotional state. Abnormalities of most of the cranial nerves mostly pertain to vision, and are assessed when observing the worker overall, and when visual acuity is tested. Visual fields, ocular movements, and examination of the pupils is undertaken (Swash, 1995: 285, 286, 296), and explained with the sections covering ‘Visual Acuity’.

Table 2.6 Physical attributes required for job selection purposes (adapted from Cox et al., 1995).

Physical Attributes Required	Physical Elimination Factors	Required medical examination
1. Good hearing	• Deafness/NIHL	• Audiometric test
2. Good vision	• Monocular vision or Blindness • Reduced peripheral vision	• Vision test (Snellen chart)
3. Colour distinction	• Colour blindness	• Colour vision – e.g. Ishihara test
4. Clear speech	• Severe speech impediment	• Verbal answers to questions
5. Good eye/hand/feet co-ordination and mobility/ balance (Gross motor skills)	• Un-co-ordinated movement • Amputation	• Central nervous system (CNS) examination
6. Good/fine motor skills	• Inability to write, due to amputation	• CNS examination
7. Physical strength, stamina	• Any severe back problems • Muscle weakness	• Musculoskeletal and • CNS examination • Exercise tolerance test (ETT)
8. No fear of heights	• Fear of heights	• Verbal history
9. No claustrophobia	• Claustrophobia	• Verbal history

2.4.13 EMPLOYABILITY

Once the data has been collected, the OHN must make conclusions regarding the capabilities of the worker, according to the following guidelines. The worker is

- Capable of performing the work without any ill effects;
- Capable of performing the work but with reduced efficiency and/or effectiveness;
- Capable of performing the work although this may adversely affect the medical condition;
- Capable of performing the work but with risks to personal health and safety, or to other workers or the community, and
- Physically and/or mentally incapable of performing the work (Klimek et al., 2001: 5).

The following figure is a diagram that conceptualized the process generally followed when undertaking medical surveillance in the occupational setting.

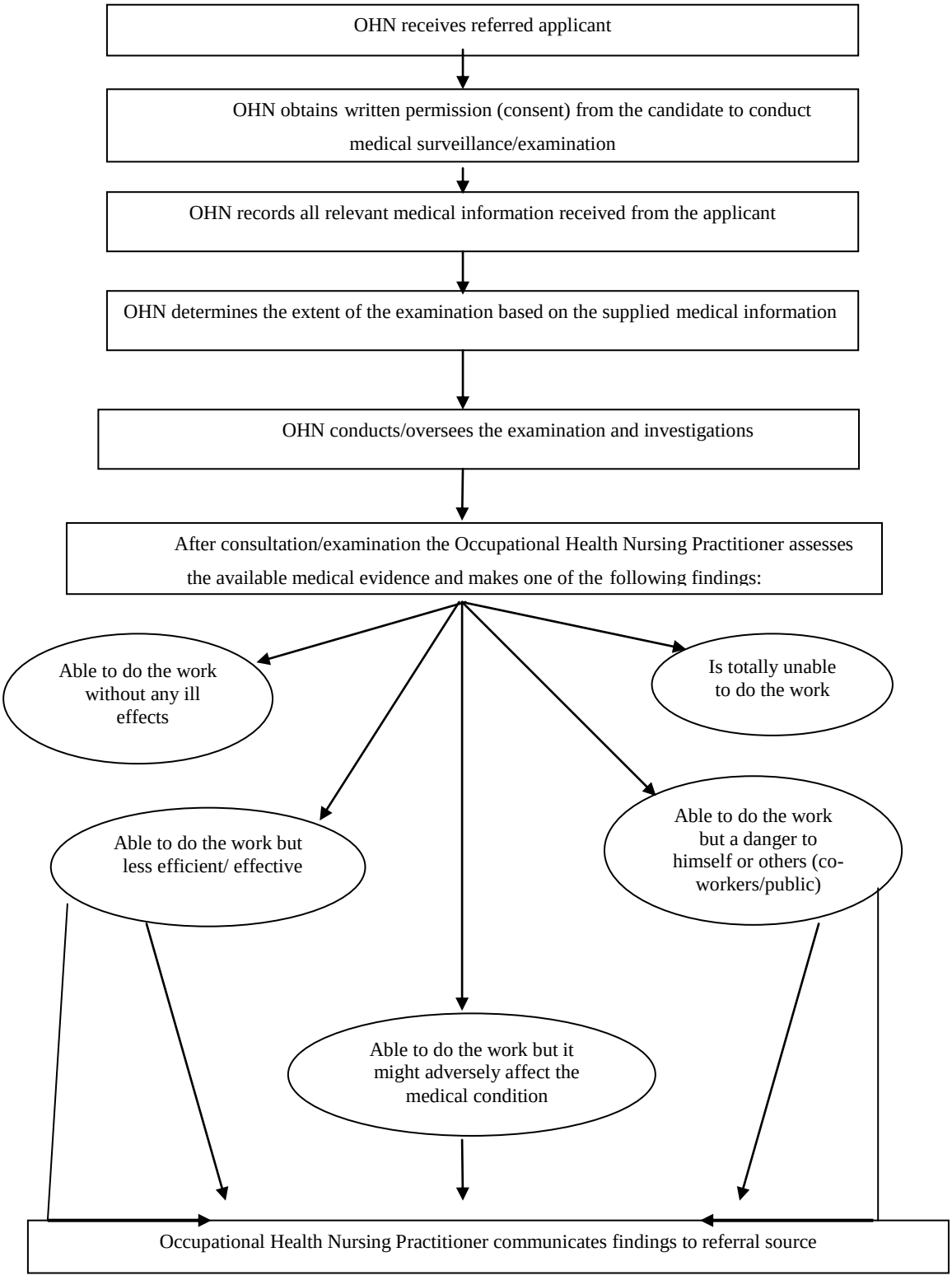


Figure 2.2 Process for conducting medical examinations (adapted from Klimek et al., 2001: 6).

2.5 SUMMARY

The reviewed literature clearly indicates that the older construction worker is at greater risk; especially as the construction industry has been noted as highly hazardous. Workers in the construction industry are exposed to many different forms of hazardous chemical substances, which could impact on their health.

Literature relative to each of the systems of the body was examined to link possible occupational and non-occupational diseases. The literature included the medical aspects relative to the physical examination, as well as the relevant tests that would be undertaken to support the literature.

Chapter 3 discusses the research design utilized in this study. Other aspects covered include research methodology and design; the research population; the data collection, the pilot study, and ethical considerations.

CHAPTER THREE

RESEARCH DESIGN

3.1 INTRODUCTION

There is much international and South African literature regarding the processes, risks and the general lack of OH in the construction industry. The literature has reported that a minority of organizations in the construction industry undertake medical surveillance as a part of their business. No South African literature is available regarding the current health status of construction workers.

The research study seeks to describe the inherent OH related risks in the construction industry, and identify the health status of construction workers that would validate the relevancy of undertaking routine medical surveillance by using a medical surveillance instrument.

The information gathered from the data will be used to formulate recommendations regarding the most appropriate medical programmes relevant to the construction industry in South Africa, and to contribute to the body of knowledge and literature relative to medical surveillance.

3.2 RESEARCH METHODOLOGY AND DESIGN

3.2.1 TYPE OF STUDY

A non-experimental research design is utilized. This study makes use of an exploratory descriptive design. The descriptive research objectives of the study are achieved through an empirical study and by means of the survey method. Surveys are one of the most frequently used methods of data gathering and provide an indication of the strength of statistical association between variables. The literature survey describes the risks relative to the working environment and a systems approach regarding the

reasons for undertaking medical surveillance. A quantitative analysis of the variables found in this domain, phenomenon and a description of the relationships between these variables follows. The statistics presented in the discussion of the results offer a descriptive analysis of the data collected using the survey method.

3.2.2 RESEARCH OBJECTIVES

The aim of the study was to address the following objectives:

- Identify the OH related hazards and related OH risks in construction from literature;
- Investigate the current health status of construction workers using a medical surveillance instrument;
- Determine whether the medical surveillance instrument determines the prevalence of non-occupational diseases;
- Determine the referral requirements emanating from the medical surveillance in order to manage and control the progression of disease, reduce absenteeism, and increase productivity;
- Identify the legal requirements relative to Labour and OH&S legislation and its specific relevance to the construction industry, and
- Formulate recommendations from the literature and findings with the view of possibly contributing towards the development of medical surveillance standards for the South African construction industry.

Furthermore, taking into consideration the limited literature available on medical surveillance standards and practice, both nationally and internationally, a secondary objective of the study is to contribute to the existing literature and body of knowledge. Where there was a lack or absence of relevant literature the researcher has incorporated previous research and published work.

3.2.2.1 LITERATURE STUDY

An extensive literature study was conducted in order to obtain knowledge regarding the OH risks in the construction industry, medical surveillance, and fitness for work. Specific literature relating to the medical surveillance tool was sought in books and articles from international, state and parastatal institutions, national journals, and contemporary publications.

The publications consulted, inter alia, were from the following well-known professional, state and parastatal institutions and organizations:

- The Department of Health;
- The Department of Labour;
- The Safety in Mines Research Advisory Committee;
- The Health Systems Trust, and
- Eskom

3.2.3 DATA COLLECTION INSTRUMENTS

3.2.3.1 QUESTIONNAIRE

For the purpose of the study the researcher used a structured medical surveillance instrument used generically in South African industries, more specifically originating from the researcher's experience and training when employed in industry. This type of questionnaire is utilized widely by many organizations, when undertaking pre-employment or baseline medical assessments, to identify any underlying health problems that would limit workers from undertaking or continuing work in particular positions or settings. The search for literature included the search for information to determine whether the criteria included in the questionnaire are adequate to ascertain fitness for duty, and to provide a profile of the general health needs of workers. The literature search supported the inclusion of family and social history taking, specifically for the long-term health of the worker.

3.2.3.2 VALIDITY AND RELIABLILITY

A questionnaire needs to be tested for validity and reliability. A valid questionnaire or measuring instrument is defined as being able to measure what it is supposed to measure, and to yield scores whose differences reflect the true differences of the variable being measured. Validity includes testing for various aspects, inter alia: content or face validity; criterion, and construct validity. Content validity ensures sampling adequacy with respect to the topics covered by the instrument. Face validity is concerned with ensuring that the questionnaire 'appears to be relevant to those who will complete or administer it'. Criterion validity involves validation of data with external or independent criteria being measured. Finally, construct validity is believed to be the most difficult, as it involves the determination of the degree to which an instrument successfully measures a theoretical construct (de Vos and Fouché, 2000: 83, 84, 85).

Reliability is defined as the accuracy or precision of an instrument; as the degree of consistency or agreement between two independently derived sets of scores, and the degree to which the same or similar results are obtained under similar conditions (de Vos and Fouché, 2000: 85).

A statistical determination of the validity and reliability of the questionnaire was not conducted. However, the preliminary questionnaire was piloted (refer to 3.3) amongst a small sample (four workers) and found to satisfy the criteria. The researcher also consulted a statistician, who advised that for this study a sample size of 100 respondents would contribute to the validity of the study.

3.2.3.3 QUESTIONNAIRE DESIGN

The design of the questionnaire included a combination of closed questions that required a tick box to be completed from limited possible responses, and open questions where further clarification or information was required. A nominal scale of measurement was utilized. The questionnaire (refer to Annexure 1) used for the medical surveillance included questions designed to extract the following information:

- Personal and epidemiological data (includes, inter alia: age; number of children; level of education, and employment information);
- Medical, occupational and family history (includes, inter alia: medical and surgical history, such as any previous operations, and hospitalization);
- Social habits and substance usage (includes, inter alia: drinking; smoking; recreation, and sporting activities);
- Physical examination requirements (includes, inter alia: height and weight; blood pressure measurement; pulse; visual acuity, and urine testing);
- Referral requirements (includes, inter alia: to the Day Hospital; General Practitioner (GP), specialist or hospital), and
- Fitness for duty by categorisation (includes, inter alia: ability to perform work without any harmful effects; be able to perform the work, but with reduced efficiency or effectiveness).

The questionnaire was discussed with the statistician at the University of Port Elizabeth, prior to the study whereafter minor changes were made, for example, to expand medical terms used, to increase understanding by including the 'layman' terms, as well as expanding the tables to capture urinalysis and alcohol and substance usage.

3.3 RESEARCH POPULATION

The subject of the research (The Health of Construction Workers) determined the selection of the research population, namely construction workers. The research population selected were from the Western Cape and included older workers, namely those older than 35.

3.3.1 SAMPLING

General Contractors (GCs) in the Western and Eastern Cape were approached by the researcher and the Head of Department of Construction Management at the University of Port Elizabeth telephonically, and then followed up with a facsimile to confirm the requirements (refer to Annexure 5). None of the GCs contacted in the

Eastern Cape responded. This resulted in the necessity of acquiring the data using an alternative route, and permission was granted by the Supervisor and Co-supervisor to use the data from a collaborative study involving the researcher, and the Research Co-ordinator in the Faculty of Engineering at the Peninsula Technikon in the Western Cape. This study, namely 'The Health of Older Construction Workers', is a longitudinal study designed to determine the ongoing health profile of construction workers as they age.

The Research Co-ordinator, Faculty of Engineering at the Peninsula Technikon, and the lead researcher of the study of 'The Health of Older Construction Workers' contacted GCs in the Western Cape Province to participate in the study telephonically. This resulted in the research being conducted on two construction sites in the Western Cape, among the various GCs engaged in building work on these sites. A total of 183 medical examinations were conducted. A total of 142 questionnaires were coded and this made up the total research sample for this study.

3.3.2 RESPONDENTS

The OH&S Co-ordinator working for the main contractor met with workers and management for the main GC on the larger of the two sites, who explained the purpose of the study and emphasised the need for voluntary participation. Those who gave voluntary consent to participate in this study were construction workers between the ages of 33 and 65 years of age in various occupational categories, namely: unskilled; semi-skilled; skilled workers, and site administrators

3.4 PILOT STUDY

A pilot study was conducted during November 2002, among four workers of a NMMM contractor involved in installing thermal insulation. The researcher, who is a trained, practising OHN, completed the questionnaire. A number of aspects in the questionnaire were adapted to improve the recording and retrievability of data, namely language usage and expanding the tables to be used for recording alcohol usage. The data obtained from the pilot study was not incorporated into this study. Further changes were made to the original questionnaire on completion of the pilot study, namely, the use

of ‘layman’ terminology to ensure improved understanding; as well as expanding on the tables to collect alcohol and substance usage.

3.5 DATA COLLECTION

In order to conduct medical examinations on at least 100 participants within the age category greater than 35 years of age, the workers who indicated their willingness, were included in a co-ordinated schedule to ensure minimal disruption to their working activities.

Two Professional Registered Nurses, one with a qualification in occupational health, and who is referred to as the Occupational Health Nurse, and the other who is studying occupational health, and was under the supervision of the Occupational Health Nurse, undertook the medical examinations conducted for the study. The researcher selected these fieldworkers to assist with data collection as a result of their availability within the co-ordinated schedules agreed to with the participating general contractors. Orientation regarding the questionnaire; processes to be followed, and testing to be undertaken was given to the Occupational Health Nurse by the researcher prior to the commencement of the research while in Cape Town. As the researcher resides in the Nelson Mandela Metropolitan Municipality, and not able to personally supervise or participate in the process, the researcher ensured regular contact with the Occupational Health Nurse by cellular telephone to determine progress, provide support, and to assist with ordering supplies such as dipstix, whenever needed.

3.6 DATA ANALYSIS METHOD

The data was analysed utilising the Statistical Package for the Social Sciences (SPSS) software package. The analysis is largely based on descriptive statistics utilizing measures of central tendency and calculated correlations when applicable. Qualitative data was analysed manually to determine the positive answers provided, or where more detail was required (see Annexure 6).

3.7 LIMITATIONS OF THE STUDY

The following section provides information regarding the limitations identified during the study.

3.7.1 PARTICIPATION IN THE STUDY

Participation by respondents in the management level of GCs in the study was minimal. GCs were contacted telephonically; and a confirmatory facsimile followed each call. Further telephonic follow up with the GCs, however did not realise their participation in the study. A higher rate of participation in some cases may have been possible if there had been some system of reimbursement of costs to the GC for the time workers would be required to be away from work. The lack of participation could also be attributed to the time the workers were required to be away from work being more important to the GC than the cost. These factors were among those given by GCs as identified in the literature survey. For example, the cost of the medical examination is not built into the construction schedule, or the cost of construction. Furthermore, there would be occasions where replacement labour would be required for workers participating – an aspect not considered in this study.

3.7.2 LANGUAGE BARRIERS

Fluency in Xhosa was preferable, especially as many of the unskilled workers in this industry were known not to be fluent in English or Afrikaans, and even more importantly, medical terminology. Neither of the OHNs engaged as fieldworkers to collect the data were of Xhosa origin, or fluent in Xhosa. Considering that most of the workers were Xhosa speaking, it is possible that there could have been some misunderstanding and misinterpretation on the part of both the fieldworkers and the respondents.

3.7.3 GEOGRAPHICAL CONSTRAINTS

The researcher was unable to physically collect the data due to geographical constraints. Use was made of the services of pre-trained OHNs who were able to participate and gather the data on the researchers behalf.

3.7.4 LACK OF CLINICAL SKILLS

The specific training available to qualify a professional nurse as an OHN does not always include the general clinical skills required to undertake clinical physical assessments, especially in relation to assessing fitness for duty. There are many instances in industry where OHNs generally only do history taking and not the clinical examination, the latter usually being undertaken by the OMP, resulting in clinical skills not being utilised or developed by experience. Certain areas of the questionnaires were not completed or the fields were omitted. In certain cases this could have been due to the following:

- The pressure placed on the necessity to send workers back to work;
- The number of workers waiting to be seen, and
- The depth of the information sought where further questioning was required.

A certain amount of deductive reasoning is necessary when asking questions, and many questions require further gathering of data, or 'layering' of data. It is likely that since this was the first occasion that these fieldworkers had conducted comprehensive medical surveillance that included both history taking and clinical physical assessments, the further gathering of data did not occur resulting in possible incomplete fields. The fact that this was a research study exacerbated the limitation.

3.8 ETHICAL CONSIDERATIONS

Permission to conduct the research was obtained from the Ethics Committee at the University of Port Elizabeth. Permission was received from the construction companies who participated, and informed consent from each of the subjects who participated. An example of the letter of consent used in this study is provided as Annexure 3.

The questionnaires made no reference to the name of the worker thus ensuring confidentiality and anonymity. The questionnaires and companies participating were however, given a unique number that was recorded on the questionnaire. A record sheet with the details of the worker was maintained by the OHN in order to be able to contact the worker for any other specific details deemed high risk, or if further information was required. The record sheet was not made available to the data encoder to ensure further anonymity.

3.9 SUMMARY

Chapter 3 is a synopsis of the research process followed in the study. The literature study enabled the researcher to determine the main issues relative to the aspects to which construction workers were most likely to be exposed, and the systemic conditions that were most likely to impact on the workers ability to work. This assisted the researcher in ensuring that these aspects were covered in the medical surveillance instrument to be used in the study. The questionnaire was adapted after the pilot study was conducted. Data was processed using the SPSS programme. The following chapter presents the data analysis and the concomitant discussion of results.

CHAPTER 4

DATA ANALYSIS AND DISCUSSION OF RESULTS

4.1 INTRODUCTION

The main objectives of this study were to identify and investigate the health status of construction workers, to determine whether general and chronic non-occupational diseases were prevalent that could impact on the workers performance, as well as the resulting management requirements relative to the diseases identified. Further objectives related to the identification of occupational risks to which workers are exposed, and the current legislation relative to undertaking medical surveillance. The research design and methodology has been presented in Chapter 3.

The questionnaire utilised in the study was one adapted from the format utilised in general industry. It was necessary to determine whether this form of questionnaire was suitable to be used, and indeed whether adequate for the identification of general, chronic non-occupational diseases (refer to Annexure 1). The descriptive results will be presented first, followed by more detailed statistical analysis. The interpretation will be presented concomitantly.

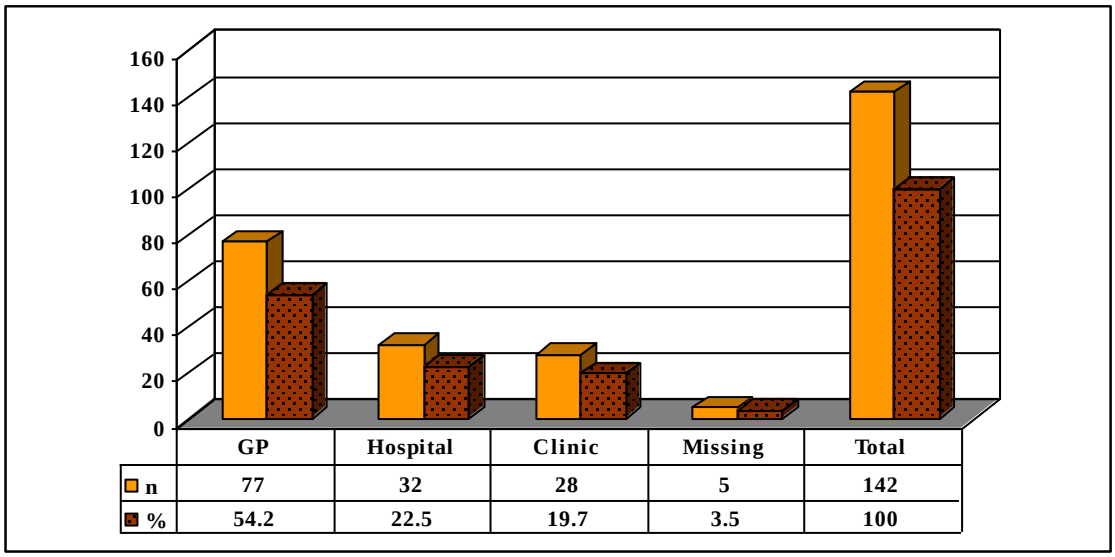
4.2 SOCIAL HISTORY

Respondents were asked to indicate various aspects relative to their social history, which included aspects such as the preferred professional service provider; social habits (alcohol consumption and smoking); family history, exercise and sport, and hobbies.

4.2.1 PROFESSIONAL SERVICE PROVIDERS

The respondents were asked whom they received their medical assistance from. Figure 4.1 indicates the professional service providers who respondents see for the treatment of their general medical conditions. Respondents reported they use their

General Practitioner (GP) (54.2%) or attend Hospital (Day) (22.5%) or Municipal (local community) Clinic (19.7%) to obtain medical assistance. This indicates that 42.2% of respondents rely on the public sector for their medical care, and the majority (54.2%) of respondents prefer to consult their GP.



	GP	Hospital	Clinic	Missing	Total
n	77	32	28	5	142
%	54.2	22.5	19.7	3.5	100

Figure 4.1 Usage of professional service providers for general medical care.

It can be noted from Figure 4.1 that workers who do not have medical aid or insurance cover would be more likely to use either the local Municipal or Community Clinic, the Day Hospital, or specialist hospitals such as Groote Schuur or Tygerberg in the case of the Western Cape. However, treatment at these facilities is generally poor, with the worker having to wait for long periods of time in order to be seen. This is compounded by the fact that the Community Clinics and Day Hospitals work on a 'first-come-first-serve-basis, and as there is a limit on the number of clients seen per day, it is possible that workers may not be seen at all. This could result in 1 or even 2 days away from work - with no pay for temporary workers, on visits that should take a maximum of 1 hour (if they visited their GP). The latter aspect has consequences with respect to adherence with treatment protocols, as the worker is required to visit the facility monthly to receive medication. A further outcome is that the worker loses up to 12 days allocated sick leave benefits (in terms of the BCEA) and that should be available in the event of illness. The aforementioned is likely to be why the majority of respondents

reported a preference to be treated by their GP and pay private patient rates even if not on any form of medical aid or insurance.

4.2.2 ALCOHOL USAGE

Respondents were asked to indicate whether they consumed alcohol, as well as the type, the frequency, and the amount. Although 36.8% of respondents in this study reported that they used alcohol, 28.9% consumed beer over weekends only, and 10.6% consumed beer on special occasions only. An equal number of respondents (28.6%) reported they consumed between 1 to 5 and 6 to 10 glasses of beer per week. Only 1 (0.7%) respondent reported an intake of more than 11 glasses of beer per week. Of those who preferred 350ml bottles of beer, the majority (24.4%) reported that they would drink 6 to 10 bottles. Only 0.7% of respondents reported they consumed wine, with 3.5% consuming wine over weekends only, and a further 3.5% consuming wine on special occasions only. Most of these respondents reported that they would consume between 1 to 7 glasses of wine at a time. A further 5.1% reported they consumed spirits, with 4.3% consuming spirits on weekends only, and 0.7% on special occasions only.

The findings of this study differ from the study undertaken by Smallwood (1997: 199) among members of the MBA (Cape Peninsula), where 48.2% of GCs believed that their workers used alcohol before and during working hours. It needs to be noted that the literature relative to alcohol consumption within the construction industry only deals with the GCs perspective, creating a negative bias in terms of the attitude of management regarding their workers, and the relationship between them. The study by Smallwood did not indicate age categories of workers, and it could be that the alcohol consumption patterns differ between the younger and older worker, with younger workers possibly drinking more frequently.

4.2.3 SMOKING

Respondents were asked to indicate whether and what they smoked, and the frequency thereof. A large percentage (41.8%) of respondents indicated that they smoked, which matches the South African prevalence rate, but is 8% lower than the

prevalence for the Western Cape, where literature indicates that 49.0% of men smoke (Bradshaw et al., 2000: 120, 121). It was determined that 14.8% respondents smoked 6 to 10 cigarettes per day, with 7.8% smoking 11 to 20 cigarettes per day, and 1.6% smoking more than 21 cigarettes per day. Of this number, 4.2% smoked 3 pipes (tobacco) daily.

A total of 1.4% respondents reported that they smoked 3 marijuana cigarettes daily, with 0.7% smoking up to 10 of these cigarettes over the weekend. None of the respondents reported that they used mandrax, or a combination of mandrax and marijuana.

Furthermore, Phoon (2001: 65) reported that recent studies suggested that the risk of having a myocardial infarction (heart attack) is substantially greater between manual and / or unskilled workers, but only marginally greater when they also smoke. This aspect was determined. However, as can be observed from the sample frame (Table 4.1), skilled workers were most likely to be at greater risk. The total research population varies, due to incomplete responses.

Table 4.1 Comparison between occupational categories and smoking habits.

Occupational Category	Do you smoke?				Total	
	Yes (%)	n	No (%)	n	n	(%)
Unskilled worker	45.8	27	49.4	40	67	47.9
Semi-skilled worker	10.2	6	14.8	12	18	12.9
Skilled worker	42.4	25	33.3	27	52	37.1
Site administration	1.7	1	2.5	2	3	2.1
Total	100.0	59	100.0	81	140	100.0

Further to the aforementioned, one (0.7%) respondent, a carpenter or skilled worker, reported that he had been treated for a myocardial infarction (MI) (heart attack) 2 years previously. However, this worker currently did not smoke. It is not known whether this respondent smoked prior to his MI.

4.2.4 FAMILY HISTORY

Respondents were asked to indicate illnesses or diseases amongst parents, inter alia: hypertension; strokes; heart attack; angina; diabetes mellitus; porphyria, and mental illness. A number of respondents reported that their parents had diseases such as hypertension (22.1%) and diabetes mellitus (12.6%). These diseases predominated among mothers, with fathers having a higher incidence of strokes (8.6%). The low level of response to this question could be related to the fact that many of this group could have grown up without their parents (through worker migration), or left home to work and had not maintained regular contact as their parents lived elsewhere. There could be under-reporting with respect to this aspect.

