

Critical Evaluation of Occupational Health and Safety Management in Sasol Retail Convenience Centres

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**Dissertation submitted in partial fulfillment of requirements for the degree
Master of Engineering (Development and Management) at the
Potchefstroom Campus of the North-West University**

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November 2007**

ABSTRACT

Occupational health and safety management has continued to take the centre stage in the decision making process in most organisations. This is further fostered by agitation from labour unions and government intervention through legislation to promote safer work environment.

This dissertation therefore presents some of the constraints and inadequacies of occupational health and safety management of Sasol Retail Convenience centres (Sasol RCCs), some of which are:

- insufficient health and safety training of staff or lack of training;
- low motivation of employee or outright absence of it;
- lack of safety records;
- non display of health and safety policy;
- absence of fire prevention and control procedure;
- inconsistent safety meeting.

Information was sourced using questionnaires and conducting personal interviews. The information gathered via questionnaires and interviews of the four Sasol Retail Convenience Centres in Sasolburg indicates that Occupational health and safety management does not have full management commitment. Although management has provided safety gadgets and equipment for the purpose of health and safety, however, it has made little investment in human capital development toward the improvement of health and safety. Poor safety record and in some cases lack of safety records has made it difficult to determine the performance of the Sasol RCCs.

The expositions made on the constraints and inadequacies of occupational health and safety management of Sasol Retail Convenience Centers coupled with the conclusions and recommendations should further improve the health and safety of employees and better protect investment. Part of the recommendations is the development of health and safety management model that could serve as guide to the management of Sasol RCCs to develop a more functional health and safety system. The model should also serve as guide for further research in Occupational health and safety.

PREFACE

Occupational health and safety at work is a serious issue that attracts the attention of both the government and the public. Employers are faced with more stringent laws to create safe work environment for their employees. However, many employers see the practice of safety at work as expensive with little or no payback on the investment committed to health and safety. Such erroneous believe has led many organisations to sweep safety under the carpet. This is evident in the negligent attitude expressed in the management of health and safety in most workplaces.

One of the business sectors which draw the attention of the public with respect to OHS is the operations of the oil and gas companies and their associated subsidiaries. Sasol Retail Convenience Centers are fuelling stations specialised in marketing petroleum products of Sasol Chemical Industry. Their operations from the viewpoint of safety are subject to the South Africa Occupational Health and Safety Act. This dissertation attempts to identify safety challenges confronting Sasol RCCs so as to proffer suggestive solution that can help improve the safety management system of the organisations. Hence the title: "Critical Evaluation of Occupational Health and safety management on Sasol Convenience Centers.

This research dissertation is not the first in the chemical and petrol industry within the domain of OHS. Several researches have been conducted to improve health and the safety of workers in the chemical and petrochemical industry. Most of the research theses on OHS are done for big time players in the oil and gas sector with little consideration for organisation like fuelling stations. Base on my research, this dissertation is, however, the first that will be committed to Sasol Retail convenience Centers for the improvement of health and safety.

This dissertation contains five chapters. Chapter one establishes the need for the research dissertation as a result of gap which exists in the improvement of occupational health and safety in Sasol RCC's in Sasolburg. Chapter two dwells on the essential literatures related to this

dissertation. The details of the design and methodology of gathering information using questionnaire and interview sessions were discussed in chapter three. Chapter four contains the result of the findings as well as the interpretations and discussions of the information. Conclusion and recommendations are discussed in chapter five.

Information used in this dissertation was sourced from recent journals on safety matters, internet sources, handbooks, technical papers, safety and business related magazines. These sources of information were obtained from Sasol InfoNet.

Unfortunately, some Sasol RCCs do not keep comprehensive health and safety records which would have been used for measuring their performances. That formed the reason for adopting two kinds of questionnaires. One of the questionnaires was designed to interview the managers while the other was used to deduce the perceptions of the employees about their organisation's health and safety management. Though, some of the responses to the questionnaires may be biased, however, the two fold approach of interviewing the management and the employees aim to provide an approximate status of the current challenges that affect the health and safety management of Sasol RCCs from which relevant recommendations are made.

This research dissertation would not have come to fruition without the support and contributions of the following persons: Professor Harry Wichers for supervising and making thoughtful criticism that has culminated into the final presentation of this dissertation; Brian Andrew Harrison for providing the needed direction for this dissertation; Pat Bender, who took pain to cross check the questionnaires; Sanet Kruger, Rensburg, M and Werner De Toit, who took the interviews on behalf of management of their fuelling stations.

I am painfully aware that I have at times been so overwhelmed that even the civilised courtesy of a 'Thank you' to the employees of Sasol RCCs was forgotten in the course of the survey. To these employees I offer my apologies and I want to say thanks.

I would like to acknowledge George De Bruin, Elize van der Westuizen, Sarie Human and other staff members of Sasol InfoNet for providing necessary literature materials and the facilities used for typesetting and printing of the dissertation document.

I am very grateful to all my EGTL colleagues, particularly those who provided me with wonderful blend of intellectual stimulation and emotional support. There would not be enough space to mention everyone. However, I would like to thank Adekoya Tunji for editing the dissertation, Chukwu Anistus Uzoh for his motivation, Ogbe Tosan and Akintunde Oludele for their support.

My special debt of gratitude is owed to my lovely wife, Ayodele Ibojiemenmen, who endured the numerous months I sojourned in South Africa while on this dissertation. Sincerely, I recognise her passion for my success. Also, I appreciate the support of my mother, Margaret Ibojiemenmen.

Finally, my profound gratitude goes to the Almighty God for the grace He granted me to complete this dissertation amidst numerous challenges.

DEDICATION

I dedicate this dissertation to my late Father, Thomas Ibojiemenmen, for all his contributions to my life's success stories. He is a rare gem to be remembered for a life time. I love you, daddy!

DEFINITIONS

Accident: Is the outcome of a contact with energy or substance above the threshold limit of the body, structure or environment.

http://www.aahperd.org/iejhe/template.cfm?template=2003_first/ritzel.html

Fuelling Station: is a facility which sells fuel and lubricants for motor vehicles. The most common fuels sold are petrol (gasoline) or diesel fuel. Other names for fuelling station are filling station, petrol station, gas station, service station etc.

<http://www.google.co.za/search?hl=en&safe=active&q=Fuelling+Station+is+a+facility+which+sells+fuel+and+lubricants+for+motor+vehicles>

Hazards: a hazard is any existing or potential condition which, by itself or by interacting with other variables, can result in unwanted effects of property damage, illnesses, injuries, deaths and other losses.

http://books.google.com/books?id=wFHR_iMgEcC&pg=PA3&lpg=PA3&dq=a+hazard+is+any+existing+or+potential+condition

Horseplay: is a rowdy or boisterous play.

<http://www2.seslisozluk.com/?word=horseplay&language=turkish>

Incident: any event which has the potential to cause harm or one that results in injury or property damage.

<http://www.gdace.gpg.gov.za/HealthCare/Written%20Papers/Janet%20Magner.doc>

Loss: is defined as an avoidable harm to people, property, processes or the environment.

<http://discnl.com/images/Glossery%20of%20Terms.pdf>

Mock Emergency: is a simulated emergency situation.

<http://www.newportnewstimes.com/articles/2005/03/18/news/news16.txt>

Mufti: This refers to clothes used outside those recommended as PPE.

Near-miss: A near miss is an unplanned event that did not result in injury, illness, or damage - but had the potential to do so.

[http://en.wikipedia.org/wiki/Near_miss_\(safety\)](http://en.wikipedia.org/wiki/Near_miss_(safety))

Safety: is the control of accidental losses to an acceptable level

<http://www.embedded.com/2000/0011/0011feat1.htm>

Unsafe Act: is any act which increases an employee's chances of being injured.