Hypertension and diabetes mellitus are familial diseases according to Coetzee and Pretorius (1997: F1.3). Therefore knowledge of familial diseases is important. Workers who do not know their family history are at a distinct disadvantage with respect to identifying and managing their own potential ill health. Similarly, identifying the potential risk relative to developing hypertension or diabetes mellitus is limited when undertaking the medical history during the medical surveillance, which in itself suggests that there is a need for medical surveillance on an ongoing basis. Adequate health education information provided to the worker at the conclusion of the intervention would link findings relative to family history, BMI, and other results of the medical examination in order to limit this risk.

4.2.5 EXERCISE AND SPORT

Respondents were asked to indicate if they participated in any sporting activities, and if so, the frequency and type of sport. Only 17.4% of respondents reported that they played any sport. Reasons for the lack of physical activity in the form of cardiovascular exercise could be, inter alia, the lack of amenities prevalent in the lower socio-economic areas in all areas in South Africa, because activity decreases with age, and because working hours are long and could be considered almost ‘anti-social’ in nature.

The low rate of activity among respondents supports the literature, specifically activity that is cardiovascular in nature, which is important and should form part of a primary prevention programme (WHO, 2002: 2). The literature also indicates that the construction worker is exposed to both heavy physical labour and static work for long periods of time, often in awkward positions that place the body under stress. This is physically tiring. As the worker ages, there is a decreased likelihood of their playing any form of physical sport after work or over weekends.

4.2.6 HOBBIES AND OTHER ACTIVITIES

Respondents were requested to indicate the type of recreation they were involved with, as well as the type and frequency. Most respondents reported that they would read (82.0%) and watch television (89.9%) daily after work. Weekend activities included working at home (53.5%) and going to church (76.0%). None of the respondents reported any hobbies that potentially could impact on their health, such as shooting or music. However, one respondent (0.7%) reported having worked as a full-time singer and musician for 5 years before entering the industry. Another form of exposure inflicted on workers is noise. This exposure emanates from one of the most common mode of transport in South Africa, namely the minibus taxis that provide transport to the general public from their communities to their place of work. Many employers provide transport from collection points, but workers could still be exposed in many instances.

4.3 OCCUPATIONAL HISTORY

Respondents were asked to list every industry, occupation, and length of service in each occupation since leaving school or home. The occupational history is considered a ‘key’ to the early identification of work-related diseases, and encompasses the workers entire working history and all exposure to actual or potential health hazards during the workers career (Coetzee and Pretorius, 1997: F1.3; Rasmor and Brown, 2001: 351). Each of these sub sections is generally assessed together, although aspects of each are discussed where appropriate.

4.3.1 PREVIOUS EMPLOYMENT HISTORY

The majority of respondents (85.9%) reported they were permanently employed, 13.4% reported they were contractors, and 1 respondent (0.7%) was a sub-contractor. This data indicates that among the contractors that participated in this study the practice to purely employ per contract was not the norm. This finding therefore does not support the literature as cited by Smallwood and Ehrlich (1998: 171), where workers are hired for the term of the contract only. Further to the aforementioned, employment practices could differ according to stage of the project, in that at the time the research was undertaken, the project could have been at an advanced stage of completion.

While most respondents had worked in the construction industry for most of their careers, 18.3% reported they had previously worked in the gold mining industry, with 4.2% having worked underground for different mines on more than 1 occasion. Most mines employ contract labour for a year. In these cases, many of the respondents reported their employment period on the mines between 1 and 12 years. The significance of this relates to the high incidence of mineworkers who have TB and the simultaneous exposure to silica. This form of information is extremely important, as workers could be eligible for compensation in terms of the Mine Health and Safety Act if identified with any of the occupational diseases related to the mining industry. A number of these cases are discussed under the section 'Lower Respiratory Tract'.

Many respondents (40.8%) reported they had worked in industries other than construction, which included: agriculture; food catering; printing; forestry; cold storage; fishing, machine operator in plastic extrusion and bottling, and even working with sewage.

A number of respondents reported that they had worked in construction outside South Africa, namely Saudi Arabia, Congo, Zimbabwe and Mozambique. One respondent reported he had worked on multiple contracts around South Africa, as well as elsewhere in Africa on projects in Sasolburg, Saudi Arabia, Johannesburg, and Cape Town. All workers had worked for between 2 and 7 employers in the construction industry.

This section of the data supports the statements by the Health and Safety Executive (HSE) (2002: 37), in that construction is peripatetic or nomadic in nature and by Smallwood and Ehrlich (1998: 171), who stated that it was traditional to hire workers on a 'project by project' basis and they were not generally regarded as long-term workers.

While the first paragraph dealing with employment status does not support the literature by Smallwood and Ehrlich, the previous paragraph does. This could be as a result of changes in construction employment practice over the 5-year period between 1998 and 2003.

The researcher suggests that the occupational history further assists with identifying whether a current problem is work related or not. It alerts the OHN and medical service provider to where additional physical examination techniques should be employed, and further questioning is required. Therefore it is extremely important that the medical service provider be alerted to all the relevant information regarding the length of service in a particular industry, to further assist with early diagnosis, appropriate management and the correct reporting protocol. Relative to the aforementioned, a full occupational history would be required to accompany any claim to the CC. Many work-related conditions or occupational diseases are not reported to the CC because workers are not aware of these conditions.

The occupational history further provides the OHN with data relating to current illnesses, in assessing workers' risks and counselling needs relative to hazards in the workplace.

4.3.2 PREVIOUS OCCUPATIONAL EXPOSURE

The majority of respondents (93.7%) reported exposure to dust and noise during their entire working history, with 19.7% also exposed to dust, noise and other variables, inter alia, chemicals, paint, stress, welding fumes, cement, asbestos and working at heights. Other combinations of exposures included a combination of dust, noise and

heat. Of this total a relatively small number (13.4%) cited having problems with their ears and hearing.

It is a well-known factor that workers' prior occupational exposure has a direct relationship on their susceptibility to developing occupational diseases relative to the actual condition or substance. This is particularly so especially with continued exposure to the same health hazards, as suggested by Rasmor and Brown (2001: 351) and Koh and Jeyaratnam (2001: 1, 2), who further suggest that occupational diseases occur as a result of exposure to physical, chemical, biological or psychosocial factors in the workplace. Most occupational diseases occur exclusively among workers who are exposed to specific hazards, inter alia: silica; noise and other physical stressors raising the risk of NIHL; respiratory diseases, and musculo-skeletal disorders.

4.3.3 LENGTH OF SERVICE

Respondents were asked to indicate their length of service both in and out of the construction industry. This aspect is used to determine the potential effect of exposure to a particular risk, for example, noise. Although noise levels or the testing of hearing were not examined in this study, 93.7% of workers reported exposure during the history taking. Therefore length of exposure to noise could be deemed extremely important. Figure 4.2 indicates the categorization of years of work undertaken in the construction industry. Only 1 worker (0.7%) had worked in the industry for between 31 and 35 years, with only 6.4% having more than 26 years of service. Findings indicate that the mean number of years service in the construction industry were 22.1 years, the median 22.7 years. The mean number of years in terms of length of service with current employer was 4.8 years, and the median, 5 years of service. The 'valid' responses are those that are included in the statistical analysis after adjustment of missing fields.

Table 4.2 Length of employment in construction.

		Yrs employed in construction (categorization) (current employer)	How many years and/or months have you worked in the construction industry?
n	**Valid**	141	141
	Missing	1	1
Mean		4.8	22.1
Median		5.0	22.7

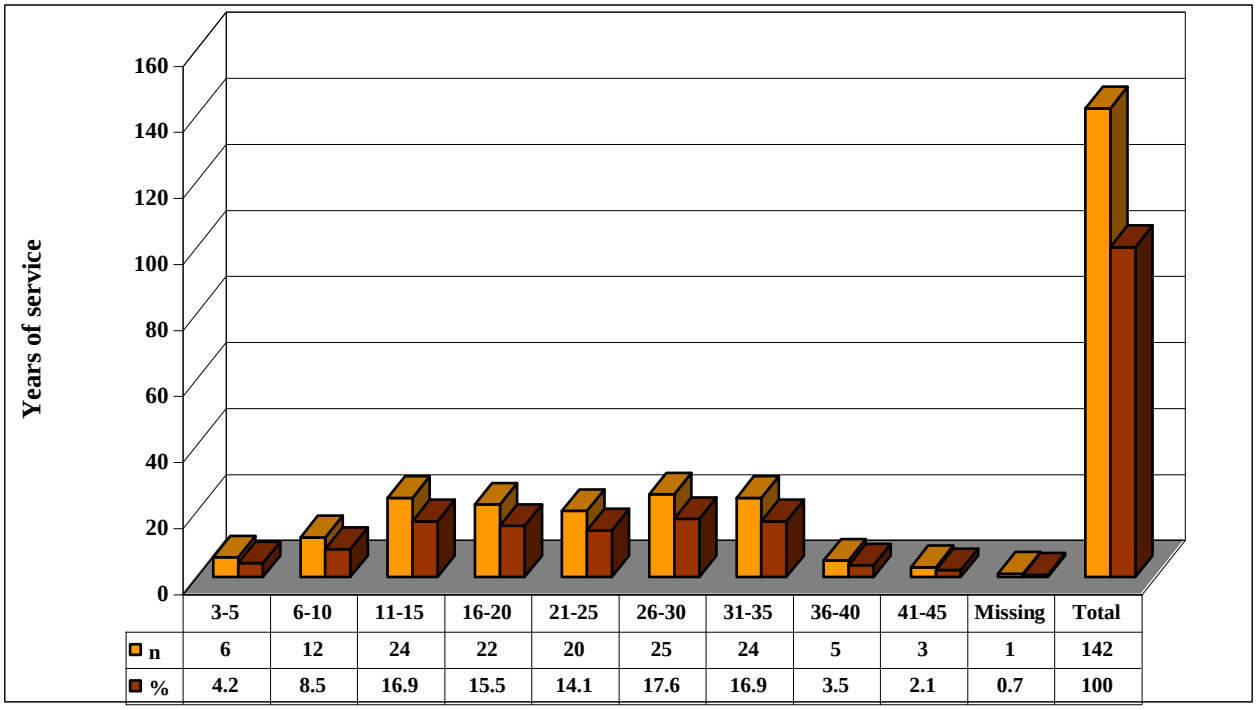
Table 4.3 indicates the positive correlation relative to the number of years worked in the construction industry. This further supports the suggestion that medical surveillance is necessary to determine the employer's risk relative to the worker having a condition that could be deemed an occupational disease such as NIHL. It was noted that of the total sample, 43.7% respondents had never worked in any other industry. The correlations are determined excluding missing fields.

Table 4.3 Correlation between total years worked and years employed.

		How many years and/or months have you worked in the construction industry?	Yrs employed in construction (categorization) (current employer)
How many years and/or months have you worked in the construction industry?	Pearson Correlation	1	.989**
	Sig. (2-tailed)		.000
	n	141	141
Yrs employed in construction (categorization) (current employer)	Pearson Correlation	.989**	1
	Sig. (2-tailed)	.000	
	n	141	141

** Correlation is significant at the 0.01 level (2-tailed).

Figure 4.2 indicates the percentage of respondents with respect to length of service or years employed in the construction industry. There is a substantial increase in service between 6 to 10 and 11 to 15 years of service and a sharp decline after 35 years of service. These factors could be attributed to, inter alia, a lack of younger workers entering the industry, or that workers feel they cannot do the work anymore and leave either from ill-health or the inability to undertake the work anymore.



	3-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	Missing	Total
n	6	12	24	22	20	25	24	5	3	1	142
%	4.2	8.5	16.9	15.5	14.1	17.6	16.9	3.5	2.1	0.7	100

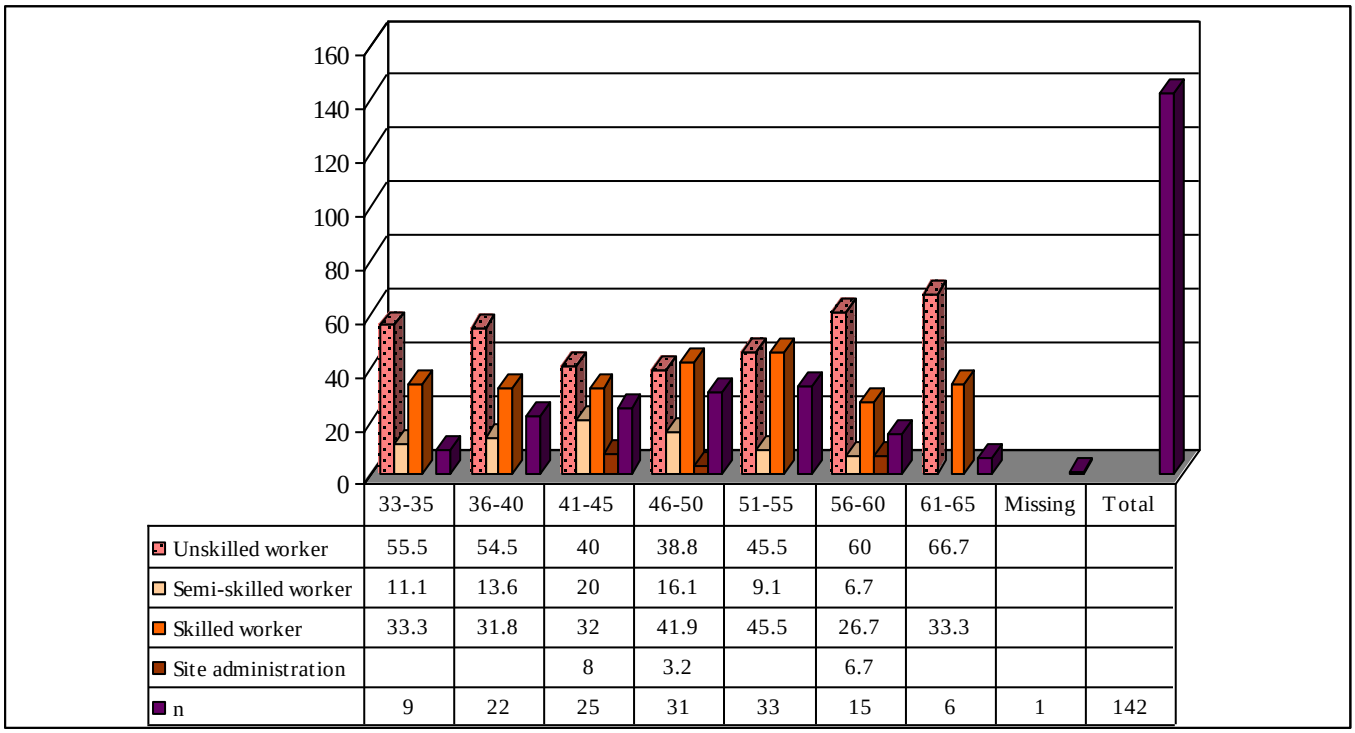
Figure 4.2 Categorisation of years worked in the construction. industry.

Certain occupational diseases, such as asbestosis and silicosis are known to take up to 20 years before symptoms develop, as noted in the previous subsection on occupational history and exposure. Noise induced hearing loss (NIHL) however, can occur after continuous noise exposure without the wearing of hearing protection after 30 days. Given the number of respondents who had reported exposure to noise and dust and the length of service specifically in the construction industry, it is possible that 56.3% of the sample frame could have joined their current employers with some level of NIHL. This increases the risk of financial loss to the employer, as once NIHL is diagnosed, the CC could load the annual premiums payable.

4.3.4 OCCUPATIONAL CATEGORIES OF RESPONDENTS

Figure 4.3 indicates the occupations categorised according to skills level. This categorisation is most frequently used in the construction industry. It indicates the cumulative occupations and the percentage of respondents undertaking such work, of which the general worker (38.3%) predominated. Examples of unskilled workers

included, for example: general labourers; scaffold erectors; pipelayers and cleaners; semi-skilled workers included storemen; drivers and team leaders; skilled workers included carpenters; bricklayers and plasterers, and welders, and workers classified as site administration included draughtsmen and site managers.



	33-35	36-40	41-45	46-50	51-55	56-60	61-65	Missing	Total
Unskilled worker	55.5	54.5	40	38.8	45.5	60	66.7		
Semi-skilled worker	11.1	13.6	20	16.1	9.1	6.7			
Skilled worker	33.3	31.8	32	41.9	45.5	26.7	33.3		
Site administration			8	3.2		6.7			
n	9	22	25	31	33	15	6	1	142

Figure 4.3 Categorisation of Workers by age group and occupation.

On further analysis there was no correlation between age and occupation. Unskilled workers make up the greater percentage across most of the age categories, except for skilled workers in the 46 to 55 year age group. These groups are the 'driving force' and the backbone of the construction industry, considering the work they perform. This situation is cause for concern considering the specific risks that relate to the age group, namely heart disease, specifically hypertension potential myocardial infarction and cerebro-vascular accidents (Bradshaw et al., 2000: 111). Furthermore the physical ability of the worker declines with age. Given the low physical activity level, the smoking and alcohol usage, the potential risk of such an occurrence is significantly increased.

4.4 DEMOGRAPHIC INFORMATION

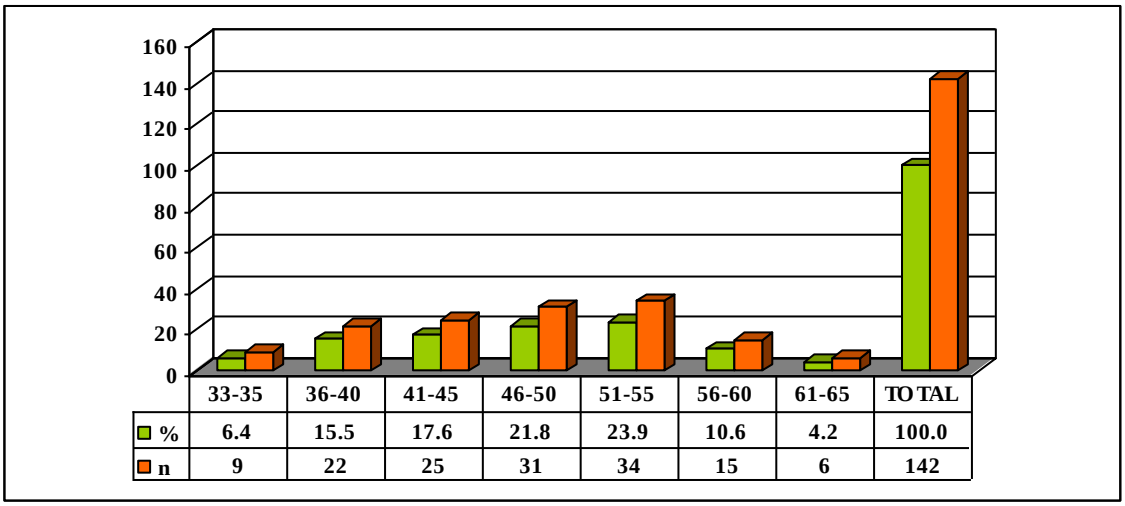
Demographic information collected included the marital status of the respondents and the number of children they had, the age of respondents, occupation and their educational background.

4.4.1 MARITAL STATUS AND DEPENDENTS

Most respondents reported that they were married (83.7%), 15 were single (10.6%) 6 divorced (14.5%), and 2 (1.4%) were widowers. A total of 24.6% reported they had 2 children, while 21.1% had 3. This indicates a fairly stable situation relative to family life; possibly as older workers are likely to have a different approach to the marital relationship.

4.4.2 AGE

Figure 4.4 indicates the age categories of the respondents who participated in the study. The greater percentage (51.1%) was between 46 and 65 years of age. The mean age of respondents was 47.8 years, and the median 49.0 years. Given the age profile of respondents, and the intimation by Bradshaw et al. (2000: 111), relative to the risk of stroke, ischaemic heart disease, diabetes mellitus and cancers among people in the 45 to 59 year age group, the potential risk relative to the respondents should be noted.



	33-35	36-40	41-45	46-50	51-55	56-60	61-65	TOTAL
%	6.4	15.5	17.6	21.8	23.9	10.6	4.2	100.0
n	9	22	25	31	34	15	6	142

Figure 4.4 Age categories of workers.

Table 4.4 indicates that the correlations between 'occupational categories' and 'Years employed in construction' is positively significant at the 0.05 level, and 'level of education' and 'age category' reported is negatively significant at the 0.01 level. The correlations are determined excluding missing fields where applicable.

There is no relationship between age, occupation and education, but a strong relationship between age and the number of years employed in a particular category of work. This would indicate that there is a greater possibility of a worker aging in a particular category. The workers' occupational category is strongly associated with the level of education and also the number of years employed in a particular category; for example, workers with lower levels of education would most likely remain in the unskilled or semi-skilled categories.

Table 4.4 Correlations between occupation, age, education and employment.

		Age Category	Occupational Category	Indicate with an X your level of education	Yrs employed in construction (category)
Age Category	Pearson Correlation	1	.006	-.278	.565**
	Sig. (2-tailed)	.	.945	.001	.000
	n	142	141	142	141
Occupational Category	Pearson Correlation	.006	1	.438**	.184*
	Sig. (2-tailed)	.945	.	.000	.030
	n	141	141	141	140
Indicate with an X your level of education	Pearson Correlation	-.278	.438	1	.001
	Sig. (2-tailed)	.001	.000	.	.994
	n	142	141	142	141
Yrs employed in construction (categorization)	Pearson Correlation	.565**	.184*	.001	1
	Sig. (2-tailed)	.000	.030	.994	.
	n	141	140	141	141

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

4.4.3 EDUCATION AND QUALIFICATIONS

Respondents were asked to indicate their level of education, post school qualifications or training. The greater percentage of respondents (42.3%) had a maximum of Standard 5 or Grade 7 education, followed by 28.9% with Standard 7 or Grade 9. Only 1.4% had obtained Grade 12 or Standard 10. While this information may not have any bearing on the outcome of the medical it contextualises the situation of the worker and his/her most probable socio-economic circumstances. This information assists with the type of information provided during any health promotion undertaken during the intervention. For example, the OHN would provide workers with appropriate literature in order to promote understanding.

4.5 MEDICAL HISTORY AND PHYSICAL EXAMINATION

The findings of the medical history and physical examination and discussion are presented together where possible. The discussion includes a comparison with the literature provided.

4.5.1 THE DERMATOLOGICAL SYSTEM

Workers were asked whether they had ever experienced skin problems, such as sores or rashes. Only 9.2% of the respondents reported they had experienced skin problems during the history taking, reported in Figure 4.5. Most of these respondents had visited their doctor or local clinic for treatment. The respondent identified with skin cancer had been receiving care since 1983. One respondent reported he had been treated for skin cancer in 1983. He was categorised as a skilled worker and his occupational history revealed that he had worked in the printing industry for 15 years, had his own clothing business for 9 years and had been working as a painter for a total of 23 years. On examination, 11.1% of respondents were identified with having minor skin problems.

The literature discussed a study conducted on behalf of the National Center for Health in the United States, where it was found that nearly one-third of the sample frame examined, had evidence of skin pathology that would have required evaluation at least once. In comparison, this study indicates that 14.1% of the population had some form of minor skin problem, while 9.2% reported they had or had experienced skin problems that required treatment. Of these, 1 (0.7%) respondent had treated himself. A doctor or the local clinic had treated all the others. The findings do, however, concur with the statement by Todd and Carman (2001: 359) that dermatological disease rarely causes serious illness, as most of these problems could be considered not to be serious, but could reduce worker efficiency if not adequately treated.

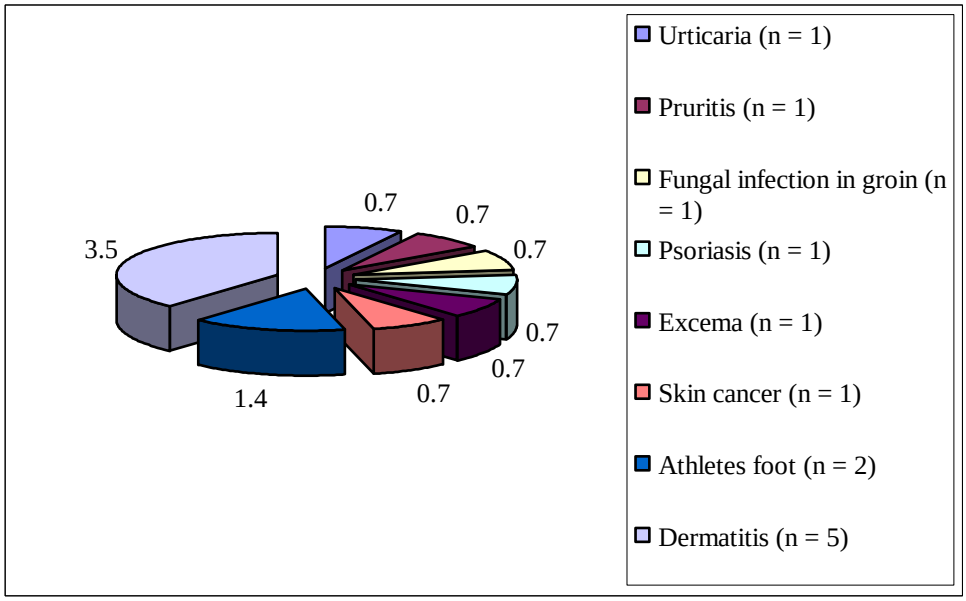


Figure 4.5 Manifestation of dermatological problems.

It was established that 34.5% of respondents worked with cement and concrete on a daily basis. However, in terms of the findings, there had been no diagnosed dermatitis as a result of this work, as was the case in the literature.

Davies and Rycroft (1995: 102), and Todd and Carman (2001: 359) stated that the distinction between occupational and non-occupational dermatoses (termed eczema or dermatitis) is difficult, largely because the similarity of the clinical appearances of these conditions. Figure 4.3 indicates that 4.2% of the respondents reported they had either had eczema or dermatitis. On investigating whether these conditions could be work related or not it was found that 3 (2.1%) of respondents had worked as bricklayers or plasterers, and had worked with cement products. Other respondents' occupational exposure included scaffold erection, driving, painting, carpentry and welding. A carpenter reported he had eczema. The respondent who had psoriasis undertook cutting and welding. It could well be that some of the related working conditions and occupational exposures could exacerbate existing or cause such conditions.

4.5.2 THE CARDIOVASCULAR SYSTEM

A number of questions were asked regarding the cardiovascular system during the taking of the medical history, as reported in Figure 4.6.

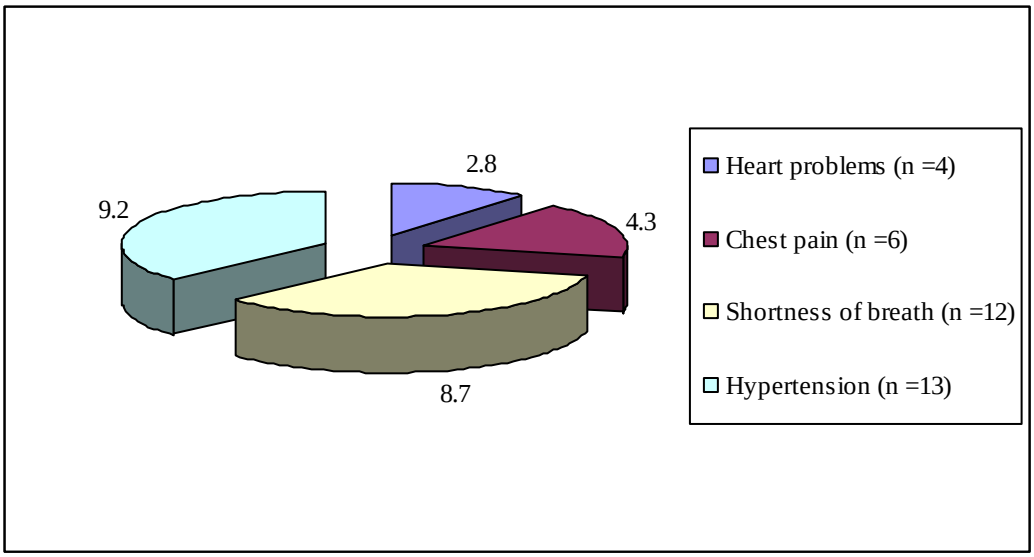


Figure 4.6 Cardiovascular problems identified from the medical history.

The majority of the workers (74.7%) were identified having 'normal' blood pressure. However, Figure 4.6 indicates those who had readings above 140/90 mm Hg, the level known to cause target organ damage (Capriotti, Kirby and Smeltzer, 2000: 338 and SmithKline Beecham, 1999: 74).

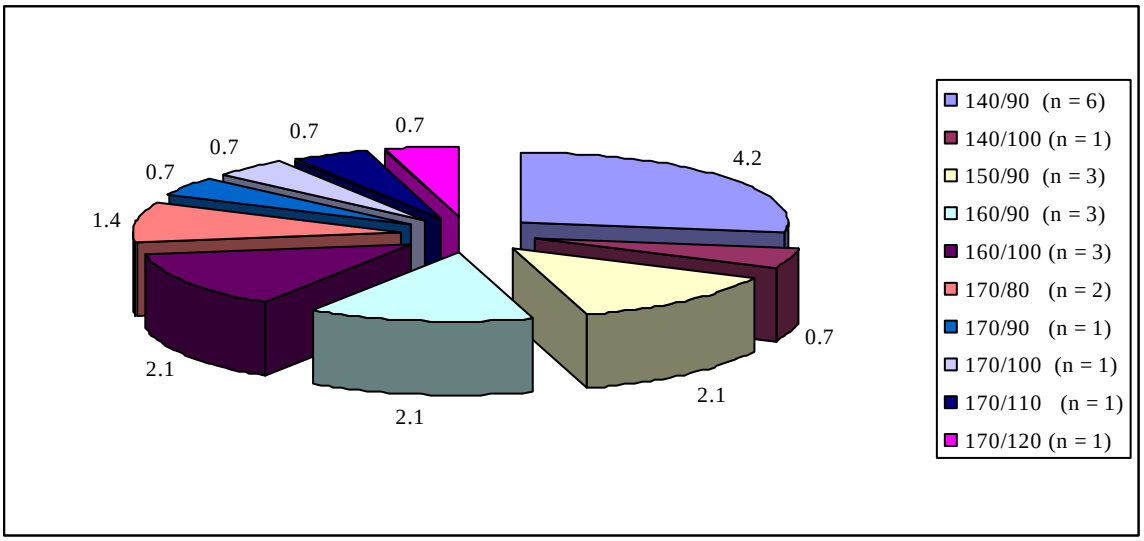
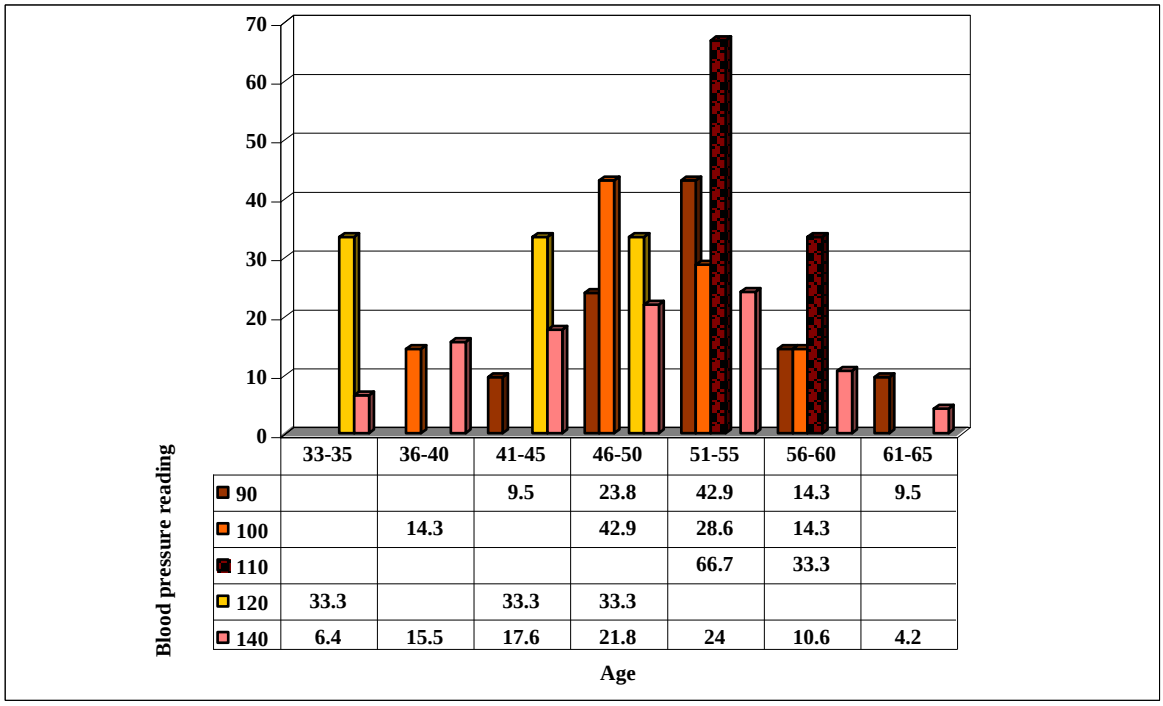


Figure 4.7 Workers identified with blood pressure readings of 140/90 and above.

The number of respondents that were found to have increased blood pressure readings (25.3%) is slightly lower than the findings of Volker et al., (1996: 686-689) and Bradshaw et al., (2000: 111) where nearly a third of all of the males examined during the initial phase of their study had an increased diastolic blood pressure of greater than 95mm Hg. Figure 4.8 indicates the ages of respondents with respect to the diastolic (bottom reading) readings between 90mm Hg and 140mmHg. Percentages are totals within each diastolic category. It can be noted that most of those that were identified as requiring referral, were in the 44 to 55 year age group.



	33-35	36-40	41-45	46-50	51-55	56-60	61-65
90			9.5	23.8	42.9	14.3	9.5
100		14.3		42.9	28.6	14.3	
110					66.7	33.3	
120	33.3		33.3	33.3			
140	6.4	15.5	17.6	21.8	24	10.6	4.2

Figure 4.8 Diastolic readings by age category.

Postural hypotension (low blood pressure) is referred to in the literature. It was found that 12.1% of respondents could fall into this category (blood pressure readings with a systolic reading below 100mm Hg). Hypotension can result from certain drugs used to treat hypertension, resulting in giddiness and tiredness and limited effort-tolerance. Work that requires frequent postural changes may prove problematic due to altered central and peripheral vascular responses, similar to the response experienced when standing up too quickly from the kneeling position. Very heavy physical work and exposure to very hot conditions with high humidity may prove dangerous because of the associated accidental risk (Baxter and Petch, 1995: 268, 270, 280).

4.5.3 BODY MASS INDEX (BMI)

The height and weight of each respondent was measured without shoes, using a tape measure and bathroom scale. Findings are reflected as the BMI to determine whether the respondent is healthy or obese. Table 4.5 indicates the distribution of the BMI. The majority of respondents fall into the 'healthy' (19 to 25) category, which is normal. However, 32.4% fall into the 'obese' (26 to 30) range.

Table 4.5 Distribution of BMI.

BMI Category	n	Frequency (%)
Underweight (≤18)	11	7.7
Healthy (19-25)	70	49.3
Obese (26-30)	46	32.4
Extremely obese (31-40)	15	10.6
Total	142	100.0

It was noted in the literature that the BMI is an important measure to determine disease profiles among workers, such as TB and AIDS, which both have weight loss as symptoms (Coetzee and Pretorius 1997: Fl.5). Other reasons cited were relative to specific work, especially where heat, heavy physical effort and mobility are required (Kew and Ehrlich, 2001: 414).

With respect to the development and management of chronic non-occupational diseases, it is well known that the diagnosed diabetic is generally obese, as are the hypertensive workers. Therefore the BMI is required to determine risk of developing such diseases along with other variables such as age, activity and previous medical or surgical history.

4.5.4 THE RESPIRATORY SYSTEM

Respondents were asked about problems with their ears, nose, throat, which are covered in the section on the upper respiratory tract. Other questions regarding diseases or conditions that affect the lower respiratory tract included whether respondents had previously had TB, asthma, lung problems, or been coughing for 2 weeks or more. The findings and discussion relative to the respiratory system are covered separately.

4.5.4.1 THE UPPER RESPIRATORY TRACT

A total of 4.3% respondents reported previous throat problems. On physical examination only 2.1% had physical symptoms, such as a ‘yellow post nasal drip’, sinusitis, and problems with breathing at night.

A total of 13.4% respondents reported dental problems, 9.9% reported having dentures while the remainder were either missing teeth, were edentulous, or needed dental care. The lack of good dental hygiene and teeth is a common problem among the lower socio-economic groups, mainly due to the lack of dental facilities available in the public sector and the lack of medical aid or insurance, which would cover the cost of regular visits and treatment. This may have precipitated a culture of extraction rather than repair among Coloured, Muslim and Black workers, as not many have dentures. If they had any, they did not wear them to work. Poor dental hygiene can affect those with heart disease and the general wellbeing of workers, since dental caries can become a reservoir of infection. Workers with no teeth may have difficulty with mastication, which could limit their intake of fresh fruit and vegetables. This could add to the possibility of obesity from eating easily available soft food such as bread, fried fish and chips, or only traditional food such as samp (maize and red beans). Both of the aforementioned aspects contribute to the development of cardiovascular disease and diabetes mellitus.

A total of 12.9% workers reported they had problems with their ears. The physical otoscopic examination revealed that 17.7% of respondents had problems. Problems identified from the examination included wax in either 1 or both external ear canals (12.6%); perforations of the tympanum (3.5%); 2 (0.14%) had ear infections, of which 1 (0.7%) was ultimately referred with otitis media (infection of the external ear canal), and 1 (0.7%) had scarring on the ear drum, probably due to a previous perforation. Aspects noted from the positive answers included problems that were unresolved, deafness from infection and meningitis, 'leaking ear' and ongoing infections. One respondent reported that his ears had been tested 2 years previously, but no result was provided.

The literature reported that certain disorders of the ear could affect the workers fitness for work in various ways, including hearing difficulty, tinnitus, ear discharge and balance disturbances. It was notable that none of the respondents complained of tinnitus or balance disturbances, but certainly loss of hearing, discharge and difficulty with hearing.

With respect to infection of the ear, the literature indicates that ear discharges are common from bacterial or fungal otitis media or otitis externa, with some forms of otitis externa being closely aligned with an eczematous dermatitis. Otitis media can further cause both a conductive and sensorineural loss, which affects the ability to hear similar to the description provided in the following paragraphs (Sinclair and Coles, 1995: 61). Perforations of the eardrum are generally caused by untreated otitis media and will result in loss of hearing. Wax in the external ear canals is normal, but can occlude the canal, affecting the ability to hear.

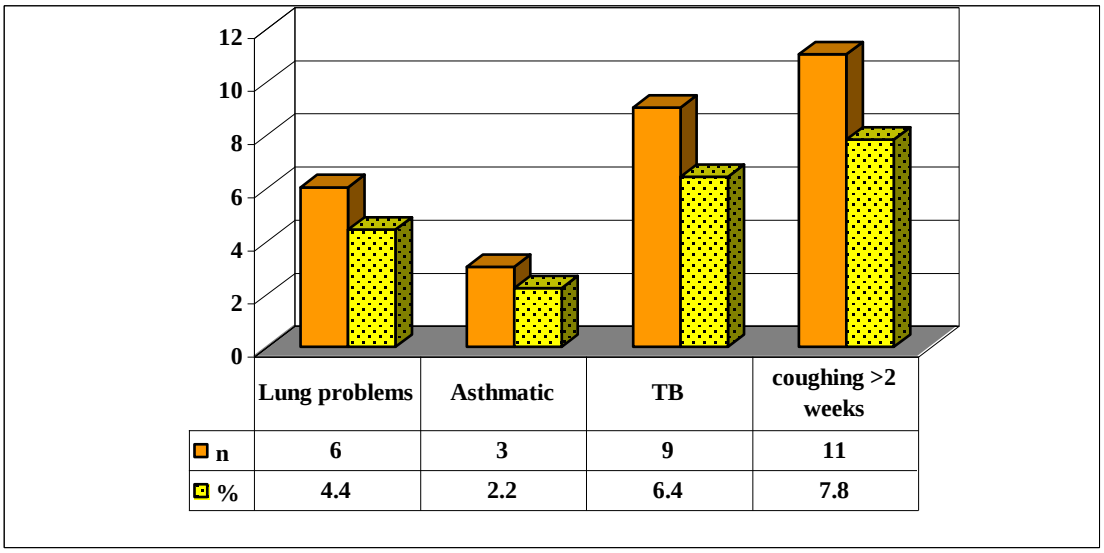
The literature further reported that workers who suffered from hearing loss, either congenitally or occupationally might not be suited to tasks where good communication is a pre requisite. For example, the banksman is required to operate radios to communicate with crane drivers. This may well affect the safety of the affected worker and place their colleagues at risk. This is because of the frequencies at which the hearing loss affects the workers speech areas and specific sounds, such as 'p' and 't' are generally heard at these frequencies. The practical aspect of this is that the worker who has NIHL cannot hear these sounds when the background noise is raised to about 85 dBA and cannot determine if the word shouted was 'stop' or 'start' as what they will hear is 'sto' or 'sta'. Consequently, an unsafe working environment or situation may arise as a result of the worker not being able to hear the precise words. However, given the aforementioned, there are very few cases in general industry where the hearing loss causes a severe enough disability to preclude employment.

4.5.4.2 THE LOWER RESPIRATORY TRACT

Figure 4.9 shows the various problems reported by respondents relative to the lower respiratory tract. Most of the workers were found to have a normal respiratory system, with only a very small percentage having major abnormalities of the lung (0.7%).

Scarisbrick and Hendrick (1995: 289, 290) suggest that asthmatic workers may need to be protected, of the 3 workers who identified themselves as asthmatic, 1 reported having been on regular medication from the clinic, had been infected with TB in 1983,

and has increased asthmatic episodes in winter. This worker had also worked on underground mines in Johannesburg for 3 years, then as a construction painter for 9 years, and has been working with carpenters for the past 22 years. The 2nd worker, a painter, attended the Community Health Centre, and complained of constant shortness of breath, for which he used a pump and 'small white tablets'. The 3rd respondent stated he had asthma as a child, and was not using any medication. He now works with waterproofing materials. All 3 respondents were referred to Day Hospitals for further investigation.



	Lung problems	Asthmatic	TB	coughing >2 weeks
n	6	3	9	11
%	4.4	2.2	6.4	7.8

Figure 4.9 Incidence of lower respiratory tract infections.

The Western Cape Province has an annual risk of TB infection of greater than 3%. None of the respondents reported that they were currently receiving treatment for TB. As the risk of annual TB infection among gold miners is approximately 10% and 19.7% of workers reported that they had worked in the mining industry, it was noted that only 2 (1.4%) of the 3 (2.1%) workers had been infected with TB while working on the mines.

A significant number (7.8%) of respondents indicated that they had been coughing for more than 2 weeks. Any cough that persists for more than 2 weeks should be considered pathological and should be investigated. Correlation of the variables relative to lower respiratory tract infections reported a significant relationship between those coughing for more than 2 weeks, and those who had previously had TB and a

significant relationship between those who had asthma and previous TB, as evidenced from Table 4.6 in support of the literature.

Table 4.6 Correlation of lower respiratory tract conditions identified.

		Coughing for more than two (2) weeks?	Bronchitis?	TB?	Asthma?
Coughing for more than two (2) weeks?	Pearson Correlation	1	.151	.249**	.150
	Sig. (2-tailed)	.	.074	.003	.077
	n	142	141	142	139
TB?	Pearson Correlation	.249**	-.038	1	.192*
	Sig. (2-tailed)	.003	.650	.	.023
	n	142	141	142	139
Asthma?	Pearson Correlation	.150	-.022	.192*	1
	Sig. (2-tailed)	.077	.796	.023	.
	n	139	138	139	139

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

4.5.5 THE GASTRO-INTESTINAL TRACT/ABDOMEN

A total of 21.1% of respondents reported gastro-intestinal and abdominal problems; 11.3% respondents reported they had had gastro-intestinal problems during the recording of their medical history, which included dyspepsia, bloating, ulcers, cramps with eating, a poisoning, constant discomfort, and gastritis. A further 8.5% reported having had surgery as reported in figure 4.10. One (0.7%) respondent reported having had a hernia repaired as a result of an injury on duty and now required further surgery while 2 (0.14%) had been hospitalized with stomach problems. A further 2.1% of respondents required repair of inguinal and umbilical herniae in combination with abdominal obstruction (possibly as a result of the hernia) and an appendicectomy. Inguinal and umbilical herniae can occur as a result of heavy physical work and can have very serious consequences, namely twisting of the bowel, or abdominal obstruction that can lead to gangrene of the bowel. Herniae and dyspepsia are also exacerbated in workers who are obese, or have large abdomens. No abnormalities were identified during the physical examination.

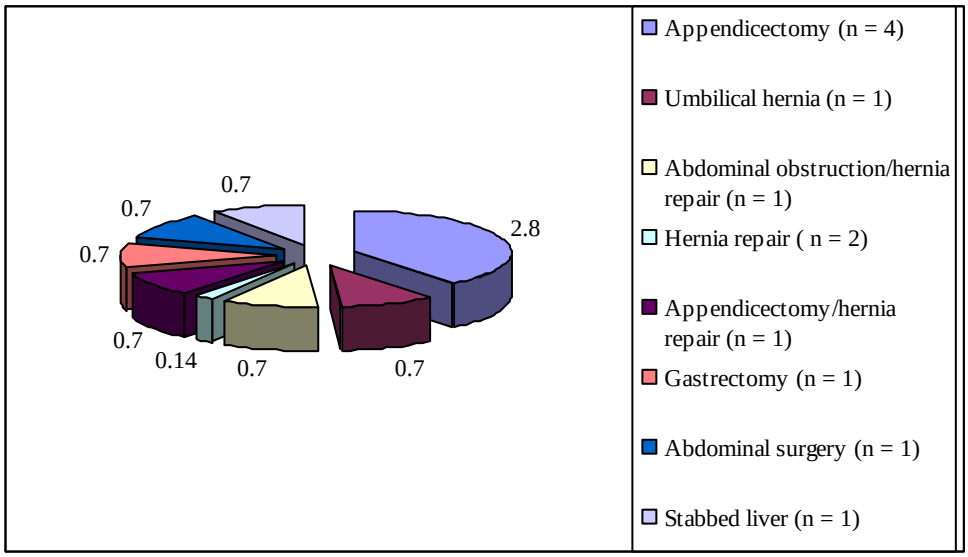


Figure 4.10 Surgical history relevant to the abdomen.

The findings support the literature (Aw and Harrington, 2002: 280, 282) with respect to the presence of inter alia: peptic ulceration; oesophageal reflux, and hernias. These can be seen to have affected many workers, as evidenced from the medical and surgical history. The literature also notes that excessive alcohol; smoking and chronic use of aspirin can cause gastritis. One (0.7%) respondent reported that his gastric discomfort was as a result of alcohol intake. Only 1.4% respondents reported they used regular medication for their stomach problems. A number of respondents (7.7%) specified that they take anti-inflammatory medication on a daily basis, with a further 5.6% indicating they take pain tablets on a regular basis. Anti-inflammatory and pain medication is known to irritate the lining of the stomach and has the potential to cause gastric ulceration, or indigestion. The appropriate education is required to be given, such as that this type of medication must be taken with food to prevent gastric mucosal irritation.

Only 1 (0.7%) respondent reported having worked with sewage, another area where there is believed to be a higher prevalence of gastro-intestinal disorders. However, the respondent had no history of abdominal problems. Table 4.7 suggests that no relationship exists between respondents' age, occupational category and the presence of abdominal pain reported.

Table 4.7 Correlation between age, occupation and abdominal problems.

		Age Category	Problems with your stomach?	Occupational Category
Age Category	Pearson Correlation	1	.020	.006
	Sig. (2-tailed)	.	.809	.945
	n	142	142	141
Problems with your stomach?	Pearson Correlation	.020	1	-.041
	Sig. (2-tailed)	.809	.	.629
	n	142	142	141
Occupational Category	Pearson Correlation	.006	-.041	1
	Sig. (2-tailed)	.945	.629	.
	n	141	141	141

4.5.6 THE GENITO-URINARY TRACT

Respondents were asked whether they had experienced any kidney or bladder problems, dysuria (difficulty in passing urine), any venereal disease (VD) and also whether they had been tested for HIV and AIDS. Questions relating to the endocrine system included previous history of glycosuria and whether they had ever had jaundice. These 2 aspects are covered under this section because the urine test can identify problems relative to the liver and pancreas, the organs that are affected by these diseases.

Testing of the urine was undertaken using a commercially available strip that measures 10 different substances that would not normally be excreted in the urine. Each of the substances could indicate disease or infection in one or other system. For example the presence of leukocytes and blood could mean infection of the bladder or kidneys. The abdomen was inspected and examined, but inspection of the genitalia was excluded.

No abnormalities were identified during the examination of the workers abdomen. Results of the urine test reported that 43.2% of the workers had abnormal readings. These abnormalities and their related prevalence are listed in table 4.8.

Of the 11.3% respondents who reported that they had bladder or kidney infections with 68.8% of these unresolved, 10.6% had dysuria, and 4.2% had been treated for sexually transmitted infections or venereal disease, with a significant 50.0%

of the latter indicating their problems as unresolved. One respondent (0.7%) reported he was impotent. A total frequency of 15.7% had been tested for HIV and AIDS with 7.0% having been tested in 2002 and 2 (0.14%) indicating they had never received their results.

The relationship was examined between the questions asked about previous problems with the bladder or kidneys, urinating, HIV and AIDS testing and the results of the dipstix test undertaken on the respondents. The results of this examination are reflected in Table 4.8, which indicates a strong correlation between those who reported bladder and kidney problems and problems relative to urinating. This is to be expected, because if infection is present, the signs and symptoms would include dysuria. There is a negative correlation between those who stated they had bladder and kidney problems, and those who stated they had dysuria with the results of the urinalysis. This would suggest that there was no pathology or underlying infection amongst this group, or that there was a group of respondents who were unaware they had problems, or that the problems were not related to bladder or kidney disease. This is in line with the literature, which indicated that products, for example urobilinogen, if found in the urinalysis are related to liver disease and not to the genito-urinary tract.

There was no relationship between those who had VD or HIV and AIDS testing and those who had experienced bladder and kidney infections, or problems passing urine. It is possible that those respondents who were identified with abnormal results had not had any previous infections, or were amongst a different group. The results in no way suggest that if tested for HIV and AIDS they would be negative. This study did not do any form of testing for HIV and AIDS, and abnormal urine results would alert the health professional to the appropriate referral for further testing.

Table 4.8 Correlation between medical history of urinary tract and urine testing.

		Problems with bladder or kidney infections?	Problems passing water?	VD (drop)?	Have you ever been tested for HIV & AIDS?	Special Investigations: Urinalysis
Problems with bladder or kidney infections?	Pearson Correlation	1	.253**	.034	.027	-.178*
	Sig. (2-tailed)	.	.003	.688	.757	.038
	n	139	138	139	137	136
Problems passing water?	Pearson Correlation	.253**	1	.058	-.024	-.223**
	Sig. (2-tailed)	.003	.	.493	.781	.008
	n	138	141	141	139	138
VD (drop)?	Pearson Correlation	.034	.058	1	.006	-.012
	Sig. (2-tailed)	.688	.493	.	.948	.890
	n	139	141	142	140	139
Have you ever been tested for HIV & AIDS?	Pearson Correlation	.027	-.024	.006	1	.028
	Sig. (2-tailed)	.757	.781	.948	.	.745
	n	137	139	140	140	137
Special Investigations: Urinalysis	Pearson Correlation	-.178*	-.223**	-.012	.028	1
	Sig. (2-tailed)	.038	.008	.890	.745	.
	n	136	138	139	137	139

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Glycosuria is commonly the result of hyperglycaemia in the diabetic worker, or if the blood glucose levels are normal, could indicate renal disease. The 2 (1.4%) respondents who reported they had been previously identified as having glucose in their urine had abnormal readings, one with glucose and one with protein. A total of 3 (2.2%) of respondents were found to have glucose on the urine test, which indicates that the one individual who had previously possibly thought or had been told he had diabetes mellitus, more than likely did not. The glycosuria could have been from either excessive alcohol, or starch intake the previous evening. The finding indicates that there was the possibility of 2 (1.4%) new diabetics identified in the sample frame.

Urobilinogen found in the urine is indicative of mild liver disease. However, bilirubin in the urine is indicative of early liver disease such as acute viral hepatitis (Merck, 1999c: 2). A number of respondents (4.93%) were identified to have bilirubin and urobilinogen, products excreted from the liver, which could indicate the presence of underlying liver disease.

Table 4.9 Results of urine analysis using Dipstix.

Results from Urine Analysis (Dipstix)	n	No. of Workers (Valid %)
Normal	78	56.1
Glucose	3	2.2
Protein	20	14.4
Blood	10	7.2
Protein + blood	9	6.5
Leucocytes	4	2.9
Nitrates	1	0.7
Bilirubin	1	0.7
Urobilinogen	2	1.4
Ketones	1	0.7
Blood + leucocytes	2	1.4
Protein + ketones	1	0.7
Blood + urobilinogen	1	0.7
Protein + leucocytes	2	1.4
Protein + urobilinogen + blood	1	0.7
Protein + blood + leukocytes	1	0.7
Protein + urobilinogen	1	0.7
Leukocytes + urobilinogen	1	0.7
Missing	3	
Total	100.0	100.0

Haematuria may indicate renal or prostatic disease. Haematuria with dysuria is usually associated with bladder infections. None of the respondents reported prostate problems. Protein was identified in 14.0% of the urine tests and in terms of the literature, it is found in most renal pathology, but may also be incidental. Protein is not pathological or serious unless found on a regular basis when testing the urine. Ketones are present if the worker has not eaten for some time, due to starvation or fasting, in uncontrolled diabetes mellitus, and sometimes if the worker has recently been under the influence of alcohol. The presence of ketones is not related to any renal diseases. The presence of leukocytes in the urine test suggests bacterial infection anywhere in the body, with the presence of nitrates indicating bacteria in the bladder (Merck, 1999c: 5, 6).

The findings regarding number of respondents with urinary tract problems is in line with literature, where Bradshaw et al., (2000: 115) report that the findings of the South African Demographic and Health Survey undertaken in 1998 indicated that 12%

of men reported they had experienced painful urination in the previous 3 months. The literature also indicates that a number of positive findings in the urine test may or may not indicate the presence of underlying hypertension, diabetes mellitus, and bacterial infections, often with no symptoms. Findings are not considered serious unless there is an underlying anatomical abnormality (Bradshaw et al., 2000: 115; Veys and Gokal, 1995: 309, 311; Merck, 1999b: 2). The combinations of the results obtained further supports this.

4.5.7 CENTRAL NERVOUS SYSTEM

Respondents were asked whether they were epileptic, ever been unconscious or suffered from headaches or migraines. No abnormalities were detected in the central nervous system (CNS) during the examination. The findings during the history taking relative to the CNS follows.

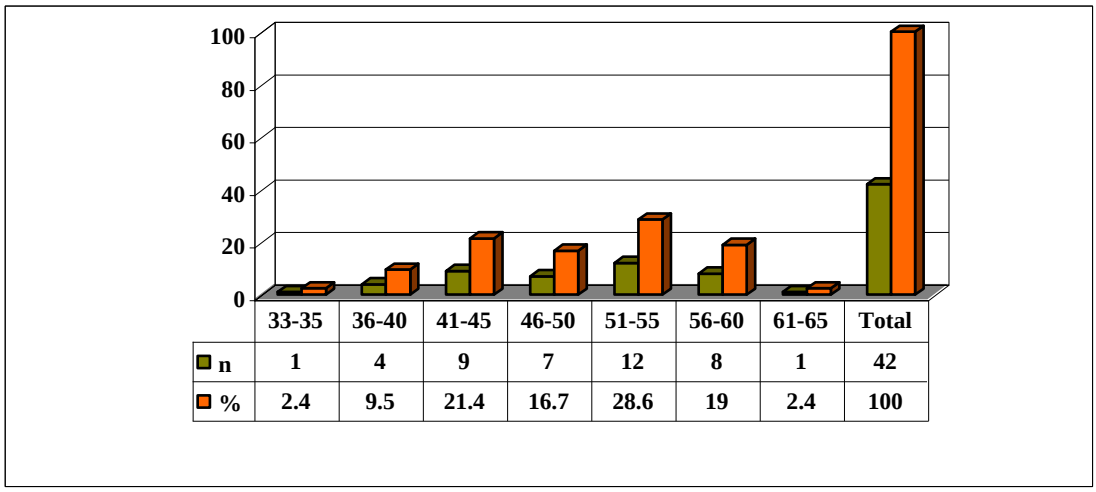
Only 2 (1.4%) of respondents reported they were epileptic, with 2.9% indicating that they had been unconscious. The respondents who reported they were epileptic were general workers, one of which had worked in the industry for 6.9 years and the other for 28.3 years. None of these respondents had ever experienced head injury or been diagnosed as hypertensive nor had they smoked, which, according to the literature, are conditions known to be common causes of adult onset. As neither of these respondents was on any form of treatment and had no further episodes, it is unlikely that they were not an epileptic manifestation. The longer the time period that passes without a second seizure, the less the overall risk of subsequent recurrence (Brown and Shorvon, 1995: 144, 146, 147; Kies, 1998: 14).

A number of respondents (17.7%) reported they suffered from headaches or migraines. However only 2.8% reported they had constant headaches, where 1 (0.7%) was attending a hospital for treatment, 1 (0.7%) was treated for cluster headaches by his GP the previous year and 2 (1.4%) reported ongoing unresolved headaches. The remaining respondents reported headaches on a sporadic basis, or when they had a cold, or when they did not wear their spectacles. When undertaking further investigation for the positive responses, 1 (0.7%) of the respondents who reported unresolved headaches

stated bilateral deafness, had poor vision and on examination had otitis media and a bacterial post nasal drip. He currently worked as a painter. All of these factors combined are likely to contribute toward a constant headache. The literature indicates that headaches are probably the most common form of pain to limit work, and mostly managed by mild analgesics such as Paracetamol. As previously reported, noise is one of the most frequently experienced exposures and cited in the literature to precipitate headaches and migraines (Harrington and Gibberd, 1995: 123, 124). Other causes of headaches and migraines could be missing meals, alcohol use and environmental factors such as temperature, humidity (Harrington and Gibberd, 1995: 130, 131), and organic solvent exposure (Smallwood and Ehrlich, 1997: 173). Heat specifically, has been mentioned under occupational exposures, where 14.8% of respondents reported they were exposed to this particular environmental factor. While it is not specifically stated in the literature, headaches can be caused by problems in other systems, as per the case discussed, chronic upper respiratory tract infections. Hypertension and visual deterioration is also known to cause headaches and dizziness. It is imperative, therefore to ensure that these systems are examined to determine whether the headache is not caused by factors other than those specific to the CNS.

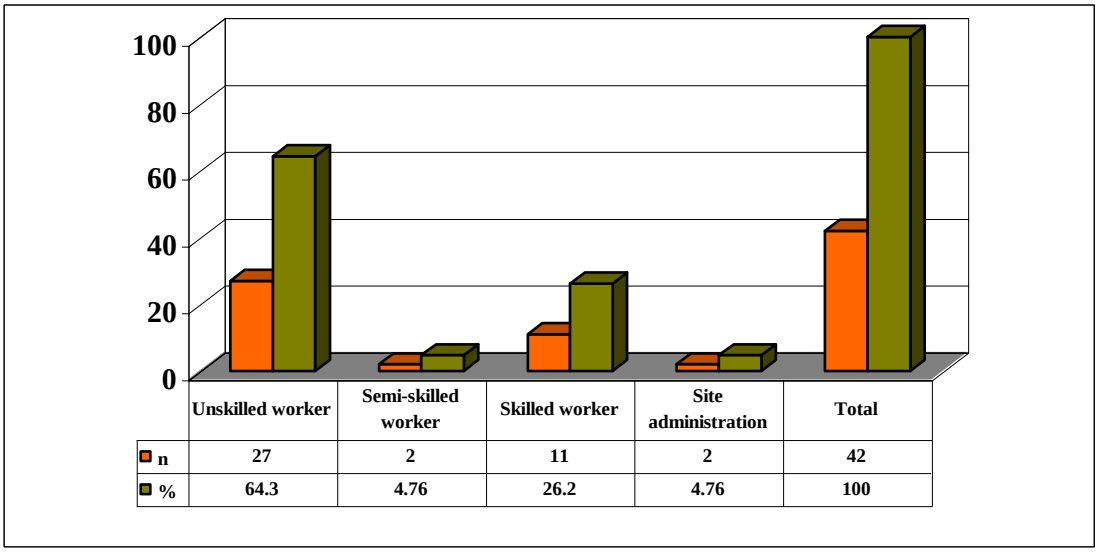
4.5.8 VISUAL ACUITY

Respondents were asked whether they had experienced problems with their eyes. During the history taking, 29.6% of the respondents reported problems, of which 7.7% reported specifically that they were shortsighted. A further 7.7% indicated ongoing problems with their eyes. Others reported, for example, that they needed glasses for reading or their glasses were broken, poor night vision and photosensitivity (sensitivity to light). A number of respondents (2.1%) reported problems relative to injuries to their eyes, with 2 (1.4%) having been injured on duty (a gas burn and sparks (usually from grinding). One (0.7%) of respondents reported he was blind in one eye. Another one (0.7%) reported that he was due to have surgery to one eye. No other significant abnormalities were identified regarding vision, visual fields or colour perception. Figure 4.11 indicates the age categories of respondents who stated they had problems with their eyes. Figure 4.12 indicates the occupational categories of the respondents who reported they had problems with their eyes. Both of these figures were calculated from the positive answers only.



	33-35	36-40	41-45	46-50	51-55	56-60	61-65	Total
n	1	4	9	7	12	8	1	42
%	2.4	9.5	21.4	16.7	28.6	19	2.4	100

Figure 4.11 Age distribution of workers with visual problems.



	Unskilled worker	Semi-skilled worker	Skilled worker	Site administration	Total
n	27	2	11	2	42
%	64.3	4.76	26.2	4.76	100

Figure 4.12 Occupations of workers with visual problems.

Many of the respondents reported they were short sighted. Given their age and the distribution as reported in figure 4.10, this is more likely to be presbyopia. In terms of the literature/ however, the problem is myopia, as it is close vision that was stated as the problem, not shortsightedness, which means that there is a problem with distant vision. Many people do not know the difference. Distant vision was not identified as a problem as the Snellen chart checks this factor, and not the ability to read at close quarters.

The literature indicates that workers who have defective vision are more liable to have accidents in hazardous situations. Given the ages of those who reported eye problems more than likely to be presbyopia, this group could be deemed as a relatively high risk group.

4.5.9 THE MUSCULOSKELETAL SYSTEM

Respondents were asked whether they had ever had problems with their backs, including slipped disc and problems including the muscles, bones and joints. Questions relative to the respondents' surgical history, injuries on and off duty, medicines and hospitalization suggested all had information relative to the musculoskeletal system. As most of the answers relative to the aforementioned were related to the musculoskeletal system, each are dealt with under the appropriate headings.

The medical history indicates that 15.1% of the respondents reported musculoskeletal problems, while 31.0% reported problems with their backs, with only 0.7% having suffered from a slipped disc. No major abnormalities were identified during examination.

4.5.9.1 INJURIES TO THE MUSCULOSKELETAL SYSTEM

A total of 40.3% of respondents reported that they had been injured at work. Figure 4.13 indicates the causes of injury taken from the history provided by respondents. It is important to note that these injuries had happened during the entire career with several having occurred many years prior to the date of examination. Age at the time of injury was not computed to compare with the literature.

Apart from those respondents who did not report the cause of their injury (31.0%), most of the injuries were caused by falls from different heights (24.0%). This aspect is in line with the literature as discussed by Eppenberger and Haupt (2003: 79). These authors further suggest that the body weight of most of those that had injuries from falling from different heights could have been contributory to the accidents. Body

weight (BMI) was cross-tabulated with workers who had been injured at work. The results are shown in Table 4.10. While most of these workers (46.4%) were healthy, slightly less than half (43.2%) were obese to a greater or lesser degree.

Table 4.10 Cross tabulation of BMI with workers injured at work.

BMI Category	Have you ever been injured on duty/while at work?	
	n	**%**
Underweight (≤18)	6	10.7
Healthy (19-25)	26	46.4
Obese (26-30)	19	34.2
Extremely obese (31-40)	5	9.0
Total	56	100.0

Many of the previously injured respondents (33.0%) failed to mention the cause of the injury and are referred to as 'not noted' in figure 4.13. Most of the other injuries as a result of being 'struck by' a moving object or agency, which included, scaffolding; drums, cement blocks, steel and a crane.

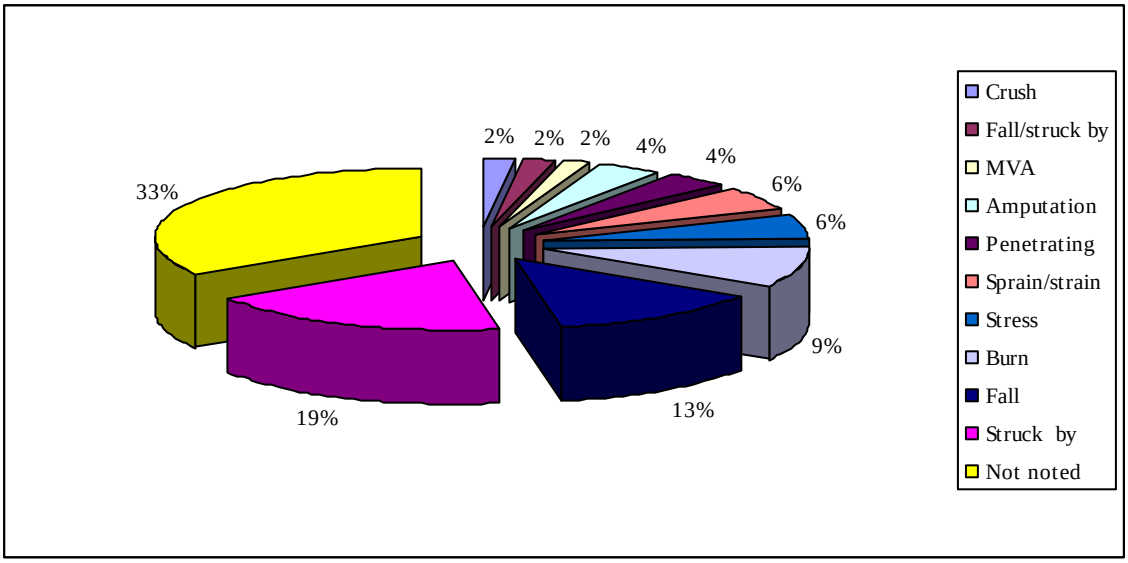


Figure 4.13 Cause of injury as provided during history taking.

The literature reported that causes of injury to older workers included 'struck by', 'struck against', and 'falls onto different levels'. This is also the case as seen in Figure 4.13. Literature from the United States of America CPWR (1998: 38), and South

Africa (Eppenberger and Haupt, 2003: 79) suggest that sprains and strains were the most common form of nonfatal injury, with the back being the most frequently injured anatomical region. However, in the case of this sample, sprains and strains caused 6.0% of the injuries and only 5.0% of injuries were to the back.

Figure 4.14 indicates the anatomical regions injured in the workplace. The most frequently injured anatomical regions were multiple in origin, and all fractures. One of these included fractures of the pelvis, back and wrist. One other respondent reported he was injured 3 times, namely to his ankle, arm and wrist. Other more significant anatomical regions injured included, the eyes (foreign body and arc eyes); feet (nails penetrating gumboots); fingers, and hands. This data is similar but at a much lower rate to that identified by Eppenberger and Haupt (2003: 83, 84) in their study. However, only 1 worker reported fractured ribs (trunk injury), while 8.0% reported injuries to their eyes.

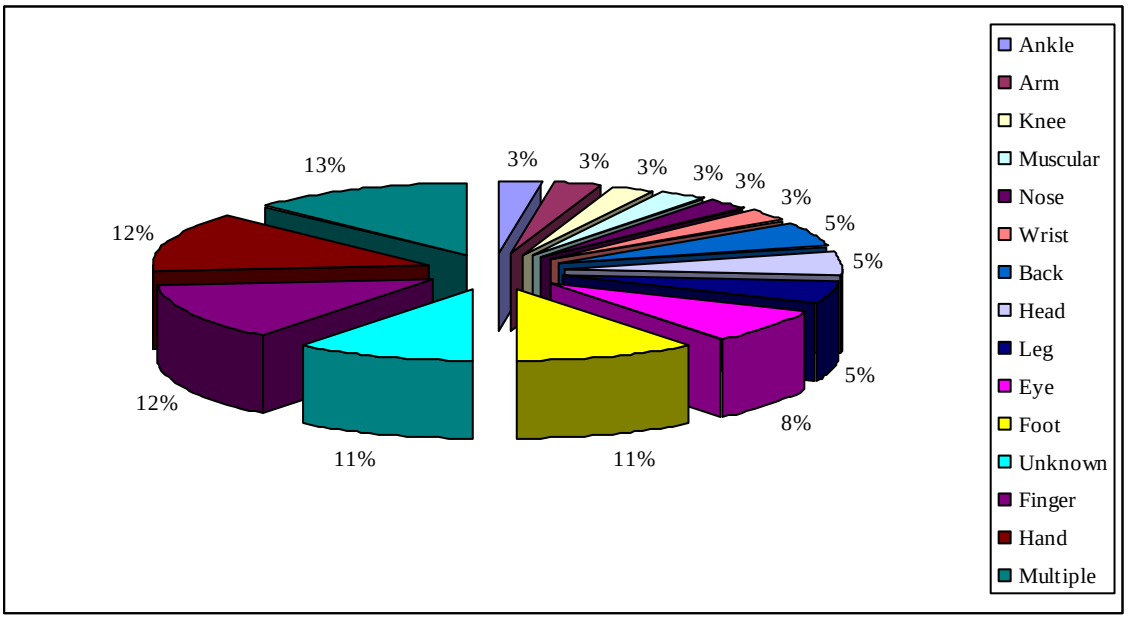
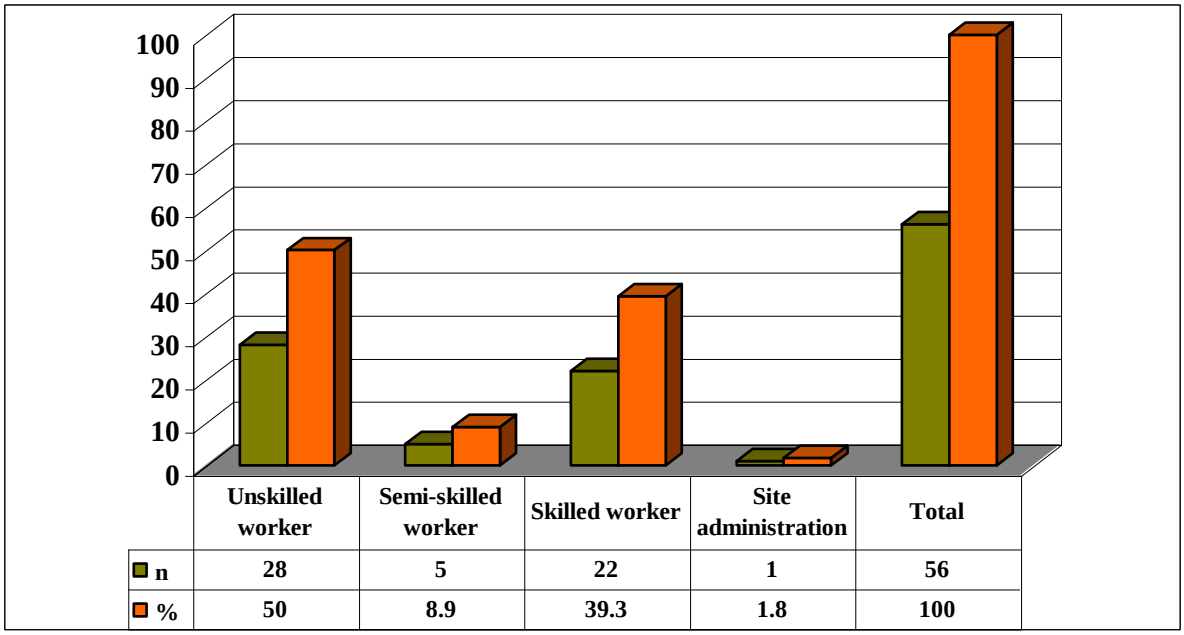


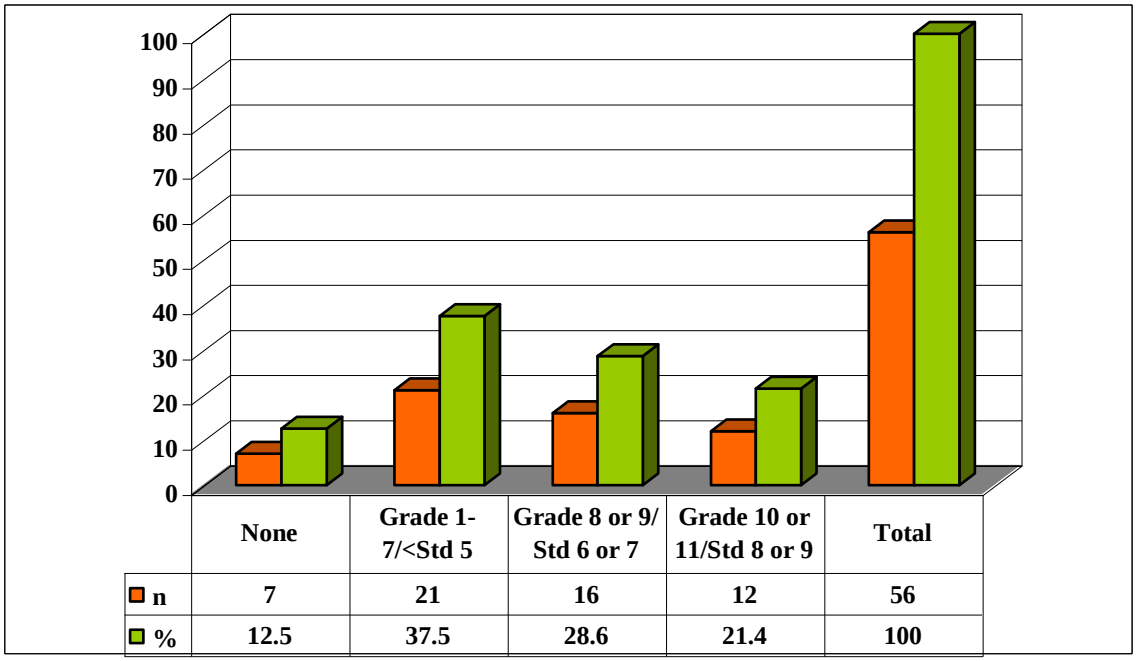
Figure 4.14 Anatomical regions injured.



	Unskilled worker	Semi-skilled worker	Skilled worker	Site administration	Total
n	28	5	22	1	56
%	50	8.9	39.3	1.8	100

Figure 4.15 Occupational injuries according to job category.

It is evident from Figure 4.15 that 50.0% of respondents were 'unskilled', with a further 8.9% being 'semi-skilled'. This finding partially supports the suggestion that older workers are likely to have a lower education and be employed in unskilled positions and therefore at higher risk of serious injury. Other causes for high rates of injury suggested in the literature were low levels of literacy. Figure 4.16 indicates that those who had been injured were indeed among those with minimal education, with 37.5% of respondents having Grade 1 to 7 education and 12.5% with none.



	None	Grade 1-7/<Std 5	Grade 8 or 9/ Std 6 or 7	Grade 10 or 11/Std 8 or 9	Total
n	7	21	16	12	56
%	12.5	37.5	28.6	21.4	100

Figure 4.16 Education level of respondents injured on duty.

4.5.9.2 GENERAL MUSCULOSKELETAL DISORDERS

Workers were asked whether they had experienced problems with their muscles, bones and joints, their backs, and whether they had ever slipped an intervertabral disc. A total of 15.8% of respondents reported that they experienced problems with their muscles, bones and joints. Of these, a total of 3.5% reported problems with arthritis of their knees, 2.1% reported arthritis of their arms or wrist, with 5.6% indicating ongoing general problems. One respondent (0.7%) reported he was currently receiving physiotherapy. Only 1 (0.7%) of respondents reported surgery for carpel tunnel syndrome, which is more common among carpenters. This was not recorded as an occupational disease as it possibly should have been.

Occupation was cross-tabulated with those workers who responded positively to problems with their muscles, bones and joints. From Figure 4.17 it is evident that unskilled workers (5.6%), general workers (5.1%), and skilled workers (7.0%), more specifically, carpenters (3.0%) were most affected.

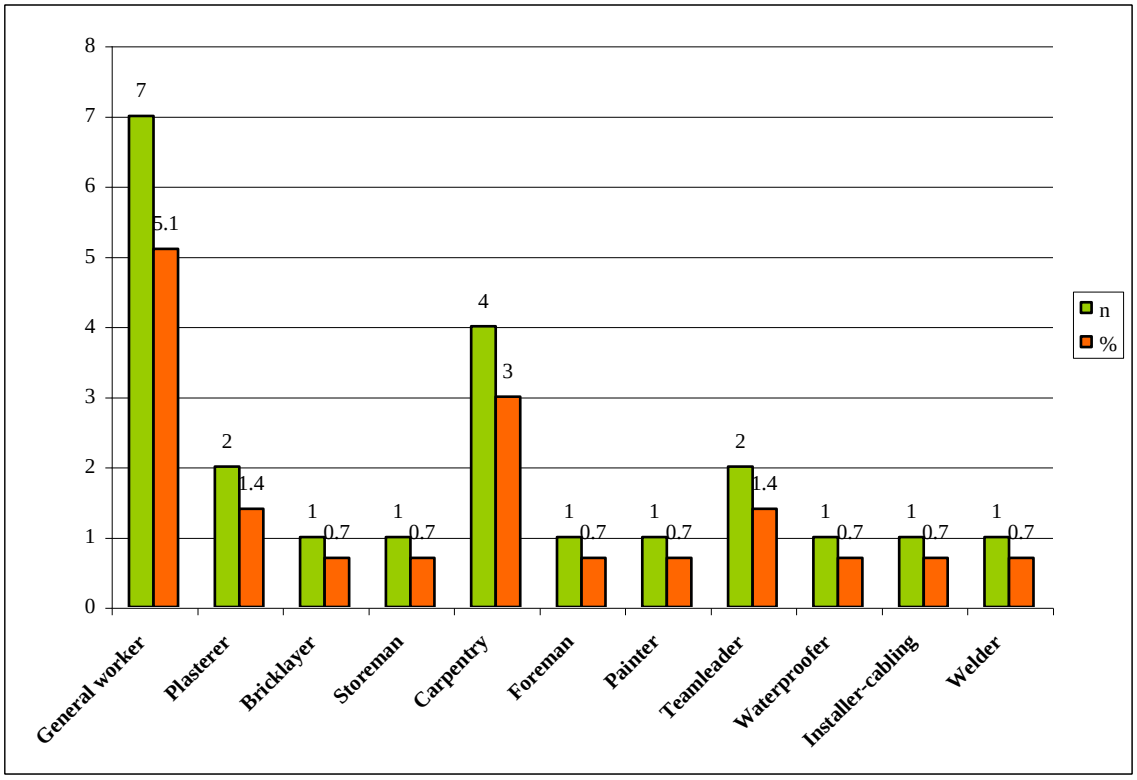


Figure 4.17 Muscle, bone or joint problems by occupation.

A total of 31.0% respondents reported problems with their backs, while only 1 (0.7%) respondent reported having 'slipped' an intervertabral disc. Cross tabulation of back problems with age indicated that the age category most at risk was 61 to 65 years where 83.3% encountered problems. The next susceptible age group was 51-55 where 38.2% encountered back problems. These results are reflected in Table 4.11.

Table 4.11 Cross tabulation between age and back problems.

Age Category		Problems with your back?		Total
		Yes	No	
33-35	**n**	**3**	**6**	**9**
	% within Age Category	33.3	66.7	100.0
36-40	**n**	**6**	**16**	**22**
	% within Age Category	27.3	72.7	100.0
41-45	**n**	**6**	**19**	**25**
	% within Age Category	24.0	76.0	100.0
46-50	**n**	**8**	**23**	**31**
	% within Age Category	25.8	74.2	100.0
51-55	**n**	**13**	**21**	**34**
	% within Age Category	38.2	61.8	100.0
56-60	**n**	**3**	**12**	**15**
	% within Age Category	20.0	80.0	100.0
61-65	**n**	**5**	**1**	**6**
	% within Age Category	83.3	16.7	100.0
Total	**n**	**44**	**98**	**142**
	% within Age Category	31.0	69.0	100.0

Figure 4.18 indicates the occupations of the respondents who reported problems with their backs. The greater percentage of the group who experienced problems were general workers (13.4%), followed by carpenters (5.6%). The 1 (0.7%) respondent who reported he had slipped a disc was employed as a pipelayer.

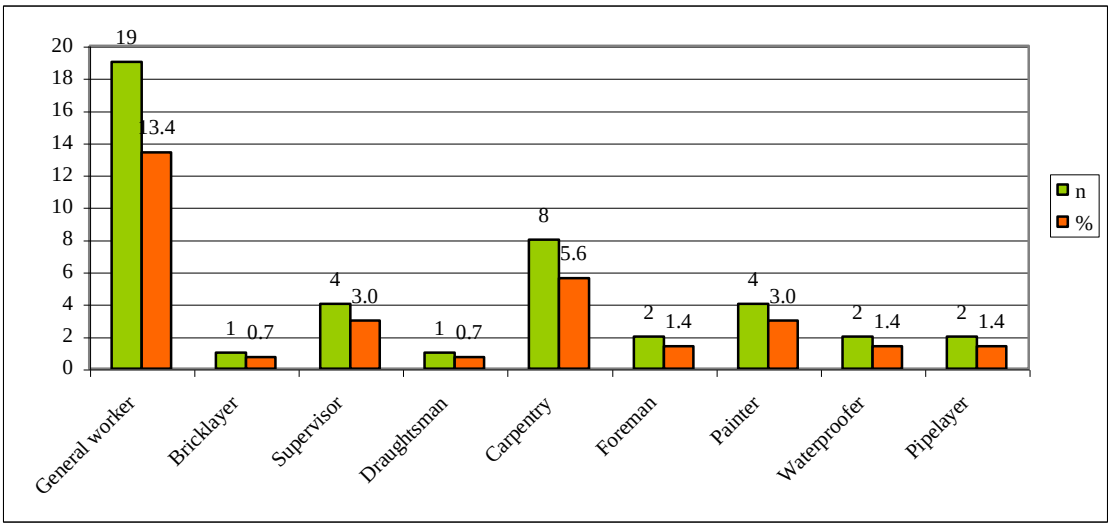


Figure 4.18 Job categories of workers who experienced back problems.

Of the respondents who reported back problems, 14.1% commented that their back problems where ongoing and unresolved, with 2 (1.4%) respondents indicating that

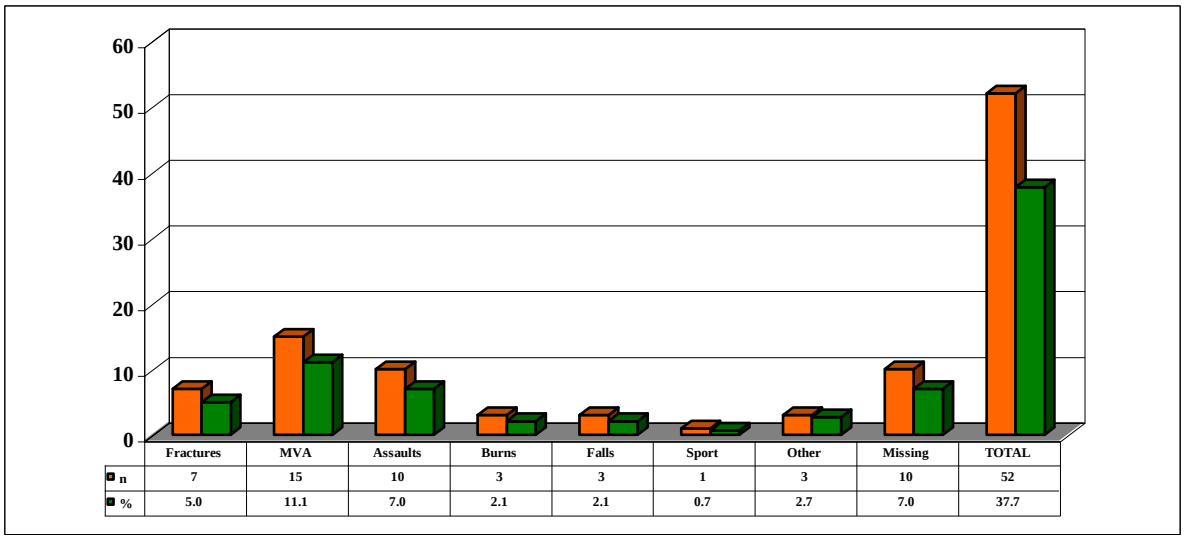
they had backache when lifting heavy objects, one of whom was receiving treatment from his chiropractor. A further 10.6% of respondents reported they had experienced backache, but it was not a current problem. No abnormalities were identified during examination.

Schneider (2001: 1062) and Arndt et al., (1996: 686) reported that there was an increased number of musculoskeletal injuries among construction workers and a close relationship between heavy work and vibration, environmental exposure, frequent use of handheld tools, repetitive work, and awkward postures. Stress and minimal resources also indicated an association with lower back pain, age, smoking, height, poor physical fitness, with less leisure time and diminished muscle strength also associated with musculoskeletal disorders. While the respondents were not asked all of the physical and ergonomic aspects relative to their work, they were questioned about other aspects such as lifestyle and social aspects. It has been noted that this group was largely obese, undertook no physical exercise and had few leisure activities. Further literature reported that 40% of workers in a study in Germany had been retired as a result of disabilities due to diseases of the musculoskeletal system (Volker et al., 1996: 686-689). The findings of literature are therefore supported.

There were no occupational diseases recorded – of any nature and more specifically, relative to the musculoskeletal system. This is not likely to be due to the fact that there were none as the risks to which construction workers are exposed is extremely well researched but rather due to under reporting. There is no doubt that the statement made by Schneider (2001: 1060) is relevant and unfortunately, true. Musculoskeletal disorders are difficult to diagnose and pain is hard to measure and quantify objectively. Schneider further stated that this aspect may well be the reason that there are very few studies that look at the prevalence of musculoskeletal disorders based on medical surveillance. This is the situation in the construction industry where workers rarely, if ever, get any form of medical surveillance through their job. Because of the difficulty in diagnosing and identifying the cause, most employers ignore workers' complaints about their backs because of the high incidence of fraudulent complaints and do not submit claims to the CC. The CC is known to reject many cases due to this aspect.

4.5.9.3 NON-OCCUPATIONAL INJURIES

A total of 30.3% of respondents reported they had been injured off-duty. The causes of these injuries are noted in figure 4.19 and included fractures (2 of which were multiple), motor vehicle accidents (MVAs) and assaults. Respondents reported fractures to their ribs, wrist, elbow, toes, arms, leg, knee, clavicle (collarbone) and ribs. Assaults included being shot and stabbed. Those assaulted had been shot or stabbed. The relationship between those who had been injured and alcohol abuse was examined, as the literature reported that there is a very high relationship between alcohol use and MVAs and assaults (Bradshaw et al., 2000: 122). However, no statistically significant correlations and thus relationships were identified.



	Fractures	MVA	Assaults	Burns	Falls	Sport	Other	Missing	TOTAL
n	7	15	10	3	3	1	3	10	52
%	5.0	11.1	7.0	2.1	2.1	0.7	2.7	7.0	37.7

Figure 4.19 Causes of non-occupational (off-duty) injuries.

The results of non-occupational injuries can impact on work ability. For example one respondent reported he was blind in 1 eye as a result of an assault. This information is imperative in the placement of a worker, as reported in the section relating to legislation and particularly to the term ‘a higher duty of care’. Placement of such a worker in a position where full peripheral vision is required can result in further injury and perhaps to others.

4.5.10 MEDICATION USAGE

A number of respondents (11.4%) reported the use of medication on a daily basis. A total of 30.3% reported that their doctor or clinic had prescribed medicines or tablets to be taken in the previous 3 months. Details of these groups are dealt with in the previous sections.

4.5.11 GENERAL SURGERY AND INJURIES

A relatively large group of workers (56.0%) reported that they had been hospitalised. Of these, 36.3% (64.3% of those who had been hospitalised) had been operated on, 41.4% had had a non-occupationally related accident, while 55.1% stated they had been injured at work. Details of these groups are dealt with in the previous sections.

4.5.12 ALLERGIES

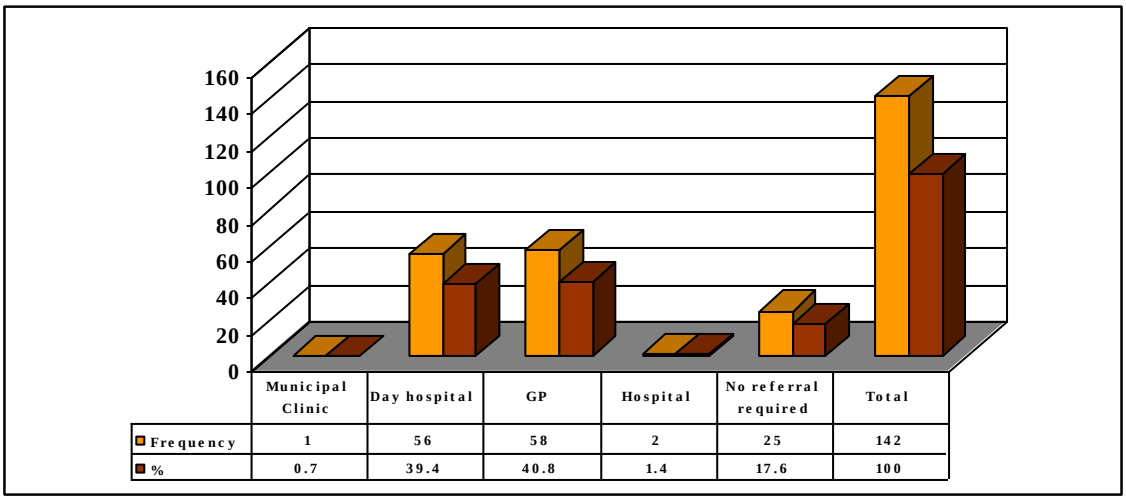
Respondents were asked if they were allergic to any food, medicines that could cause swelling, rashes or pruritis (itching). A total of 3.1% respondents reported that they were allergic to either food or medicines, which included penicillin, tinned foods, and fizzy drinks.

4.6 OUTCOMES OF THE MEDICAL EXAMINATION

Abnormal results arising from the medical examinations need to be referred to an appropriate service provider to undertake further investigation, diagnosis and appropriate treatment. This is necessary to determine whether the abnormality identified is relative to the occupation of the worker or not.

4.6.1 REFERRALS

It is significant to note from Figure 4.20 that a very small percentage (17.6%) of respondents did not require referral for further investigation or treatment. Of those referred, only 0.7% was referred to the Municipal or Community Clinic, 1.4% were referred to hospital, 39.4% referred to Day Hospitals and the most were referred to their GP.



	Municipal Clinic	Day hospital	GP	Hospital	No referral required	Total
Frequency	1	56	58	2	25	142
%	0.7	39.4	40.8	1.4	17.6	100

Figure 4.20 Referral requirements.

4.6.2 DETERMINATION OF FITNESS FOR DUTY

The majority of workers (95.7%) were found to be able to perform the work without any harmful effects, with only 4.3% being able to perform, but with reduced efficiency or effectiveness.

It must be noted that this outcome is from the perspective of the OHN; as such determination must be made within the OHNs scope of practice. Therefore, this outcome may well change once the service provider has seen the worker.

4.6 SUMMARY

Chapter 4 provided the details relative to the data obtained from the workers who participated in this study. Aspects investigated included: medical; social; family and occupational history; demographics relative to education level; marital status; number of children; age, and current occupation. Full clinical examinations were undertaken that examined the workers physical status and included: height and weight; vision testing; blood pressure and pulse; abdominal examination, and an assessment of the musculoskeletal system.

Analysis of the data was undertaken and compared with the literature. Where necessary, correlation analysis or cross tabulation was undertaken to determine relationships between variables. The outcomes of the data were discussed relative to their fitness for duty. The following chapter discusses the conclusions and recommendations resulting from the study.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The purpose of this exploratory and descriptive study was to describe the inherent risks in the construction industry and to identify the health status of construction workers. The research objectives were specified at the commencement of the study, these being to: identify the OH related hazards and related OH risks in construction from literature; investigate the current health status of construction workers using a medical surveillance instrument; determine whether the medical surveillance instrument determines the prevalence of non-occupational diseases; determine the referral requirements emanating from the medical surveillance in order to manage and control the progression of disease, reduce absenteeism, and increase productivity; identify the legal requirements relative to Labour and OH&S legislation and its specific relevance to the construction industry, and to formulate recommendations from the literature and findings with the view of possibly contributing towards the development of medical surveillance standards for the South African construction industry.

The study reviewed the available literature relative to the objectives. A medical surveillance instrument was utilized to undertake medical surveillance amongst 142 consenting respondents. The data was analyzed using the SPSS programme, and the findings were recorded.

This chapter reviews and summarizes the findings relative to each of the objectives listed. Conclusions drawn from the study are stated, followed by recommended interventions based on both the findings and conclusions, and recommendations for future studies in the research area.

5.2 CONCLUSIONS

The conclusions relative to each objective are discussed, and the results of the testing of each of the hypotheses are presented.

5.2.1 IDENTIFICATION OF THE OCCUPATIONAL HEALTH HAZARDS AND RISKS

A large amount of literature was identified that listed the hazards and risks relative to the construction industry. The related hazards and risks are very well researched at an international level, even though no actual results from environmental monitoring was available to support the literature. The hazards identified include noise, heat, stress, positional work or ergonomic stressors, and many different forms of hazardous chemical substances. All of the hazards were also identified as having health effects, for example, exposure to organic solvents could cause damage to the central nervous system. Respondents were asked to provide information during the recording of the occupational history that included all previous occupations and the hazards workers were exposed to during the time period employed.

The hypothesis that construction activities entail exposure to OH related hazards and pose health risks to workers (H1) cannot therefore be rejected.

Therefore it can be concluded that design, details and specifications dictate the use of materials and processes that represent risk to workers, and either are or partially mitigated by contractor related interventions. However, certain risks such as non – ionising radiation are natural and therefore cannot readily be mitigated through design, detail and specification related interventions. The latter conclusion can be debated in that off–site prefabrication within a controlled environment will substantially reduce exposure to such radiation on site.

5.2.2 INVESTIGATION INTO THE WORKERS' HEALTH STATUS

The results of the intervention identified a great number of problems emanating from aspects such as: medical, surgical and injury history; chronic diseases; the skin, and from urine testing. A great deal of complex information is thus available from the use of such an instrument that would be of importance should compensation claims be made for occupationally related problems. No aspect can be assessed in isolation.

The hypothesis that workers' have signs and symptoms of general and chronic non-occupationally related diseases not yet diagnosed (H2) cannot therefore be rejected.

Therefore it can be concluded that the construction process is not complementary to workers health. Furthermore, work related conditions exacerbate the illnesses arising from poor socio – economic conditions. Given the general lack of access to primary health care by the majority of workers in the construction industry, OH provision has a major potential role to play in this regard.

5.2.3 EFFECTIVENESS OF THE MEDICAL SURVEILLANCE INSTRUMENT

The medical surveillance instrument determined that non-occupational diseases such as hypertension constituted a problem and that workers could be at risk of further complications should treatment not be initiated. The instrument further highlighted the significance of linking the occupational and non-occupational information in determining the overall effect of work on the ability to perform.

The hypothesis that the medical surveillance instrument identifies general and chronic non-occupationally related diseases that are present at the time that the medical examination is conducted cannot therefore be rejected (H3).

Therefore the following can be concluded: given that medical surveillance establishes health status and that health impacts on overall performance, OH provision constitutes an invaluable and critical construction management intervention; a structured and comprehensive approach in the form of a medical surveillance instrument is necessary, and medical surveillance can identify serious disorders.

5.2.4 DETERMINE THE REFERRAL REQUIREMENTS

The greater percentage of workers required referral for further investigation. The literature relative to chronic diseases such as hypertension and the relationship between age and other aspects such as weight and physical activity were confirmed in the literature and the study. Medical surveillance is an intervention that will manage to reduce the progression of disease, consequently contribute to an increase in work attendance and subsequent productivity.

The hypothesis that the identification of general and chronic non-occupationally related diseases result in increased absenteeism and reduced productivity (H4) cannot therefore be rejected.

Therefore it can be concluded that OH provision in the form of medical surveillance can mitigate occupational and general disease progression, ill health, and absenteeism as a result thereof. Furthermore, organisational industrial relations, and ultimately the image of the construction industry are likely to be improved as a result of the perceived concern by management for the workforce.

5.2.5 IDENTIFYING THE LEGAL REQUIREMENTS

International case law, and South African studies were cited relative to the higher duty of care and the ‘egg shell skull principle’ that needs to be taken into consideration to protect workers from the adverse effects of their working environment. The literature survey indicated that few GCs undertake routine medical surveillance. However, given

the recent promulgation of the Construction Regulations as part of the Occupational Health and Safety Act No. 85 of 1993, future findings are likely to differ.

The hypothesis that the current Labour and OH&S Legislation does not provide clear guidance to GCs relative to undertaking medical surveillance (H5) cannot therefore be rejected.

Therefore the following can be concluded: various stakeholders, for example, the Department of Labour have not engendered compliance with long–standing legislation; given that optimum health of workers complements overall performance, GCs have not realised best practice through routine medical surveillance, and the recent promulgation of the Construction Regulations constitutes admission that medical related surveillance requirements should be readily determinable through a cursory reference to legislation.

5.3 RECOMMENDATIONS

The conclusions reached lead to the following primary categories of recommendations: design, details and specifications; the role of the client; education and training; OH service provision; medical surveillance and the related planning and budgeting; legislation; awareness relative to the benefits of OH service provision, and further research.

5.3.1 DESIGN, DETAILS AND SPECIFICATIONS

Investigation into the risks relative to design, details and specifications is required in terms of current legislation. While a comprehensive assessment of risk is now required in terms of the Construction Regulations, alternative designs, processes and products are required that will limit exposure to aspects such as: noise; dust; ergonomic, and other physical risks.

5.3.1.1 THE ROLE OF THE CLIENT

The client initiates the design and construction process. The client is now responsible for OH&S in terms of the recently promulgated Construction Regulations, which require inter alia, the provision of an OH&S specification. However, in order for clients to meet this requirement, they will require guidelines. Although large client organizations are likely to have their own 'in-house' OH&S specialists and therefore are more likely to be able to develop and disseminate the requisite information, they are unlikely to have the requisite construction related knowledge and skills. Statutory bodies, such as the Department of Labour and the Construction Industry Development Board (CIDB), and client associations such as the South African Property Owners Association (SAPOA) should provide comprehensive guidelines.

5.3.1.2 THE ROLE OF THE DESIGNER

Design takes many forms that include not only structures, but also interiors and landscaping. Designers, inter alia, architects, civil engineers, interior designers and landscape architects are often dictated to, or pressurised by clients to evolve unusual or striking designs in order to obtain work, which ultimately are detrimental to workers during and following the construction process. Designers specify products to be used during construction, such as special paint finishes, tiles, and wall or floor coverings. Designers also dictate aspects such as in situ construction, or prefabrication. In terms of the current legislation, the Construction Regulations require the reduction of risk to the worker during the lifetime of the structure. Professional design related associations and institutes should provide comprehensive guidelines.

5.3.2 EDUCATION AND TRAINING

The need for education and training of all role-players in the construction process is clear. However, the study also indicates that the education and training of OHNs requires attention.

5.3.2.1 EDUCATION AND TRAINING IN THE BUILT ENVIRONMENT

Tertiary institutions must ensure that OH&S related education is included in all built environment programmes and that the conducting of a rudimentary risk assessment is included as an outcome of such education. Similarly, the construction industry needs to ensure that those currently employed receive the requisite continuing professional development (CPD) training to supplement current inadequacies thereby engendering best practice and optimum performance.

5.3.2.2 CLINICAL SKILLS TRAINING

5.3.2.2.1 IN SERVICE TRAINING

The results obtained from the study reveal that there are areas in clinical practice where OHNs require further education and training in OH. Many of the questionnaires had fields that were incomplete, due to the limited clinical training than many OHNs have received. Various training courses in OH nursing are available, from certificate (entry level, and legally required in order to practice as an OHN) to bachelor degree (advanced level). OHNs have always, albeit limited, a choice of the level they wish to study. The certificate in OH does not include any training on conducting a physical examination during a clinical assessment, nor does it include a research component. The certificate programme is in the process of being phased out by most tertiary institutions to engender change. The entry level of training is what the majority of currently practicing, experienced OHNs would have. With the recent amendments to the Medicines and Related Substances Control Act relative to the dispensing of medication, it is imperative that the OHN be able to conduct a thorough physical assessment of the client before prescribing the appropriate treatment. Furthermore, it must be noted that the OHN generally works in isolation, or independently in comparison to the traditional medical setting. The OHN thus provides the bulk of the OH service provision, making many decisions either in isolation or with line management, and also, would normally have intimate knowledge of the processes and products used on a site. Minimum input

would be provided by the OMP, and then generally as a specialist or advisory function to determine the final outcome relative to claims to the CC, and where occupational changes are required. Consequently the minimum training level of OHNs should be at the advanced or degree level. OHNs should also receive the requisite CPD training to ensure the continued updating of knowledge and thus the engendering of best practice.

5.3.3 OCCUPATIONAL HEALTH SERVICE PROVISION IN CONSTRUCTION

It is of major concern that there is a general lack of OH care with respect to construction workers, specifically in, but not limited to, the South African construction industry. It is clear that workers are exposed to many physical hazards such as noise, 93.7% of workers stated that they had been exposed to noise during their working careers, and therefore, audiometric testing is required amongst these workers as required by current legislation. Such testing will probably result in many claims being made to the CC for NIHL. However, once identified, it will provide a true reflection of the levels of NIHL in the industry. This will result in adding to the already negative perception of the construction industry.

Given that 82.4% of the workers who participated in this study required referral to investigate identified medical conditions, medical surveillance at regular intervals is required. It is recommended that a medical surveillance instrument similar to the one used in this study form the basis from which other instruments used in baseline or pre-employment surveillances are developed. It is recommended that the aspects alluded to in Tables 2.5 and 2.6, and Figure 2.2 be used by the construction industry and OHN as the basis for the determination of fitness and ultimate selection of workers for the appropriate occupation. Time frames of such medical surveillance need to be determined initially by legislative requirements and the risks to which workers are exposed, followed by the individual health status or requirements and finally by best practice.

5.3.3.1 HEALTH PROMOTION

Given that the majority of workers required referral, many for unresolved non-occupational such as hypertension, various skin, upper and lower respiratory, and musculoskeletal conditions, a health promotion programme that addresses these aspects is strongly recommended. The OHN could include such a programme either on a formal or on an individual basis when undertaking the medical surveillance. Other aspects to be addressed would be dependant on the outcome of the workers general history.

5.3.4 PLANNING AND BUDGETING FOR MEDICAL SURVEILLANCE

Cost is a reason frequently given for not undertaking medical surveillance and health promotion. Consequently, specific tests that need to be conducted relative thereto should be recorded in contract documentation. The requirement that clients provide an OH&S specification to principal contractors in terms of the Construction Regulations is likely to engender the provision of such appropriate items by those parties that compile contract documentation. It is recommended that budgeting for such medical surveillance should be facilitated through the provision of appropriate items in the Preliminaries section of contract documentation. Clients are, furthermore, required to ensure that adequate financial provision is made for such surveillance and related health promotion programmes, prior to awarding the contract.

5.3.5 LEGISLATION

While the final phase of this dissertation was being completed, the Construction Regulations were promulgated as part of the Occupational Health and Safety Act, No. 85 of 1993, defining further requirements relative to undertaking medical surveillance amongst construction workers. This is a positive development. There is a strong possibility that the Department of Mineral and Energy will become part of the Department of Labour, thus combining aspects of the Mine Health and Safety Act (MH&SA), and the OH&SA. The outcome of this is likely to result in the consolidation

of all OH&S legislation under the Department of Labour, and therefore is likely to complement OH in construction. This is attributable to the generic implementation MH&SA requirement that codes of practice be developed according to the type of exposure to which the worker is likely to be exposed. It is recommended, therefore, that statutory bodies such as the Department of Labour and professional organizations such as the South African Society of Occupational Health Nurses (SASOHN) provide guidelines for medical surveillance.

5.3.6 AWARENESS RELATIVE TO THE BENEFITS OF OH SERVICE PROVISION

Legislation should not, however, be the primary reason that medical surveillance is undertaken. Employers in the construction industry need to take the 'Higher duty of Care' and 'egg shell skull principle' seriously, as the evidence in this study indicate that construction workers are at high risk, and not necessarily from work related conditions but chronic diseases linked to aging. In doing so, workers will be assured of not having existing conditions exacerbated by the working environment. This approach would be very positive for the industry as a whole. If younger workers become aware that their occupational and general health will be looked after, and deemed important, they may be attracted into the industry. This aspect would, furthermore, improve the image of the construction industry. Furthermore, emphasis needs to be placed upon the cost benefits of optimum worker health as a result of improved overall performance. Consequently it is recommended that the level of awareness be raised among GCs in this regard.

5.3.7 FURTHER RESEARCH

This study has identified that there is a need to undertake further longitudinal research to determine the final outcomes of the medical surveillance intervention, to determine protocols for treatment and best practice, and requirements for fitness for duty.

A comprehensive OH programme is incomplete without the results of environmental monitoring. Such monitoring assesses, for example, actual noise levels, temperature, dusts, and lighting levels, and is needed to design and plan the most appropriate medical surveillance programme. Therefore, formal environmental monitoring is required at various stages of the construction process to determine special needs of workers relative to maintaining their health, and to ultimately reduce the overall risks of the industry. Research studies in this regard will ascertain which of the processes, as well as the details and specifications constitute OH risks.

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ANNEXURE 1: MEDICAL QUESTIONNAIRE

MEDICAL SURVEILLANCE FOR CONSTRUCTION WORKERS

Mark the appropriate box with an √

3
1 4

Worker Number

Employer Number 6

1. Marital status:

Single	Married	Divorced	Living together	Widow/er
1	2	3	4	5

7

2. Number of children: _____ 8

3. What is your current occupation (the job you do now)?

_____ 10

4. How old are you?

_____ Years 12

5. Indicate with an X your level of education?

None	Grade 1-7/ ≤Std 5	Grade 8 or 9/ Std 6 or 7	Grade 10 or 11/ Std 8 or 9	Grade 12/ Std 10
1	2	3	4	5

13

6. Do you have a post-school qualification?

Yes	No
1	2

14

6.1 If 'Yes', please specify: _____ 16

7. Are you qualified in a trade?

Yes	No
1	2

17

7.1 If 'Yes', please specify: _____ 19

8. Are you employed as a:

Casual ≤3days/week	Permanent worker	Contract worker	Sub Contractor	Other
1	2	3	4	5

20

8.1 If 'Other', please specify: _____ 22

9.	**Have you, or have you ever had, any of the following?** *If 'Yes' please provide full details at the bottom of the page (* BELOW).*	Answer Yes	No	
9.1	Problems with your skin (i.e. rashes, sores)?			23
9.2	Problems with your heart?			24
9.2.1	Chest pain (angina)?			25
9.2.2	High cholesterol level?			26
9.2.3	Shortness of breath if you climb stairs?			27
9.2.4	High blood pressure (hypertension)?			28
9.4	Problems with your lungs?			29
9.4.1	Asthma?			30
9.4.2	TB?			31
9.4.3	Bronchitis?			32
9.4.4	Coughing for more than two (2) weeks?			33
9.5	Problems with your stomach?			34
9.6	Problems with bladder or kidney infections?			35
9.6.1	Problems passing water?			36
9.6.2	VD (drop)?			37
9.7	Epilepsy (fits)?			38
9.7.1	Unconscious?			39
9.7.2	Headaches or migraines?			40
9.8	Problems with your ears?			41
9.9	Problems with your eyes?			42
9.10	Problems with your throat?			43
9.11	Problems with the muscles, bones, joints?			44
9.12	Problems with your back?			45
9.12.1	Have you ever slipped a disk?			46
9.13	Have you ever had any sugar in your urine?			47
9.14	Have you ever been tested for HIV/AIDS?			48
9.15	Have you ever had yellow jaundice?			49
9.16	Cancer or tumours of any kind?			50
9.17	Do you take any tablets or medicines on a daily basis?			51
9.17.1	Type: Dosage:			53
9.17.2	Type Dosage:			55
9.17.3	Type Dosage:			57
9.18	Has the Doctor/Clinic given you any medicines or tablets in the last 3 months?			58
9.18.1	Type Dosage:			60
9.18.2	Type Dosage:			62
9.19	Have you ever been in hospital?			63
9.20	Have you ever had an operation?			64
9.21	Have you ever had an accident (i.e. sport, car)?			65
9.22	Have you ever been injured on duty/while at work?			66
9.23	Are there any foods or medicines that cause a rash, itchy skin or make it difficult to breath?			67
9.24	Where do you get your medical assistance from: GP hospital Clinic	1	2	70

3
2 4

***For each of the 'Yes' answers, please provide the following details:**

No.	When were the last symptoms?	Treated by?	Specific treatment used	Current status				

3
3 4

10. How many years and / or months have you worked?

10.1 In the Construction Industry? _____Years_____Months 6
10.2 For your Current Employer? _____ Years _____ Months 8

11. Please list all of the jobs that you have ever had since leaving school:

	Industry	Occupation	From (Yr) To (Yr)	Main Hazards e.g. noise, heat, chemicals, dust							
11.1											14
11.2											20
11.3											26
11.4											32
11.5											38
11.6											44

12. Describe the work you are doing now:

_____ 46

_____ 48

_____ 50

_____ 52

13. Family history: Do any of your immediate family have or had any of the following illnesses/diseases?

	Disease	Mother			Father			
		Yes	No	Don't know	Yes	No	Don't know	
13.1	High blood pressure (Hypertension)							54
13.2	Stroke							56
13.3	Heart attack							58
13.4	Angina (chest pain)							60
13.5	Sugar diabetes mellitus (Diabetes mellitus)							62
13.6	Porphyria							64
13.7	Mental Illness e.g. Depression requiring hospitalisation							66
13.8	Other (Specify):							66
13.9	Other (Specify):							68
		1	2	3	4	5	6	

3
4 4

14. Do you drink any alcohol?

Yes	No
1	2

5

14.1 If 'Yes' what types of alcohol do you drink?

	Type	Frequency				No. of drinks			
		Daily	Weekends Only	Monthly/ bi-monthly	Special Occasions	No. of Glasses	No. of Bottles		
							350 ml	750 ml	
14.1.1	Beer								8
14.1.2	Wine/ Fortified wine/ Liqueurs								11
14.1.3	Spirits								14
14.1.4	Other:								17
		1	2	3	4		5	6	

If 'Other', please record adjacent to 'Other' in the matrix above

15. Do you smoke?

Yes	No
1	2

18

15.1 If 'Yes', what do you smoke?

	Type	Frequency				
		Daily	Weekly	Monthly	How many?	
15.1.1	Cigarettes					21
15.1.2	Pipe					24
15.1.3	Dagga					27
15.1.4	Other:					30
15.1.5	Other:					34
		1	2	3		

If 'Other', please record adjacent to 'Other' in the matrix

15.2 How long have you smoked? _____ Years _____ Months 36

16. Do you play any sport?

Yes	No
1	2

37

16.1 If 'Yes', what types of sport do you play?

	Type	Frequency				
		Daily to weekly	Weekends	Monthly	Never	
16.1.1	Rugby					38
16.1.2	Soccer					39
16.1.3	Boxing					40
16.1.4	Cricket					41
16.1.5	Gym					42
16.1.6	Other:					45
		1	2	3	4	

If 'Other', please record adjacent to 'Other' in the matrix

17. What do you do on your off days/spare time?

	Type	Frequency				
		Daily	Weekends	Monthly	Never	
17.1	Read					46
17.2	Watch TV					47
17.3	Work at home					48
17.4	Church work					49
17.5	Other:					52
		1	2	3	4	

If 'Other', please record adjacent to 'Other' in the matrix above

3

5 4

Physical Examination:

L = Left; R = Right

0 = Normal, no abnormality detected
1 = Minor abnormality (minor treatment, no specialist referral, no impact on work)
2 = Major abnormality (specialist referral, impact on work/unable to work if not treated)

	General condition	Comments				Score		
18.1	Height							7
18.2	Mass (Weight)							9
18.3	Body Mass Index (BMI)							10
18.4	Skin Lesions							11
18.5	Lymph Glands							12
18.6	Varicosities							13
	Head and Neck:							
18.7	Corrected Vision	L	R					15
18.8	Pupils (pearl)	L	R					17
18.9	Peripheral vision							18
18.10	Ishihara Colour Vision	Grade 1	Grade 2	Grade 3	Grade 4			19
	ENT:							
18.11	Canals	L	R					21
18.12	Drums	L	R					23
18.13	Sinuses							24
18.14	Throat							25
18.15	Teeth							26
	CVS:							
18.16	Pulse Rate							27
18.17	BP							28
18.18	Respiration							29
18.19	Thorax and breasts							30
18.20	Lungs							31
18.21	Heart							32
	Abdomen:							
18.22	Organs							33
18.23	Masses							34
18.24	Hernia							35
	Musculo skeletal:							
18.25	Deformities							36
18.26	Spine							37
18.27	ROM: Upper body							38
18.28	ROM: Back							39
18.29	Lifting techniques							40
	CNS:							
18.30	Power							41
18.31	Co-ordination							42
	Skin & appendages							
18.32	Hands							43

19. Special Investigations:

19.1	Urinalysis	Normal	Glucose	Protein	Blood	Other	Other		
		1	2	3	4	5	6		46

20. Remarks from examiner:

		48
		50
		52
		54
		56
		58

21. Referral Requirements (Please record each appropriate organization or person):

21.1	Municipal Clinic (Specify):		59
21.2	Day Hospital (Specify)		60
21.3	GP (Specify):		61
21.4	Specialist (Specify):		62
21.5	Hospital (Specify):		63

22. Fitness for work.

Please use the following ranking to determine overall suitability for work:	**Select one only**		
Able to perform the work without any harmful effects.	1		64
Able to perform the work, but with reduced efficiency or effectiveness	2		65
Able for perform the work, although this may have a harmful effect on the medical condition.	3		66
Able to perform the work, but not without an unacceptable risk to his/her health and safety and/or the health and safety of other workers or the community.	4		67
Physically or mentally incapable of performing the work in question.	5		68

Workers Signature: _____

Examiners Name: _____

Signature of Examiner: _____

Date: _____

:

(C\: Worker Medical Questionnaire.doc)

ANNEXURE 2: ACCEPTANCE OF RESEARCH PROPOSAL

UNIVERSITY OF PORT ELIZABETH
UNIVERSITEIT VAN PORT ELIZABETH
IYUNIVESITHI YASEBHAYI

Ms CH Deacon
P O Box 40108
Walmer
PORT ELIZABETH
6065

6 November 2001

Enquiries: Mrs G Ehbel **Telephone:** 5042121 **Our ref:** 201341247

Dear Ms Deacon

FINAL RESEARCH PROPOSAL

Please be advised that your final research proposal was approved by Faculty Management provided that the recommendations/amendments are made to the satisfaction of your supervisor.

The following comments/recommendations were noted:

(i) that it is suggested that the title be amended as follows:
THE HEALTH STATUS OF CONSTRUCTION WORKERS
(ii) that there is no abstract in the proposal;
(iii) that references in the text are not always in the reference list;
(iv) that references to laws also need to be in the reference list;
(v) that it is recommended that the study should link the aims, hypotheses and in particular to specify the data analysis;
(vi) that consideration should be given to consulting a data analyst.

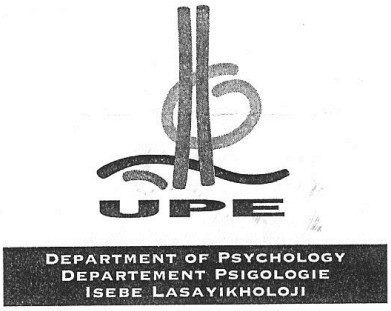
Yours sincerely

OFFICE OF THE DEAN
FACULTY OF HEALTH SCIENCES

GE/jc/4

UNIVERSITY OF PORT ELIZABETH/UNIVERSITEIT VAN PORT ELIZABETH/IYUNIVESITHI YASEBHAYI,
1600, PORT ELIZABETH, 6000. SOUTH AFRICA. ☎ +27 41 5042111 +27 41 5042574.

ANNEXURE 3: HUMAN ETHICS COMMITTEE APPROVAL



HUMAN ETHICS COMMITTEE

Dr J von der Marwitz
Nursing Science
MB 0908

2002.04.29

Dear Dr von der Marwitz

PROPOSAL FOR APPROVAL BY C. DEACON

The proposal entitled "*The Health Status of Construction Workers*" was submitted to the Committee in February 2002.

Members of the Committee found the proposal to be ethically acceptable. Please inform the candidate of the outcome and we wish you well with the project.

Yours sincerely

PROF D M LUIZ
CHAIRPERSON: HUMAN ETHICS COMMITTEE

Cc: Members of the Human Ethics Committee
The Director of Research, UPE
Faculty Officer, Health Science

UNIVERSITY OF PORT ELIZABETH/UNIVERSITEIT VAN PORT ELIZABETH/IYUNIVESITHI YASEBHAYI, PO BOX 1600, PORT ELIZABETH, 6000, SOUTH AFRICA.
TEL: 041 5042354/5042776 FAX: 041 5833152. E-mail: pyambs@upe.ac.za

ANNEXURE 4: CONSENT FORM USED IN STUDY

CONSTRUCTION WORKER MEDICAL SURVEILLANCE

CONSENT FORM

Dear Researcher,

I have had the aims of the research explained to me, and I agree to voluntarily undergo a medical examination in order to participate in two research studies entitled 'The health of construction workers'/Older workers in Construction. I understand that all findings will be kept confidential, unless the researcher identifies any abnormalities, in which case these will be discussed with me prior to any further action being taken.

Construction Workers signature _____

Date _____

Researchers signature _____

ANNEXURE 5: EXAMPLE OF LETTER TO CONSTRUCTION INDUSTRY

UPE

DEPARTMENT OF CONSTRUCTION MANAGEMENT

15 July 2002

Neil Muller Construction (NMC)
(021) 551 2977

Pages: 2 + 5 = 7

Attention: Mr S Webber

Dear Shaun

Re: Medical Surveillance of Construction Workers

Our discussion this morning refers.

The Peninsula Technikon and the University of Port Elizabeth are undertaking a joint 'Health and well-being of older workers in construction' research project.

The project will entail the conducting of medicals on approximately 300 construction workers in the Western and Eastern Cape, and would ideally entail the following – I have detailed the potential levels of medical surveillance, their respective scope and approximate time implications:

Level	Scope	Time (mins)	Accumulative time (mins)
1	Pre-employment / Baseline Medical (refer to Occumed cc five – page facsimile)	45	45
2	Level 1 plus:		
	Audiometric	15	
	Lung function	10	70
3	Level 2 plus:		
	Pre-HIV / AIDS test counselling	15	85
	Blood test	5	90

We appreciate and thank you for your agreement (in principle) to facilitate such medicals. Ideally we would conduct ten medicals per employer, which medicals would be representative of the worker profile. The only cost to NMC would be that of the time dedicated to the medicals. Research findings would be available in global format i.e. consolidated. However, we would in all likelihood require the workers to sign 'consent to divulge the findings' (even for the Level 1 & 2 medicals), which would enable the findings to be given to the employer.

UNIVERSITY OF PORT ELIZABETH, P O BOX 1600, PORT ELIZABETH, 6000. SOUTH AFRICA
TELEPHONE +27 41 5042790 FAX +27 41 5042345 E-mail addresses: coalle@upe.ac.za, coajjs@upe.ac.za website: www.upe.ac.za/construction/

We would be grateful if you would record your willingness to facilitate such medicals in writing (including the level of tests).

Regards

Professor John Smallwood, PhD (Construction Management)
Associate Professor, and Head, Department of Construction Management
Programme Director, MSc (Built Environment) Programme

Cc Faculty of Engineering and the Built Environment, Peninsula Technikon – Att: Dr TC Haupt
Occumed CC – Att: Ms C Deacon

ANNEXURE 6:

QUALITATIVE INFORMATION FROM QUESTIONNAIRE

No	Comments/details/referrals	Occupational History
1	None	Construction-bricklayer 1988-2003 Hazards: dust & noise Work now: bricklayer & general work
2	9.9 Short-sighted – no glasses – ongoing 9.11 Apr2002 Arthritis-R knee – Chemist - ongoing 9.17.1 Tablets daily – anti-inflammatory 1 tds 9.18.1 tablets-3mnths – Arthritis 1 tds	Farm-general worker 1973-1974 Hazards: dust & noise in all jobs mentioned Mine: general worker 1975-1977 Mine: general worker 1978-1985 WBHO: general worker 1986 Work now: Kango machine, scaffolding/power floating, concrete, patching.
3	9.4.3 July2002 – OK 9.9 Short-sighted – Ophthalmologist – Broken Glasses - ongoing 9.12 1984 plank lifting-strained back 9.22 strained back – Specialist – tablets-no X rays – Ongoing 9.12 & 9.22 injury on duty	Construction: general worker 1975-1976 Hazards: dust & noise in all jobs mentioned. Mine: general worker 1978-1979 WBHO: general worker 1980-2003 Work now: Scaffolding & shuttering-carpenter
4	None	Norep Plastering Trade 1972-1981 Hazards: noise & dust in all jobs Haroun Plasterers 1985-now Work now: plastering walls with cement
5	9.10 9.19 & 9.22 in hosp due to MVA 1980 treated in Tygerberg hosp – neck brace Ok	Food canning-operator 1971-1972 – Noise Building contracting: bricklaying 1972-1990 – Noise, dust, cretestone & cement dust WBHO: 1991-now. Noise & dust. Work now: bricklaying, patching working with wet & dry cement & cretestone
6	9.11 last year(01/01/02) fractured R-wrist & ribs – treated at Transkei hosp. plastering - slightly stiff. 9.22 1995 Fell from scaffolding. Treated at N1City hosp for back .Ok	LTA-Jhb Assist. Carpenter 1988-1990 dust & noise. WBHO: handyman 1991-now. Dust, noise, glue, chemicals in cement. Work now: labour, handyman doing bricklaying and carpentry.
7	9.5 Stomach problem all the time. Treated Macassar Day hosp & Tygerberg hosp. X rays-NAD. Still sore. See urinalysis. GSH: 1970 & 1980 Tygerberg : 1999. Still not right	Construction: labourer 1969-1984 Landscaping on construction site: labourer 1984-2003.
8	9.4.2 Feb2001 – Received pills at Crossroads Day hosp. Ok 9.6 Feb1996 – epilepsy fits. Ok 9.12 Back problem all the time. Ongoing. 9.19 1996 R-hand - N1City hosp. Ok 9.20 Skin graft done due to burn. Ok 9.21 Burnt with fire. 9.22 Burn-injury at work. 18.4 Physical: old burn-R hand missing Small finger L-hand	Construction: concrete 1996-2003 noise & dust. Work now: patching with concrete, help carpenters.

9	9.4.4 Coughing constantly. Nov2002-pills Prescribed by G.P. Ok 9.5 Constant stomach pains. No treatment. Ongoing. 9.6.1 Passing water-burning morning & night No treatment. Ongoing. 9.7.2 Constant. Tygerberg hosp. pills given. Ongoing. 9.8 Constantly has problem. No treatment. Ongoing. 9.9 Constantly – "goes dark". No treatment. Ongoing. 9.13 Back. constantly sore. No treatment. Ongoing. 9.18.1 Tablets in last 3mnths – betaflex (muscles) 1 tds 9.19 & 9.21 2000 18.4 Physical: recovered hole in forehead - bullet wound 18.12 physical: L-gone R-hole in-letter to Dr.	Construction: general worker 1978 Construction: general worker 1979 Construction: general worker 1986-1988 WBHO: general worker 1988-2003 Hazards: noise & dust on all above jobs Work now: hammer machine for concrete Cut the concrete & cleaning of site
10	9.10 Far sighted. Treated by Eye Specialist. Broken glasses. Ongoing. 9.23 1985-drum fell arm-R. Injection by GP. Ok. 9.18.1 Tablets in last 3 months-for neck pain-1tds 18.4 physical: tattoos over body: names 18.15 1 tooth with hole. Ref. to dentist	Farm: labourer 1976-1979 chemicals Transport: labourer 1979-1981 dust & noise Bricks: labourer 1981-1982 dust & noise Farm: labourer 1982-1983 dust & noise Ovcon: labourer 1983-2003 dust & noise Work now: shuttering-carpentry
11	9.1 1997 urticaria - sporadic 9.19.1 Dec2002 Lost consciousness/dizzy spell: twice. Somerset West hosp & GP = Hypoglycaemic 9.11 Constant lower back pain. Intermittent. No treatment. 9.14 1996 – negative 9.19 & 9.20 1980: Gastrectomy re: ulcer. Surgical treatment at Wynberg hosp Ok. 18.7 Physical: R-eye 6/6 with glasses 18.15 1 with hole. Ref. to dentist 18.17 advise to get vitamins.	Construction: draughtsman 1973-2003 dust & noise. Work now: draughtsman
12	9.5 & 9.19 & 9.20 Appendix 2002. Appendi-sectomy at Tygerberg hosp. Ok 9.8 Dec 2002. Foreign body. Removal by GP. Ok. 9.7.2 Last week.	Construction: Carpenter 1986-1999 dust & noise Ovcon: Storeman 1999-2003 dust & noise Work now: Storeman-tools monitoring
13	9.7.2 Jan2002 – Ok. 9.12 1981 – Lifting weight. Treated by GP. Pills. Ok. 9.19 & 9.20 1985 – Umbilical Hernia. Operation at Stellenbosch hosp. Ok 9.18 Tablets last 3 months-Anti-inflammatory 1 tds 18.15 Physical: few left 18.26 spine stiff	Construction: Apprentice 1967-1971 Construction: Carpenter 1971-1984 Construction: 1984-2003 Hazards: dust & noise in all jobs Work now: carpentry-construction/finishing roofing.

14	9.7.2 Intermittent. Ok. 9.21 digit amputated. Paarl Hosp – sutured. Ok 18.15 Physical: Dentures 18.25 L-small finger tip off	Dry cleaning: pressing clothes 1972-1973: chemicals Construction: Apprentice 1974-1975 Construction: Carpenter 1975-1996 Construction: Carpenter 1996-2003 Hazards: dust & noise in all jobs Work now: Carpenter- construct & finishing roofing.
15	9.18 Tablets last 3mnths: Voltaren tabs 1tds 9.19 Infection in R hand few yrs ago. Injury At work. Treatment – Antibiotics at Paarl hosp. Ok	Army: army 1978-1979 noise & dust OK: Receiving of goods 1980-1981. KWV: Bottling operator WBHO: bricklayer 1983-Now. Noise & dust Work now: bricklayer, working with wet cement, epoxy.
16	9.8 Sometimes deaf. 9.18 Tablets last 3mnths: Pain tabs-2tds. 18.12 Physical: R-waxed	WBHO: general worker 1994-now. Hazards: Noise dust & dry cement Work now: sweeping & mixing concrete
17	9.7.2 2001 – Ok. 9.9 Short sighted. Ongoing 9.7.2 1988-2002 Migraine. Treated at Namibia hosp & GP. Pills. Ok. 9.22 IOD 2001 Eye injury. Examination done Athlone GP & Gatesville. Ok IOD 1984 #L-arm. No op. Treated at Libertas hosp. Ok 18.12 Physical: L-waxed R-waxed -advised 18.15 Dentures 18.20 Lungs wheezing	Deliveries: labourer 1971-1973 no hazards M&R Construction: labourer 1973-1975 Construction: labourer 1975-1981 WBHO: labourer 1981-2003 Hazards: dust & noise in construction jobs Work now: carpentry – handyman/electrical
18	9.10 Runner heals giving trouble. Now. Treated at Pinelands. Physio. Ongoing.	MGM Construction: Carpenter 1972-1984 WBHO: Carpenter 1984-now Hazards: dust & noise Work now: Carpenter – build columns
19	None	R.J. Southey: learned for scaffolding 1990-1994 SGB: scaffolding 1994-1995 WBHO: scaffolding 1996-now Hazards: noise & dust in all jobs Work now: scaffolding
20	9.16 Few years ago. Treated by GP. Treatment – anti histamine. Ok 18.7 Physical: R-6/6 with glasses 18.15 Dentures Remarks: advice on overweight	R.H .Morris: Tealady 1976-1981 WBHO: Tealady & cleaning 1982-now No hazards Work now: making tea for all offices & sometimes help with cleaning
21	9.14 1998 tested. Ok. 9.19 1998 Operated on LH and #wrist at Vincent Pallotti hosp due to injury at work. Ok. 18.15 Physical: few missing teeth	Jonker & Nagel: learner-carpentry 1968-1976 McCarthy & Sons: Carpentry 1976-1977 HSK/WBHO: Carpentry 1978-now Hazards: dust & noise Work now: Carpentry – building constructions for concrete.
22	9.12 3/12 ago. Treated by GP. Treatment used – tablets. Ok 9.19 Operation at Louis Leipoldt. Prostate. 9.20 Dr Lamberts treated. Ok. 18.4 Physical: Crytheme on chest 18.15 Few missing 18.28 Minimal: lower back problem Fungal infection of toenails	R.H.Morris: Student carpenter 1963-1983 Hazards: noise & dust WBHO: Carpenter 1983-now. Stressful Work now: Carpentry- foreman. Finishes inside building.

23	9.11 Last week. Woodstock Day hosp. Pills given. Physio. Ongoing. 9.19 1985 # toes-L 9.20 Operation done at Woodstock hosp. 9.22 #toes-L was injury at work. Ok	Goldmines: Storeman 1958-1959. No hazards George Forestry plant: 1959-1964 No hazards Construction: Electrical 1968-1971 Plastics: machine operator 1971-1977 SGB: foreman 1977-2003 Hazards: noise/dust Work now: Foreman- supervise scaffolding
24	9.7.2 If too long without glasses. Got new lenses: optician. Ok. 9.19 # elbow 1994/5. Garden City-Jhb. 9.20 Operated on for # elbow. 9.22 #elbow – injury at work. Ok 18.7 Physical: wears glasses 18.15 Dentures	Roy Beamish: Apprentice 1971-1975 Construction: carpenter 1975-1978 Sasol-JHB: carpenter 1978-1979 chemicals/dust/ noise Saudi Arabia: carpenter 1979-1980 JHB construction: supervisor 1980-1995 CT construction-Grinaker 1995-1998 Construction-WBHO: foreman 1998-2003 Hazards: Noise & dust in all above construction jobs. Work now: Supervise subcontractors, general workers & artisans
25	9.8 Hearing loss. Ongoing. 9.9 Reading glasses. Optician. Ongoing. 9.18.1 Tablets last 3mnths-Calcium. 9.22 1990 Fell: roof. GP. X rays & tablets .Ok 18.11 Physical: L-waxed R-waxed. Advice 18.12 L-waxed R-waxed. Advice	Construction: carpenter 1967-1980. WBHO: construction-carpentry 1981-2003 Hazards: dust /noise. Work now: Foreman-supervise workers.
26	9.6 In mornings & evenings. Treated by GP. IVP. Ongoing 9.14 2002 – negative 9.22 Stress related 2002. GP. Pills. Ongoing 9.9 & 9.21 R eye sight. 1981 Dr Charda – Rylands. No op. Pills. Ongoing. 9.12 9.21 Back injury. Fell 1999. #back. No op. diagnostic. Claremont Clinic. meds. Ongoing. 9.18 Tabs/meds in last 3mnths – pain: back Drops for eyes –sporadically: daily. 18.7 Physical: R-no vision after IOD. 18.11 L & R-waxed, Advice 18.12 L & R waxed, Advice	Cape Concrete: labourer 1972-1973 dust & heat Ovcon: labourer 1974-2003 dust & noise Work now: Supervisor
27	9.2.1 All the time. No treatment. Ongoing. 9.2.4 2002. Nyanga Clinic. Pills. Ok. 9.6 All the time. Ongoing. 9.9 All the time. Ongoing. 9.7.2 Dec 2002. Chemist. Pills. Ok 9.19 1975: Concrete. Franschoek Clinic. Pills. Ok. 9.22 Forklift – injury at work. Ok.	Mining: gen.worker 1966-1967 heat/dust/noise Mining: gen.worker 1967-1968 heat/dust/noise Fertilizer factory: machine op. 1968-1969 chemicals Congo: construction: 1970-1988 dust/noise WBHO: construction: gen.worker 1988-2003 Dust/noise Work now: Gen.worker: works with concrete, mixes/spreads
28	9.5 Gastro after curry. Ok 9.19 Burnt as a child. Treated at Red Cross. 9.22 Stood on a nail: 1990. Treated by work doctor. Injection & dressing. Ok 18.12 Physical: L & R waxed. Advice 18.15 Few teeth left	Berco: Cleaner 1979-1979 chemicals Airflex: Delivery 1980-1981 Prison 1981-1989 Construction: gen.worker 1992-2003 dust/noise Work now: Scaffolding: gen. Labour/carry materials

29	9.1 Last wk. GP. Cortizone cream. Ongoing 9.9 Shortsighted. 9.14 1993 – negative 9.19 Haemorrhoids 1993. Tygerberg hosp. Operation. Ok 9.22 June 2002 – Concrete fell on foot. Xray Milnerton Mediclinic. Physio. Ok 18.15 Physical: Less front teeth.	Market: gen.worker 1982-1985 Army: Rifleman 1987-1989 Security: 1989-1990 Construction: scaffolding 1997 Work now: erecting & dismantling scaffolding.
30	9.6 Dec 2002. Ok 9.9 Burn sometimes. Ok 18.15 Physical: Few teeth left	Mining: labourer 1970-1985 dust/noise Dairy: milker 1985-1990 Construction: gen.worker 1990-2000 dust/noise SGB: gen.worker 2000-2003 dust/noise Work now: Scaffolding
31	9.20 Operation 3/12 ago. Sutures R-arm elbow after knife wound. Ok 18.11 Physical: L-waxed	Porterville: gardenwork 1969-1979 WBHO: gen.worker & concrete mix. Noise/dust WBHO: permanent 1996-now. Noise/dust Work now: Mix cement & concrete & do general work when off machine.
32	9.17 Tablets daily – herbs. 9.18.1 Tablets last 3mnths – herbs. 9.19 Abdominal obstruction. Woodstock hosp 9.20 Hernia op 1980. Ok 18.15 Physical: Dentures	Construction: Paint-labourer 1960-1964 Painting: 1964-2002 Construction: Painting 2002-2003 Hazards: chemicals/noise/dust Work now: painting of walls & doors
33	9.1 Rash? Dermatitis of pinnae last week. Ongoing. 9.7.2 Intermittently. 2001. Ok 9.18.1 Tablets in last 3mnths – for stomach/flu	Construction: Plasterer 1990-1997 WBHO: Bricklayer 1997-2003 Hazards: dust/noise Work now: bricklaying
34	9.4.2 2000. Kraaifontein Day Hosp. Tablets. Ok 18.12 Physical: R-waxed. Advice	JHB: Construction: driver 1988-1989 CT: Construction: labourer 1989-1995 WBHO: Construction: labourer 1995-2003 Hazards: noise/dust Work now: Mix, float & carry concrete.
35	9.4.2 1992. Porterville Hosp. Tablets. Ok 9.13 Last wk-back pain. Grandpa powder. Ok 9.19 Bronchitis 2001. Porterville hosp. Antibiotics. Ok.	Construction: bricklaying 1979-1981 Ovcon Construction: bricklaying 1981-2003 Hazards: dust/noise Work now: Shutterhand: carpentry & saws & sandpaper
3 6	9.9 L eye: short sighted. Ongoing 9.12 Last week. Not treated. Ok 9.14 2002 – negative. Guguletu hosp. Ok	Construction: Driver 1972-1978 WBHO: Gen.worker 1978-2003 Work now: Gen.worker-mix, float & casting concrete.
37	9.14 1991 – negative. Ok 18.15 Physical: dentures	Woodwork: cutting machine 1972-1974 Construction: apprentice 1974-2003 Hazards: dust/noise Work now: Supervisor
38	9.9 Night vision poor. Optician. Will be getting glasses. Ok 9.15 Negative. GP. Ok 9.19 1998-Stabbing: liver. Operated. Ok 9.22 +/-1985 Sling fell off column – break R leg & joint + R arm & joint. Somerset hosp. 1995 – Fell thru roof – unconscious. Somerset hosp. Ok	Construction: labourer 1972-1977 Construction: labourer 1977-1980 Construction: labourer 1980-2003 Hazards: dust/noise Work now: Carpentry-finishing

39	18.15 Physical: without upper, lower teeth need dentist	Construction: Carpentry 1969-1982 WBHO Construction: Carpentry 1982-2003 Hazards: dust/noise Work now: Foreman-supervise carpenters.
40	9.11 Presently. Ongoing 9.19 1987 back & legs. X rays. Somerset hosp No operation. Ok 9.21 Rugby – back & legs. same as above. Tablets given. Ok.	M&R: plasterer 1985-1987 Harare: plasterer 1988-2003 Hazards: dust/noise Work now: plastering
41	9.12 Presently. Bellville Clinic. Pills. Ongoing. 9.6.1 2002. Khayelitsha. Pills. Ok 18.12 Physical: L-waxed.	Boland Factory: gen.worker 1968-1971 NGA: gen.worker 1971-1973 WBHO: gen.worker 1982 Work now: gen.worker: sweeping, carrying
42	9.5 1999 – ulcer. GP. Meds. Ok 9.9 Short sighted 2001. Glasses. Optician. Ok 9.21 1965 # l arm. Hospital. Pop. Ok 9.17 Tablets daily – vitamins. 18.15 Physical: Dentures 18.25 L-arm was broken as young.	Construction: carpentry 1965-1969 Construction: carpentry 1969-1972 Construction: carpentry 1972-1993 Construction: carpentry 1993-2003 Hazards: dust/noise Work now: Construction: boxing for concrete Finishing: hanging doors/skirting/ceilings
43	9.4.1 1983: Asthma. Clinic: CT. Meds. Ongoing 9.4.2 1979 Nyanga Clinic. Meds. Ok. (Prone in winter). 9.12 Back pain. Ongoing 9.9 Shortsighted. Ongoing. 9.22 #L wrist 1997. City Park hosp. Operation. Ok.	Jhb: Mine: gen. labour 1969-1971 heat/dust/noise CT: Constr.: painter 1971-1973 dust/noise Construction: painter 1973-1980 dust/noise R&N Constr.: carpenter 1980-2003 dust/noise Work now: carrying equipment & material/ assistant carpenter
44	9.5 2002 bloating. Khayelitsha Clinic. Tablets. Ok. 9.6.1 2002 dysuria. Khayelitsha Clinic. Tablets. Ok. 9.18 Tablets last 3mnths - Panado 9.19 Jooste hosp. 9.20 L ankle #. Operation. Ok 18.4 Physical: L-lower leg – old knife wound	R&N Constr.: gen. labour 1982-2003 dust/noise Work now: carry equipment/sweeping/cleaning
45	9.11 2001 Arthritis: wrists. GP. Tablets. Intermittent. 9.14 Sept 2002. Negative. GP. Ok 9.19 Dawo: Sinuses. Woodstock. 9.21 Operation. Ok. 9.22 Amputation: 1993 – Finger. False Bay. Operation. Ok. 9.18 Tablets in last 3mnths: anti-inflam-matory : arthritis. 18.15 Physical: Few left 18.32 L-index finger joint missing	Safmarine: seaman 1974-1980 Constr.: apprentice 1980-1992 dust/noise R&N Constr.: carpenter 1992-2003 dust/noise Work now: hanging doors/concrete work/columns & walls
46	9.19 2001 Paralysis. G/Schuur hosp. Pills. X rays. Ok 18.4 Physical: Old knife wound at back(L)	Constr.: gen. worker 1969-1987 dust/noise R&N Constr.: welding 1987-2003 dust/noise Work now: welding/general work
47	9.6 Kidneys. Ongoing. 9.6.1 Dysuria. Ongoing. Referred to Nyanga Day hosp.	Constr.: R&N gen. worker 1967-2003 dust/chemicals Work now: labour: carry bricks & sand/mix cement
48	9.5 Last night. not serious. Current 9.22 2002 laceration: finger. Sutured. City Park hosp. Ok.	Constr.: gen. labour 1975-1994 dust/noise R&N Constr.: gen. labour 1994-2003 dust/noise Work now: gen. worker: mix cement/transport sand & bricks

49	9.6 Constantly. Site B Clinic-Khayelitsha. 9.6.1 Constantly. " " " ". Intermittent 9.7.2 Occasionally. 9.12 Mechanical? Site B Clinic. Pills / meds. Ok 9.19 1986. Car accident. Conradie hosp. Graft 9.20 R arm avulsion. 9.21 Car accident. 9.18.1 Dec 2002. Tablets for pain 1 tds & for Back/kidneys. 18.4 Physical: R-front arm. Taxi accident	Farm: labourer 1958-1959 chemicals Milling: labourer 1959-1964 Constr.: labourer 1964-1973 R&N Constr.: labourer 1973-2003 Work now: carry cement/sand/bricks Cleaning duties/mixing cement
50	9.4.2 2002 - 9/12 Khayelitsha. Ok. 9.6 Pains last week. Ongoing. 9.6.1 Intermittent. Ongoing 9.7.2 Constant. Back & front. X rays. Pills. Ongoing. 9.12 For 5 yrs. 9.14 2000. Negative. Jooste Hosp 9.9 R eye. 2 yrs. Photosensitive. Ok. 9.19 TB: 2000. Meds. Ok. 9.21 1973. Assault. Sutures. Ok 9.22 1998: hit a brick. City park. Sutures. Ok 18.12 Physical: R-waxed. advice	Tulbagh Farm: gen. labour 1975-1976 Jhb Constr.: gen. labour 1976-1987 R&N Constr.: gen. labour 1987-2003 Work now: carry bricks/sand/mix cement/cleaning
51	9.9 Short sighted. To go to day hosp. Glasses. 9.14 2 wks ago. ? Results. Langa. Ok 9.19 Conradie Hosp. 9.20 1999 incised. Operated. Ok 9.18.1 Tablets for boil (abscess) 1tds 9.18.2 Injection in gum.	Brickyard: gen.worker 1967-1971 dust/noise CT Wool: labourer 1971-1973 dust/noise Dockyard: 1973-1988 noise R&N Constr.: gen. worker 1988-2003 dust/noise Work now: carry bricks/sand/mix cement/cleaning
52	9.19 Woodstock hosp. 9.20 Operated on nose. 9.22 Injury on duty 1989. Ok	R&N Constr.: learned for crane driver 1984 Labourer 1973-now noise/dust/cement Work now: work with cement, any job, clean floors
53	9.17 R ear was infected, slightly deaf. 9.19 When he was young. Burnt. Treated at Conradie hosp. Ok. 9.22 No treatment required. 18.4 Physical: old knife marks & burns 18.12 L-waxed R-waxed. Advice	R&N Constr.: labourer 1982-now Hazards: noise/dust/cement Work now: general work with cement, etc.
54	9.2 Irregular heart rate. Valve defect. 2000. Langa GP. Pills. Ongoing but Ok. 9.6.1 Dysuria presently. Ongoing. 9.18 Shortsighted. Ongoing. 9.12 Mechanical. Constant. Ok. 9.19 Car accident 1992. G/S Hosp. 9.20 Amputation finger. Ok 9.21 Car accident. 9.22 Fell from scaffolding 2002. City Park Hosp. X rays. Ok 18.32 Physical: deformity? Amputation R-hand 2nd & 3rd digits	Jhb: Mine: gen. labour 1972-1974 R&N Constr.: gen. labour 1975-2003 Work now: gen. labour: bricklayer assist./mix cement
55	9.4.3 Flu currently. Nov 2002.Rylands-GP. 9.4.4 Antibiotics. Ongoing. 9.9 Eyesight bad. Has glasses at home. Ongoing. 9.7.2 With flu.(currently). Panado. Ongoing. 9.19 1971 Appendix. Conradie hosp. Op. Ok.	Farm: gen. labour 1959-1969 Brickworks: gen labour 1971-1975 M&R Constr.: gen labour 1975-1987 R&N Constr.: gen labour 1987-2003 Work now: mix concrete/cleaning/carrying bricks, cement, sand

56	9.5 Heartburn (dyspepsia). Dec 2002. Rylands. Meds. Ongoing. 9.12 Back pain: occasionally. Ongoing. 9.9 Gas burn at work. Ongoing. 9.18.1 Stomach meds. 1tds.	Jhb: Mine gen labour 1979-1982 heat/dust/noise R&N Constr.: gen labour 1984 dust/noise Work now: carry cement/bricks/sand Cleaning/mix cement
57	9.9 Iod L eye 3 3/52. Gone to Dr. Took sparks out of eye. Not ok properly. 9.22 2001 Sept 16 – hurt L forefinger. Medipark hosp. Stitched & skin transplnt.Ok.	M&R-Plettenberg Bay: walky talky 1981-(full yr) M&R-Humansdrp: carpenter assist. 1982-(full yr Congo Construction: surveyor assist. 1983-(full yr) Ovcon: carpenter assist. 1984-1985 M&R-Plettenberg Bay: 1986-few mnths Ovcon-Cape Town: 1987-1989 Electrical Co-Mossel Bay: 1990-1991 M&R: 1996-now Hazards: dust/noise Work now: assist surveyor in helping with tripods & levels
58	None 18.4 Physical: Lower abdomen knife wound (1986) 18.20 creps R-lower bb	Orange Mine: undergroud 1997-1998 dust/heat Saldanha Steel: 1998-2000 dust/noise Work now: help mixing cement, sweep sand
59	9.2.3 Constantly asthma. 9.4 Community centre Heideveld. 9.4.1 Asthma pump. Short of breath. 9.7.1 Assaulted 2002, 2000. Cnradie Hosp 9.19 Hanover Park Med centre. Stitched. Ok 9.22 1998, 1999, 2000. Ankle, knee, L hand. Dr of company & Dr Kabana. Stitched. 9.9 Double vision sometimes. 9.17.1 Asthma pump – prn, white tab – 2 BD 9.18.1 Same as 9.17.1 18.15 Physical: no teeth 18.20 Very tight. Under day hosp.	Ensign Clothing: belt boy 1984 (3mnths) Clover Ice Cream: 1984-1986 Prison: kitchen 1986-1991 SGB: Construction: shutdown Caltex 1996-now Work now: building scaffolds, unloading trucks
60	9.9 Watery in strong light. 9.22 IOD. Last year. Foreign object in L eye. Company doctor removed object. Ok Fell through slab, hurt L leg. First aid Treated. Still sore, but Ok.	Casual: Allsans Super: 1981-middle 1981 chemicals/noise Back to school 1981-1985 M&R: labourer 1988-1992 M&R: trained & worked as carpenter 1992-now Hazards: noise/dust/glues Work now: making ceilings, boxes, doors
61	9.19 Conradie hosp 9.22 1986 IOD. Cable into L leg. Stitched. Ok. 18.12 Physical: L-waxed R-waxed. Advice	Petuli Rustenburg Mine: surface 1970-1971 Nobola Construction: Alberton: gen.worker 1971-1972 Spoornet: gen.worker 1972-1973 M&R: gen.worker 1975-now Hazards: noise/dust Work now: casting wet concrete
62	9.2.3 Sometimes. Do not remember. Ok 9.12 Sometimes/long ago. Dr. Injection. Ok	Cape Doors: cut wood 1988-1990 noise/dust St. Jiles Hsp: cleaner ?-1996 floor stripper/polish Two Oceans Aircondition: 1998-now paint/dust Work now: cleaning, painting pipes of airconditioning & carry.

63	9.1 Now. Athletes feet. 9.2.3 Now. Ongoing. 9.8 New. Had meningitis as a child. Nerve in ear dead – slight deafness. 9.19 Now. No treatment. 9.14 Last year. Clear. 18.13 Physical: Sinusitus – advice.	Big Four: printing & machine mechanic: 1975-1984 chemicals /noise/dust Tiling Co: cement tiling 1985-1987 cement dust/noise Luwa: install ducting – casual. Noise Tomson Air cond: install ducting 7 months of 1998 noise Two Oceans Air cond: 1998- dust/noise Work now: site driver, drive outside also, carry ducting for air conditioning.
64	9.16 As 10 yr old child 9.19 Fell from roof 1992 – Broken wrist & pelvis & cracked spine. Private hosp Hillbrow. Ok. 1982 Ear operation. Florence NightingaleHosp-Jhb. Ok 9.22 Was self employed at the time.	Pick 'n Pay: cold storage 1969-1971 cold AC Sobotker: apprentice carpenter: 1971-1975 Dust/noise/asbestos dust Contract work 1975-2001 dust/noise Falcon Shop fitters: Carpenter 2001-now dust/noise Work now: carpenter: cutting of wood & installation
65	9.14 1999 tested. Ok	GG Construction: making dams 1970-1971 dust Swart Construction: building 1971-1972 dust SPK Badenhorst: dumper driver 1973-1976 Dust/noise KCC: dumper driver 1977-1985 dust/noise Concor: dumper driver 1986-1988 dust/noise WBHO: 1988-now. Dust/noise Work now: dumper driver – concrete/daga/bricks
66	9.2.4 Current. Private Dr. For hypertension. Ok 9.20 Knee problems. Private Dr & G/Schuur Hosp. Pain tabs. Ok 9.21 1976 – Sport. # collar bone. Clinic. Bandaged. Ok 9.17.1 For hypertension – daily. 9.18.1 Same as 9.17.1 18.17 Physical: Referral letter to clinic	Dept of water affairs: carpenter 1974-1980 Concor: Team leader 1980-1988 WBHO: Team leader 1988-now Hazards: noise/dust Work now: Team leader for construction work.
67	9.19 1982 – after car accident. Richmond hosp. L knee stitched. Ok. 9.22 IOD 1979. Stitches in head. Worcester hosp. Ok 18.4 Physical: Old laceration-head	Provincial Council: Roads: labour Concor: labour 1976-1987 WBHO: Team leader 1988-now Hazards: dust/noise Work now: Team leader for construction work
68	9.6 Lower back & side pains. Blood trace in urine. Letter of referral. 9.8 Can't hear well. Ongoing. 9.9 Can't read & write. 9.11 Muscles sore at right from drilling. Injection & tabs. Ongoing. 9.19 Hospitalised after car accident. L leg with lesion. Conradie hsp. Stitched. Ok See 9.19 for 9.20 & 9.21 9.18.1 For muscle pains. 1 tds 20. Remarks: Letter to Dr for cystitis.	LTA: throw concrete 1974-1980 noise/dust Stocks & Stocks: throw concrete 1982-1986 Noise/dust Western Prov. Hardware: packer 1987-1996 no WBHO: chipping hammer/scaffolding/guide for crane 1996-now. Noise/dust Work now: chipping concrete with hammer/do scaffolding/guide for the crane-baseman
69	9.19 G/Schuur hosp – 1970 car accident. 9.20 Car accident – broke arm. Plastered. Ok 9.23 Canned foods in tins & cool drinks. Ok 18.15 Physical: Dentures 18.17 Advice	Heafle Waterproofing: waterproofing 1978-1981 Forbes Waterproofing: waterproofing 1982-1987 De Koning: waterproofing 1988-now Hazards: noise/dust/heat/chemicals Work now: waterproofing roofs, etc. Working with torch to melt substances using in waterproofing.

70	9.6 As 9yr old. Tygerberg hosp. Ok. 9.7.2 16/01/03 Took grandpa himself. Ok 9.21 Everyday. GP. Pain tabs. Ongoing. 9.19 1999 Hernia. Jan S. Marais hosp. 9.20 Operation. Ok. 9.22 1998 – Work. Ok. 20. Remarks: Advice with diet	Nampak Polyfoil: machine operator 1982-1989 Private: Sales in construction field 1990-now Hazards: chemicals/noise/heat/dust Work now: Supervise, check/test cabling
71	None 18.17 Physical: referred to GP	Joinery: machinist 1970 Robert Lee: apprenticeship 1971-1976 LTA & Beukman, Theunissen: 1976-1982 WBHO: carpenter 1982-now Hazards: noise/dust/chemicals Work now: putting in ceilings, fixing doors, concrete work, staircases, beams.
72	9.4.2 1987. 18.11 Physical: R-waxed	Winkelhaak Mine: 1975-1978 West Driefontein Mine: underground 1978-1987 WBHO: 1987-now Hazards: dust/wet/noise Work now: general labour, assist in construction work
73	9.7.2 Yesterday. Took grandpa 9.11 Last week. R arm & shoulder. GP. Brufen & pain tab. Ok. 9.19 Somerset Strand General hosp. IOD 9.22 IOD. Iron went through gumboots. Cleaned, wound. Ok 9.18.1 Brufen – 1 daily 9.18.2 Blue tablet – 1BD Physical: lesion on abdomen – witchdoctor for poison	Stilfontein Goldmine: 1964-1965 dust/heat/noise Doornfontein " ": 1966-1967 dust/heat/noise Westenaria " ": 1968-1971 dust/heat/noise Casual: general worker Tospatula Construction: plastering 1972 Koeberg Power Station: labour 1979-1984 dust/noise WBHO: gen.worker/torch cutting/team leader dust/noise/heat of torch Work now: Team leader for construction/sweeping/cleaning etc.
74	9.19 G/Schuur hosp – Appendix 1989. 9.20 1989 Appendicectomy. Ok	Durban Deep Gold: 1983-1984 noise/dust/heat Concor: labourer 1984-1985 noise/dust WBHO: labourer 1986-now Work now: labouring work – sweeping sand
75	9.19 13 yrs old Hernia H.F. Verwoerd hosp 9.20 Hernia operation. Ok.	Army: 1977-1978 SA Railways: shunter 1979-1980 dust of coals Dawzen & Frazer: trainer for construction fire protection 1979-1989 dust/noise SA Fire Fighter: contract manager dust/noise Work now: contract manager for fire protection
76	9.1 Rash groin, fungus. Now. 9.22 Last yr. Chris Barnard Mem. Hosp. X rays – treatment. Ok	BMD: machine operator 1981-1983 heat/chemicals Amero Ceilings: building work 1984-1985 dust Coscar Motor Ind-SA: 1986-1996 exhaust fumes, dust, asbestos from wheel drums Mazo Steel GW: 1998-now dust/heights/lifting heavy steel/noise Work now: general work, lift steel beams, pipes
77	9.12 Back op 2001. N1City Mediclinic. Fusion. Painful at night. Ongoing 9.19 Back injury on duty 1991. Had fusion thereafter. 9.21 Back & neck injury. 18.4 Physical: back operation	Calvin Footware: labour-machinist 1974-1977 Noise/chemicals Herrit Trailers: operator 1978-1980 Universal Engineering: operator 1980-1982 Mazo Steel: Team leader 1982-now Hazards: noise/dust/heat/heights Work now: Team leader - supervising
78	9.14 2002 tested. Ok 18.31 Physical: varicose veins R-leg. Letter to Day hosp for trace blood/leukocytes in urine & varicose veins painful	Klerksdorp Gold Mine: underground 1972 noise/heat/dust Martin & East: pipe layer/team leader 1986-now Work now: team leader for concrete layers

79	9.4.3 1998 TB treatment at Nyanga Clinic. Ok 9.6.1 2002. Dr. Tabs & inj. for bladder. Ok 9.12 Nov 2002. Nyanga Day hosp. Tabs & inj. Not 100%. Ongoing. 9.14 2002 by sister at work. Ok 9.21 1994 # L ankle. Conradie hosp. Ok 18.11 Physical: R-waxed	Vaal Reefs Goldmine: underground 1979-1987 Noise/heat/dust WBHO: gen.worker 1989-1995 noise/dust Work now: Storeman – receive & give out tools
80	9.19 Livingstone Hosp PE-1979. 9.22 Car accident 1979. Plaster. Ok 9.23 1997 Tinned fish. Dr Vabaza. Inj. & tabs. Ok 18.4 Physical: Old knife wounds-side of back 18.15 Dentures	Telkom: installed cables 1989-1994 Libby Construction: install cables for telephones 1997-2001 ICAT: install cables 2002-now Hazards: dust/noise Work now: Installing cables for data & telephones
81	9.1 Eczema-summer. Now. Dr Anthony – Paarl. Cortizone ointment. Ok 9.10 Arthritis-wrist & knees. Continuously. Dr Anthony-Paarl. Voltaren tabs. 9.19 1993 Paarl hosp. 9.20 Removal of R knee cartilage. Ok. 9.22 R wrist painful growth. Dr Tayler Foreshore. Operation. Ok 9.17.1 Arthritis- Voltaren, pain tabs. 1 tds of each. 9.18.1 Same as 9.17.1 18.15 Physical: Dentures	KWV: cleaning of bottles 2yrs noise Lewis Stores: tea boy 2yrs Duro Plastic-Bellville: inspecting clothes 1yr McCarthy Car Traders: Appr. carpenter dust/noise/chemicals WBHO: carpenter now dust/noise/chemicals Work now: carpentry-making cupboards, construction work, finishing skirting, doors, lock, ceiling
82	9.19 G/Schuur hosp. 9.20 IOD – 1990. Operated on #wrists. Ok 9.22 IOD – 1990. 18.4 Physical: Wrists, only where operated on.	WBHO: labourer & team leader 1988-now Noise/dust/heights Work now: team leader for scaffolding
83	9.18.1 Antibiotics, pain tabs. 1BD 9.19 Growth on epiglottis. Louis Leipoldt Hosp 9.20 1996 Growth removed. Ok 18.15 Physical: Dentures	Played in Band & sing: 1968-1974 noise John Thompson: operator Construction: 1975-1978 Tyger Staal: rigging 1979-1982 Gran Steel: rigging 1983-1996 Mazo: rigging 1996-now Hazards: noise/dust/heat Work now: team leader for rigging – building steel structures
84	9.22 1996 Laceration R forefinger. Stitched at G/Schuur hosp. Ok.	Iscor-Jhb: gen.worker 1980-1984 Eskom-Middelburg: gen.worker 1985-1988 Cape Waterproofing: 1991-1995 chemicals/heights/heat/dust GP Koning Waterproofing: 1996-now chemicals/heights/heat/dust Work now: waterproofing of roofs
85	9.11 Now has little arthritis. Ongoing 9.12 Now – lower back pain. Ongoing. 9.19 1983 – burnt at hostel. Jhb hsp treated burns. Ok 18.4 Burn lesions (1983)	Pres. Steyn Mine: underground 1965-1971 dust/noise/heat Griffiths & English: tar roads 1971-1976 heat/chemicals Saldanha Steel: under water construction 1976-1980 cold Contract for building 1980-1996 Work now: helping bricklayers, bring daga

86	9.1 Now athletes foot, skin hard. Still to advise. 9.7.2 Cluster – Dec 2002. Dr – tablets. Ok 9.19 1981 Gastro-enteritis Rustenburg. Inject. Ok. 9.22 1990 R forefinger laceration. Somerset Hosp. Stitched. Ok	N.Westhuizen Visbedryf: cut? Building Business Meester Bouers: 1980- Rembrandt cigarettes? WBHO: bricklayer 1998-now. Work now: bricklaying & plastering.
87	9.12 When lifting heavy objects. Chiropractor. Ok. 9.21 Car accident. Backlash. Ok. 9.18.1 Eye drops	HG Holiday: joiner 1972-now noise/dust/chemicals Work now: installing, manufacturing cupboards, doors, windows, panelling ceilings
88	None 18.17 Physical: Letter to Day hosp-Khayelitsha	Congo Construction: gen.worker 1985-1987 WBHO: gen.worker 1988-now Hazards: noise/dust Work now: general worker-working outside, concrete, etc.
89	9.6.2 Last yr. Khayelitsha Day hosp. Tabs. Ok 9.7.2 When eyes start burning. Painamol. Ok 9.9 Same as 9.7.2 9.12 Last year. Khayelitsha Day hosp. Rubbing stuff. Ok 9.14 Last year. Khayelitsha Day Hosp. Got no results. 9.21 1982 Injured R leg. Baragwanath Hosp. Gave crutches. Ok	Gillies Construction: making dams 1982-1986 Kilpatrick Electric Construction: 1986-1989 Subcontracts: bricklaying 1990-1995 Training Centre for 1yr 1995-1996 Casual jobs: 1996-2002 Martin & East: 1992-now Hazards: dust/noise Work now: general worker – laying curbs, water pipes, sewer pipes
90	9.6.1 Ocassionally (last mnth).No treatmnt. Intermittent. 9.11 1992 R knee – shooting accident. G/Schuur hosp. Surgery. Ok 9.19 R knee & R little finger. G/S hosp/Gatesville. Surgery. Both ok. 9.20 1992 – R knee & R finger. 9.21 1992 knee. 1997/8 finger. 9.22 1997/8 R little finger. Gatesville Med centre. Operation. Ok. Not bend 100% 18.7 Physical: L- 6/9 10% R- 6/12 15%	Free State Gold Mine: operator 1970-1972 heat/dust/noise Hotel: kitchen staff 1972 CT-Murray & Roberts: gen.worker 1974-1976 Paarl Construction: team leader 1972-1973 Hazards: dust/noise Paarl Municipality: electrical work 1976-1978 electrical Simonstown: gen. work construction road: 1979-1980 traffic noise/dust Work now: general work – WBHO
91	9.5 Cramps intermittently .No treatment. Ok 9.7.1 Dizzy in mornings. (24/1/03 morning dizzy) No treatment. Ok 9.7.2 One a wk Frontal region. No treatment. Ok 9.9 When reading/tired. No treatment. Ok 9.11 Can't lift heavy weights 2002 May. 2001 Day hosp – physio. Ok 9.12.1 No X rays for back. 18.15 Physical: No teeth	McCarthy: general work 1971-1985 No noise McCarthy: joinery 1985-1987. None HG Holliday: joinery 1988-2003 Work now: joinery
92	9.2.4 Hypertension: currently. Day hosp. Tablets-white. Ok 9.19 1982/3 – shooting acc. Conradie H. emergency. 9.20 Bullet remains. Ok 9.21 2001: car accident. IOD. Mediclinic. Durbanville. Bruising. Stiff joints. 18.4 Physical: Behind neck – knife cut long ago 18.15 Dentures top. No teeth bottom	Plastic Co: driver 1976-1983 traffic Old Mutual: clerical 1983-1987 Portnet: casual 1988-1990 Mazor Steel: operator 1999-current noise/dust/heat Work now: operator- drilling/grinder/connect steel bits

93	9.2.3 Sore chest when coughs. Ok 9.6 Kidneys: after long hrs. Pain tabs clinic. Ok 9.10 Sore throat when cough. Ok 18.7 Physical: L- 6/12 15% R- 6/9 10%	Nothing listed Work now: mixing cement
94	9.2.3 Sometimes. Ok 9.2.4 July last yr. Dr CH Hundleby. BP tabs. Ongoing, still has headache. 9.6 Last year. Dr Hundleby. Tablets. Ok. 9.7.2 Last wk. Ok 9.9 Glasses-reading. Ophthalmologist. Ok 9.13 July 2002. Dr. Tabs not by Dr. Ok for now 9.17 Hypertension .Ok 9.18 July 2002. Tablets? 18.17 Physical: Letter of referral to Dr.	Gold Mine: driver 1964-1968 heat/dust/noise CT Civil pipeline Constr.: checker 1970-1972 Heat/dust/noise Construction: carpenter 1973-1974 dust Construction: site clerk 1975-2003 dust/noise Work now: site clerk: book in times, records for site, first aider
95	9.2.3 Sometimes. No treatment. 9.7.2 Sometimes. Status-headache. 9.9 L eye can't see properly. Clinic. Referred to G/S hosp. Status-surgery. 9.11 R knee hit by scaffold pipe. Dr in Constantiaberg – op. Status-Sometimes painful. 9.12 Lower back pain. Ok 9.19 For knee op as above. 9.21 1985. Break R leg & R arm. Conradie Hosp 9.22 See 9.11 18.7 Physical: L-no vision 18.9 Cannot see with L-eye 18.15 Own, few left Remarks: Going to have op at G/S Hosp on L-eye. No date yet. Presently under Clinic	Steeldale: fixer -1978 WBHO: steel fixer/scaffolding 1978-now Hazards: noise/dust Work now: cleaning – sweeping, work with vacuum cleaner
96	9.23 Every night. Ok. Current. 9.9 Night blindness every night. Current. 9.12 Referred. Pain when work. Ongoing 9.17 Monday 27/1/03. Self – Panado. Ongoing. 9.19 Appendix-hernia 1977. Tygerberg hosp. Ok 9.21 1987 car accident. IOD. 9.22 X rays done at Somerset West Private Hosp. Back still pain. Ongoing. 18.4 Physical: Appendix op L side abd. op. 18.15 Own, 2 to be taken out next week Letter of referral to Somerset West Day hosp to Open WCA case again for back trouble.	Power construction: labourer 1984-1986 bricks Construction: student 1986-1987 Power Construction: foreman 1987-1990 Construction: contractual 1990-2003 noise/dust Work now: pipe layer
97	9.2.1 Last week. Muscular treatment. Ok 9.12 2001. No specific treatment. Ok	Gold Mine: labourer 1966-1969 Robert Construction: labourer 1969-1974 Construction: labourer 1976-1980 Construction: labourer 1981-2003 Hazards: heat/dust/noise Work now: labourer-bricklaying

98	9.2 2 yrs ago heart attack. ECG/bloods. Jooste hosp. Ok. 9.2.3 Sometimes-smoking. Treatment-heart related? Ok 9.7.2 Irregularly. Ok 9.9 Weak all the time. Ongoing. 9.12 16 yrs. Not now. Woodstock. Brace. Ok. 9.19 Gastroscopy 2001.GSH. ?Ulcer-alcohol. 9.20 13 yrs old. # arm. GSH. Operation. Ok. Problem on L side now. Louis Leipoldt. R hernia repair. Ok 9.22 Hernia – from lifting heavy weights work. R hernia repair. L side now. 18.15 Physical: dentures 18.17 Uneven heartbeat 18.21 Miss a beat. Had heart attack	Furniture: carpenter 1965-1982 Furniture: carpenter 1982-1998 Furniture: shop fitting 1998-2001 Furniture: carpenter 2001-2003 Hazards: dust from wood & noise Work now: Carpentry
99	9.2.3 Intermittently. Unfit. 9.4 As a child. Ok 9.2.4 Hypertension. Ok. 9.6.1 2 Months ago. Ok 9.8 Often: this week. Ongoing. 9.9 Eyes blurred constantly. Ongoing 9.15 As a baby. Hospital. UV. Ok 9.19 Accident at school. Hospital 9.20 Leg & arm. Operation. Ok 9.22 1997 – hand injury. Hosp. Skin graft. Ok. 18.12 Physical: L-lesion R-lesion can't hear sometimes.	Rutherfords: joinery 1983-1999 heat/dust/noise GP Koning: gen. work 1999-2003 Work now: waterproofing
100	9.2.1 2002. Mitchells Plain. ECG, blood. Ok 9.2.2 Last wk. Ongoing 9.4.4 Constant smoking. Ongoing. 9.7.2 Constantly. Intermittent. 9.8 Deaf both ears. Ongoing. Ref to D. Hosp 9.9 Bad vision. Ongoing. Ref to D. Hosp 9.10 Intermittently. Ok 9.11 1981 carpal tunnel. Victoria hosp Op. Ok 9.12 Constant pain: lifting weights. Ongoing 9.19 & 9.20 See 9.11 18.4 Physical: acne spots on back 1811 L-infected 1812 L-busted 1813 Yellow post nasal drip 1815 Very bad, few left 1832 R-middle, ring & small finger stiff – had operation Remarks: Body very infected. Ref. letter to Mitchells Plain Day Hosp. L-ear otitis media	Painting: painter 1968 + prison 7yrs to 1981 Unemployed Jan – Jan Painting: painter 1998-2003 chemicals/falls Work now: painting walls, ceilings, doors on construction sites.

101	9.2.1 2002. Ok 9.2.4 ? All the time. Ok now. 9.5 Sometimes. Ok 9.11 2002 Cramps: muscles. Ok 9.19 Stab wound – 2000. Tygerberg. Op. Ok 9.21 See 9.19 9.22 2002 April. Fell. Treated at Delft. Sutures/meds. Ok	Parks dept: gardening 1977-1987 dust Council: gardening 1987-1997 Construction: electrical –grinding 1997-2000 Construction: electrical –grinding 2000-2002 Construction: 2002-2003 Hazards: noise Work now: terminating wire cables
102	9.1 Rash: 2002. Site C Clinic. Ointment. Ok 9.2.1 2002. Site C Clinic. Told no smoking. Ok 9.2.3 Constantly. Status-constant. 9.6 All the time. Constant. 9.6.1 Sometimes. Not Ok. 9.6.2 2002. Site C Clinic. Tablets. Not Ok 9.7.2 July 2002. Site C Clinic. Tablets. Ok 9.8 L leaking all the time. Site C Clinic. Drops. Not Ok. 9.9 Bad vision all the time. Private treated. Glasses at home. Ok 9.10 June 2002. Site C Clinic. Tablets. Ok 9.12 All the time. Khayelitsha Dr. Tablets. No X rays. Not Ok. 9.12.1 To be investigated all the time 9.19 Tygerberg: stabbing 1987. Suturing. Ok 18.12 Physical: L-infection, was at Day hosp. Remarks: Letter to Tygerberg hosp - Urology	Gold mine: underground cleaning 1975-1976 Heat/dust/noise CT: Hotel: waiter 1976-1980 Hotel: barman 1980-1982 Hotel: cleaner 1982-1983 Drop Inn: assistant 1983-1984 Hotel: barman 1984-1985 Construction: pipe layer 1985-2003 dust/noise Work now: pipe layer
103	9.8 2002. GP/ ENT. Wax on nerve: dizzy. Ok 9.12 Nov 2002. Ongoing. 18.15 Physical: Upper dentures	City Council: cleaner 1980-1983 chemicals Construction: operator 1983-1993 dust/noise Construction: painter 1993 chemicals/noise/dust Work now: paint-spray paint
104	9.4 3 weeks. Constantly. Ongoing 9.6.2 1970 Grassy Park. Injections.Ok 9.10 Presently. 1989 G/S Hsp. Pre-cancerous? When eating, swells. 9.12 Constant.Ongoing. 9.17 See 9.10 9.19 See 9.20 9.20 Removed bullet. MVA. GSH 1978. Op. Ok Ligament knee MA. GSH 1986. Op. Ok Blood poisoning MA.GSH 1986. Op. Ok Gland.-see point 10. GSH 1989. Op. Ok 18.4 Physical: Tattoos 18.11 R-waxed – advice 18.15 Own bottom, no top 18.19 C/O pain behind L-thorax Remarks: Will go to G/S hosp again for gland under L-side of jaw	Council: labourer 1969 traffic exhaust fumes Engineering: operator 1969-1970 Engineering: labourer 1970-1971 Kurling mills: checker 1971-1972 dust/noise/heat Metal: operator 1972 noise Printing: stacker 1972-1973 fumes Prison: 1973-1974 Council: 1974-1976 maintenance-sewerage Coffee: 1976-1977 operator Convalescing: 1977-1979 Prison: 1979-1985 Council: 1986-1992 maintenance Construction: Tiler 1992-1995 dust/noise Liquor-Bacardi: 1995-1996 packer Whiteheads: 1997-2003 dust/noise Work now: painter. No spray painting
105	9.2.1 Last month. Intermittent. 9.4.2 TB 1983. Netreg Bonteheuwel. Antibiotics. Ok. 9.4.4 2 months ago. Coughing. Ok 9.6 Nephritis – Nov. Ok 9.7.1 Dizzy intermittently. Ok. 9.7.2 Last wk. Heideveld Day Hosp. Tabs. Ok 9.8 Currently. Sore. Ongoing	Dry cleaners: driver 1970-1973 Traffic GP Koning: labourer 1975-2003 dust/noise/heat Work now: Showers-waterproofing/carry heavy materials/painting/sweeping

	9.9 Accident 1973 – eye. G/S Hosp. No op. Dressings. Ok 9.11 Sometimes achy joints. status-now & then 9.12 Yesterday. Current. 9.19 Eye accident. Bandages. Ok. 9.20 1958 – Boil. Middelburg. Op. Ok 9.22 Burn L eye. Charlesville. Dressing. Ok 18.7 Physical: R-can't see, had acc. 18.8 R-little wider 18.9 Better left side 18.15 Dentures on top, own bottom Remarks: c/o pain beneath L-ear & neck for 3/12 now.	
106	9.4.4 15 years: still. Ongoing 18.17 Physical: Letter of referral	Construction: tiling 1984-1991 dust/noise Construction: stone/glass 1991-2003 dust/noise Work now: drill & install copper wiring
107	9.8 All the time – 'not right'. Ongoing 9.9 Pain all the time. Ongoing 9.12 Not everyday – last wk. Ongoing 9.19 See 9.21 9.21 Car acc., 2000 Harare. Pills. X rays. Ok 18.12 Physical: L- old scar R- white spots. Remarks: worker says he can't hear so well from L ear. Previous burst eardrum	Paper: packing 1978-1985 dust Shoes: packing 1985-1987 no dust Farm: labourer 1987-1992 GP Koning: waterproofing Sept 1997-2003 dust Work now: carry rolls of material/sweep/use glue
108	9.6 All the time. Ongoing. 9.12 All the time. Ongoing 9.19 2002 – Stabbed. Khayelitsha Day H. Sutured. Ok 9.20 See 9.21 9.21 Car acc. 1999. GSH Hosp. X rays # R leg .Ok 18.12 Physical: L-waxed R-waxed – advice 18.29 Did wrong	WBHO: Carpenter 1995-2003 dust/noise Work now: woodwork
109	9.4.4 All the time. Ongoing 9.5 Op– stomach. Tygerberg. 1985 for Poisoning. Ok 9.11 1987 accident R leg. Conradie H. Amp. Ok. 9.20 & 9.22 See 9.11 9.14 HIV Khayelitsha Day Hsp. Negative. Ok 18.25 Physical: R-leg prosthesis	Construction: Bruce Dundas: gen. worker 1974-1976 Construction: Heimes: gen. worker 1977-1980 WBHO: gen. worker 1981-2003 Hazards: Dust/noise Work now: Clean toilets & change rooms
110	9.14 HIV test – no results. 2002 Cape Town Long Str ?Dorp Str 9.18 1999 #R leg. G/SH/Conradie Hsp op. Ok-painful 9.20 & 9.21 See 9.19 9.19 R arm. Fall onto glass. Retreat Day Hosp. Suture. Painful when lifting weights. 9.21 Last week. 18.4 Physical: R-lower leg, old laceration 18.8 R- little wider than L 18.12 L-waxed R-waxed	Clothing: Ironing 1983-1983 Prison: 1986-1991 RR Roberts: labourer 1991 dust/noise/chemicals Work now: cleaning

111	9.12 Sometimes. Ok 9.20 1999. Tygerberg. Stomach. No op. OK 18.15 Physical: needs dentist (own)	Workshop: assistant 1963-1970 no noise/dust Construction: electrician 1970-1985 dust/noise Welding: welder 1986-1987 dust/noise General: labourer 1987-1989 dust Workshop: assistant 1989-1996 no noise/dust Martin & East: labourer 1996-2003 noise/dust Work now: labourer: carry heavy cement bags/cleaning
112	9.9 Need glasses constantly. Ongoing 9.12 Back pain: currently. Feb – Specialist - Kraaifontein. Tablets. No X rays. Ongoing 18.4 Physical: feet dry	JHB-Goldmine: driller 1970-1978 heat/dust/noise Farm: apple picker 1978-1980 M&R Constr.: gen.worker 1980-1984 noise/dust Ovcon: gen.worker 1984-2003 noise/dust Work now: concrete: machine levels concrete
113	9.1 Constantly - last month. If too hot. Ongoing 9.4.4 Dec 2002 (normally winter). Ongoing 9.5 Stomach cramps: Food. Ongoing 9.6 Pain next to bladder. Ongoing 9.6.1 See urinalysis. Ongoing 9.12 All the time. Mowbray GP. Tabs. Ongoing. 9.18 Nov 2002. Mowbray GP. Tablets. Ok 9.8 1960. Ok 9.21 Axe accident as a child. Transkei. Sutures. Ok 18.12 Physical: L-waxed R-waxed, advice.	Goldmine: gen.worker 1958-1969 heat/dust/noise M&R Constr.: gen.worker 1969-1987 dust/noise WBHO: gen.worker 1987-2003 dust/noise Work now: smooth the concrete floor once mixed & cast
114	9.1 Itchy skin at pulses & body. OHP Whitfields. Ongoing 9.2.4 Had 2 yrs ago. Private Dr. Tabs ? 9.9 Can't see near without glasses. No glasses yet. Remarks: Letter to day hosp re: glucose in urine	RH Morris: labourer 1970-1982 noise/dust WBHO: Team leader 1982-now noise/dust Work now: team leader for workers working with wet concrete
115	None	WBHO: store man 1982-1984 noise/dust WBHO: gen.worker 1984-now noise/dust Work now: power floating concrete (wet)
116	9.6 Kidney. Pharmacist. Donns Tablets. Ongoing. 9.9 Shortsighted. Optician. Glasses prescribed. 9.18.1 Donns tabs 2x3day 9.19 Milnerton hosp 9.21 Car accident. # rib. Ok 18.6 Physical: spiderneave Remarks: Has some kidney inf. Been to pharmacy last wk. Still recovering	Mining: underground 1976-1977 noise/dust/heat Mining: underground 1979-1985 noise/dust/heat Work now: team leader – pouring of concrete, cleaning brick work, scaffolding.
117	9.2.4 2002 Nov. Clinic. Pills. Ongoing. 9.14 HIV: 2002 Sept. Negative .Ok 9.19 Hypertensive 2xdaily. Clinic. Tabs. Ok 9.20 See 9.17 Remarks: has pearly rings around irises.	CT shop: gen. wrk 1968-1969 Tripod Constr.: gen. work 1969-1970 dust/noise Colour Constr.: gen. work 1970-1976 dust/noise Cooper Homes: gen. work 1976-1980 dust/noise Ovcon: 1981-2003 dust/noise Work now: excavation/bricklayer/team leader

118	9.7.2 2002 – Sporadic. Ok 9.8 L last week. Pain. To be investigated. 9.21 1973 – boil excision. Ok 9.22 2002 March – L leg. Burnt – flames. Treated on site. Ok 18.26 Physical: shoulder pain occasionally. Remarks: Kneeling when working experiences some pain & when stands up from kneeling.	Garage: petrol att. 1981-1984 chemicals/fumes Decks Engineers: labour 1984-1987 dust/noise Plastics Engineers: labour 1987-1990 fumes/heat Edgars: labour 1990-1997 Intermittent: labour 1997-2000 dust/noise GP Koning: labour 2000-2003 dust/noise/fumes Work now: waterproofing: carry heavy rolls of materials/burn work/painting
119	9.1 June 2002-Aug 2002. Chemist. Tabs/cream. Ok 9.6 April 2002-Sept 2002. GP. Tabs / ointment. Ok 9.12 Jan 2003. Ok 18.28 Physical: Pain 18.29 Pain 18.31 L-leg Remarks: Incorrect. Lifting techniques – exp backache when stands up	Mining: timber constr.: 1982-1987 Hazards: noise/heat/chemicals/dust Work now: finishing of bricklaying
120	9.1 Psoriasis. Treated self. Aqueous cream + herbs + Vaseline. Ok 9.2.3 2002 Nov. No exercising. Ok 9.5 See 9.21 Tygerberg hosp. Ok 9.7.2 Sept 2002. Headaches. Ok 9.8 Oct 2002. Scratch. GP. Drops. Ok 9.19 Oct 2000 : Shot. Tygerberg. Op. Ok 9.22 1986: Stabbed. Tygerberg. Op. Ok 9.23 1999: Car acc. Mitchells Plain D/hosp .X rays. Ok 18.4 Physical: Psoriasis 18.12 L-perforation 18.13 Breathing at night 18.14 Redness 18.15 NAD – missing 18.29 LBA – lifting. Need to be corrected.	Clothing: labour 1983-1985 Construction: labour 1985-2003 heat/noise/dust Work now: operator: burning – cutting torch/welding
121	9.2.4 Nov 2002. Woodstock Day Hosp. Pills. Ok 9.9 1975 – Stick in eye. Ciskei. Blind. Still sore. 9.6.1 Now. Not treated. Burning. Ongoing. 9.14 Negative. 9.21 See 9.9 9.17.1 Hypertension.1daily. 9.18.1 Same as 9.17.1 18.7 Physical: R- no sight – injury 18.9 NAD L-side 18.29 Needs attention Remarks: Compliance of hypertension medication can cause detrimental effects	WBHO: labourer March 1987-2003 dust/noise (1 yr study: bricklaying) Work now: bricklaying
122	9.6.2 June 2002. GP. Treatment-unknown. NAD 9.21 MVA at 10 yrs. E. Cape hosp. NAD 18.29 Physical: Shoulder pain when lifting heavy objects	Construction: bricklayer 1988-1992 Hazards: noise/heat/chemicals/dust Work now: gen.worker assists in all activities

123	9.12 Nov 2002. Treated self. Deep heat. NAD Remarks: Lifting techniques advised.	Mining : store man 1988-1989 No work: 1989-2002 Construction: carpenter 2002-2003 dust/noise JHB: Construction: carpenter 1991-2002 dust/noise Work now: making cupboards/hanging doors/fitting shelves
124	9.6.2 1988. Salt River. Pills. Ok 9.22 1996 Fall. Athlone. X rays. Ok	WBHO: gen.worker 1986-1989 dust/noise WBHO: carpenter 1990-2003 dust/noise Work now: Cut timber/hammer/grinder/power tools
125	9.2.4 3/52ago. GP. Tablets. Ok 9.8 5 yrs ago. L ear. Paarl Hosp. Need op. Ok 9.19 1999 – Stomach. Paarl Hosp. Tablets. Ok 9.17.1 Hypertension. 1daily. 9.18.1 Same as above 18.14 Physical: bit red 18.17 On medication 18.32 Tremor Remarks: L-ear: ruptured membrane. Dr is aware. No pain. Hypertension. Poor lung function ability: exhaling. Sees Dr regularly.	Construction: labour 1971-1973 M&R Constr.: bricklayer 1974-1981 Constr.: bricklayer 1982-1987 Constr.: bricklayer 1988-1995 Constr.: bricklayer 1996-2003 Hazards: dust/noise Work now: bricklayer
126	9.4.4 All the time. Constant. 9.12 All the time 2002. GP. Pills. Const. Ok 9.6.2 Impotent. Constant 9.8 R ear deaf. Constant 9.9 Shortsighted. Constant 18.4 Physical: Athlete's foot 18.7 R-bad short sightedness 18.12 R-perforated. Referred 18.14 Red 18.15 Decayed 18.20 Wheeze 18.28 Constant pain 18.32 Gout in feet & feet fungal infection Remarks: Elderly patient presently with multiple problems	JHB: Constr.: gen. work 1964-1973 Constr.: plasterer 1973-1974 A. Cox Constr.: gen. Work 1974-1984 Bram Paring: gen. work 1984-1986 WBHO: gen. work 1986-2003 Hazards: dust/noise Work now: gen. work – scaffolding
127	9.12 May 2002. Ongoing.	Ovcon: gen. work 1978-2003 dust/noise Work now: dig: spade/columns with concrete Make a deck/cleaning/sweeping
128	9.24 1988 Crush: injury to L thumb. Victoria hosp. Sutures. Ok 18.11 R-waxed 18.12 L-waxed advised 18.15 Only few left 18.17 advised	Constr.: gen. worker 1980-1986 dust/heat Constr.: gen. worker 1988-2003 Work now: concrete- mixing/scaffolding
129	9.14 Tested 1987. Salt River Day Hosp. Ok 9.19 Hosp in East London when small. 9.20 Removal of something in back. 9.22 1985 – G/S Hosp. Inj. back muscle. Ok. Remarks: BP -told him to go to Day hosp when he gets headaches	CT: BSB Epping Sheep wool 1974-1975 dust Murray & Roberts: plumber-casual 1975 Mine Westonaria: 1976-1977 noise/dust/heat Shop: JHB: 1977-1979 WBHO: 1980-now noise/dust/cement Work now: Floating concrete/patching walls/wet cement

130	9.2 Quick heart rate when TB. Clinic in Nyanga 9.2.1 Chest pain when TB. Ok 9.4 Sometimes TB. Clinic in Nyanga. Ok 9.4.2 Refer 9.4 9.4.4 At night time. Ok 9.6.1 Sometimes problem. Ok 9.11 Pain in legs. Ok 9.19 IOD L foot injured by cement block. City Park Hosp. Ok 9.20 See 9.19. Painful at night. 9.21 Not injured. 9.22 See 9.19 Remarks: To go for TB test every 6 months. Is now clean.	Mine Free State: 1960-1963 Ships Ind: 1986-1987 Gauteng Mines: 1967-1970 Gauteng Mines-West Driefontein 1974-1977 WBHO: 1987-now Hazards: noise/dust Work now: sweep cement through water and put mask on
131	9.9 Eye flickers in heat. Ok 9.14 Tested for HIV/AIDS. Maponewa Day Hosp. Ok 9.19 1985 for abdominal problem (lower). Tygerberg. Ok 9.20 See 9.19 9.22 IOD R leg cut off. 1987 operation. City Park Hosp. Prosthesis.	Willco Homes: gen.worker 1977-1980 noise Blue Standes: gen. worker 1974-1976 dust WBHO: cleaner 1981-now dust/chemicals Work now: cleaning toilets/changing rooms
132	9.2.4 1/12 ago. Nyanga Day Hosp. Small pink tablets. 9.11 Knee problem. Nyanga Day Hosp. Yellow capsule. Ok 9.17.1 See 9.2.4 9.17.2 See 9.11 9.18 See 9.2.4 & 9.11	Amla: truck loading/forklifting 1971-1978 noise Table Bay Cold Storage: labour 1978-1979 cold WBHO: Asst. carpenter 1980-1988 dust/noise WBHO: Storeman 1988-now. Dust Work now: pack tools in shelves & give it out as a storeman
133	9.2.3 Just now. Never treated. After coughing for sputum specimen. 9.14 Tested Dec 2002. Ok 9.18 Long ago. GSH Laceration L big toe. ok 18.12 Physical: L-waxed R-waxed Advised 18.20 Short of breath Remarks: Very short of breath after coughing for sputum spec. Referred for investigations.	RTA Contractors-Kimberley: handyman 1975-1976 noise/dust Ken Steven: labour 1976 –1980 noise/dust Martin & East: driver 1980-now. Work now: truck driver (water truck)
134	9.2.4 2/12 ago. Dr Cassan – anti hypertension tabs. Ok 9.22 IOD 3 yrs ago. Paarl Mediclinic. Stitched chin. Ribs #. Ok 18.17 Physical: Referred to GP.	JF Electrical: assistant 1991-2002 dust/noise ICAT: site supervisor: 2002-now. dust/noise Work now: Doing computer cabling installation/supervising
135	9.12 L/5 spinal fusion. Vincent Palotti. Op. Ok 9.19 Car accident 1995. Varicose vein stripping. Operation. Wynberg. Ok 9.20 & 9.21 Ref 9.19 18.28 Physical: Scar from fusion 18.29 Restricted: operation	Construction: bricklaying 1971-1977 Construction: bricklaying 1977-1984 Seymour Paring: supervisor 1984-2003 Hazards: dust/noise Work now: supervisor
136	9.18.1 Conjunctivitis Dec 2002. Antibiotics 9.21 Car accident 2000. Ok 18.29 Physical: to bend knees	Construction: labour 1971-1979 dust/noise Construction: bricklayer 1979-2003 dust/noise Work now: supervisor
137	None	Construction: gen. worker 1992-1996 dust/noise Construction: gen. worker 1996-2003 dust/noise Work now: concrete

138	9.5 Constant. Upon eating: burning. GP. Pills. Recurrent. 9.12 Lumber pain: constant. Ongoing. Upper back pain. GP. Pills (Brufen). Intermittent. 9.14 Negative 1999. GP. Ok 9.19 Fall: 1984. # wrist. Claremont. Op. OK. 9.20 & 9.21 Ref. 9.19 18.4 Physical: dermatitis of chest 18.10 Not no 3/5/7/9/10 18.25 R-tip toe (birth) 18.31 fungal infection-toes	Construction: bricklayer 1988-1994 dust/noise Construction: supervisor 1994-2003 dust/noise Work now: supervisor
139	9.2.4 2 yrs ago. GP. Tablets. Ok 9.4.3 2 yrs ago. Ok 9.5 Ulcer. GP. Tablets. Ok 9.23 Appendix operation. Hottentots Holland Hosp. Ok 9.8 2001 Audiometry. Ovcon. To come back. Ok 9.9 Continuous. Ophthalmologist. Glasses broke/stolen. 9.11 Arthritis(winter). GP. Tablets. Ongoing. 9.22 Ovcon. WBHO Dr. Steel fell: # Ok 18.15 Physical: must go to dentist 18.25 light scoliosis	Building: labour 1962-1964 Gardening: gardener 1964 Building: labour 1970 Industrial Engineering: operator/welder 1968 Construction: WBHO 1975-2003 dust/noise Work now: welder
140	9.2.1 Today. Treated by no one. Ongoing 9.2.3 Today. 9.4.2 Night sweats.family has TB. Short of breath 9.6 2002. Nyanga. Pills. Ongoing. 9.24 2002. Crane accident. L hand. GP	JHB: Mining: labour/driller 1985-1989 heat/dust/noise CT: WBHO: labour 1989-2003 dust/noise Work now: none
141	9.1 ? Skin cancer 1983. Ongoing 9.12 Last time: 2002. GP. Pills, injections. Ongoing. 9.19 Fell. Stitches in head 1992. Suturing. Ok 18.12 Physical: L-waxed R-waxed. Advised	Printing: mach. operator 196801970 chemicals Own business: sold clothes 1970-1979 Construction: painter 1979-2003 chemicals/dust/noise Work now: painting
142	9.6.1 Dec 2002. Ok 9.9 Glare – photosensitive all the time. Ok	I&J: cray fishing 1988-1989 Construction: gen. worker 1990 2003 dust/noise Work now: gen. work: bricklayer/building/screeding /pack