<http://outerblog.com/A+/?cat=19>

Unsafe Condition: is a condition within the work environment which increases an employee's chances of having an accident.

http://www.retailers.com/news/mutual%20interests/RMutualInterest_winter06.pdf

ABBREVIATIONS

Admin: short form for 'administration'

FBA: Franchise Business Adviser

HSE: Health & Safety Executive. HSE is an organisation that specializes in the area of health, safety and environmental research studies in the UK

H&SS: Health and Safety Services. H&SS provides a wide range of occupational health and safety advice, information and services to University of Manchester.

HAZCOM: Hazard Communication

MOS: Act: Machinery and Occupational Safety Act

OHS: Occupational Health & Safety

OSHA: Occupational Safety and Health Administration

PPE: Personal Protective Equipment

RCC: Retail Convenience Centre

RCCs: Retail Convenience Centres

RCR: Recordable Case Rate

Rep: Representative

SA: South Africa

CCOHS: Canadian Centre for Occupational Health and Safety

Exchange Rate Used for Monetary Figures

- 1\$ = 7.1075 Rand
- 1€ = 9.5823 Rand
- 1£ = 14.151 Rand

Courtesy Business Report: South Africa National Financial Daily.
Tuesday, June 5, 2007. www.businessreport.co.za

INTRODUCTION

The crave for safety at work dates back from the early days of industrial revolution when men were first exposed in the workplace to unfamiliar forces and energies greater than those contained within their own bodies or encountered in nature. As one would expect, the rate of incident/accident cases were very high and brutal. However, initially acceptable they may have been to employers and to workers who want to satisfy their physiological needs; in the passage of time the loss rate became unacceptable to concerned members of the society as the losses involved were not only limited to affected workers. Their families and the society also shared from the economic and social pain that characterizes such losses.

The applicable standards changed and reforms were initiated. The loss-producing systems in the workplace were modified, by evolutionary process, until the loss rates became acceptable. The modifications, which produced these acceptable rates, became safety rules and industry practices, these rules and practices were codified and promulgated by trade groups, technical societies, insurance associations and standards organisations. However, many of such rules and regulations have now become government regulations.

In the days when there were no laws to protect workers, employers never bothered to take responsibility for any case of accident that ever occurred neither did they concerned themselves with remunerating the families of the deceased in a case of accident involving death. Employers were primarily concerned with making profit with less or no value for human life at work.

The ignorant of employees about safety never help matter, as they did not know who to hold responsible for their well being at work. Many workers really suffered untold hardship when they were disabled by accident because no compensation was paid to them. None ever thought of the importance of safety as a necessary ingredient for accident-free work environment.

As the awareness of the need for safety of employees and the protection of industrial asset grew, management effort was sought to curb the rate of accident. The change in thinking was largely influenced by the society. The ripple effects of socio-economic hardship borne by the society were the major drive towards the novel change.

Societal values are promoted partly by the government and also by the governed; and the aim of every government is to protect its citizenry. The need to promote safety at work resulted in the first safety laws initiated by Bismarck in Germany as the first compensation laws ever to be legislated (Fletcher & Douglas, 1971)^{T-22}.

South African Machinery and Occupational Safety Act (MOS Act) was promulgated in 1983^{I-31} and it was in operation till 1993 when the parliament passed a bill titled Occupational Health and Safety Act (OHS Act). The new law actually became effective in 1994.

Sasol Retail Convenience Centers (RCCs) derive their safety principles and policy from the SA Occupational and Health Act. However, a critical review and evaluation of Sasol RCCs safety management is necessary to continue to position Sasol RCCs as top performing fuelling stations in their operational location.

This research dissertation therefore focuses on analyzing and evaluating the present health and safety position of Sasol RCCs with possible suggestions on how to improve the status quo in order for them to join the league of world class fuelling stations.

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CHAPTER 1

PROBLEM STATEMENT AND SUBSTANTIATION

1.1 PROBLEM STATEMENT AND SUBSTANTIATION

Over the years, employers in many businesses have been practising Occupational Health and safety (OHS) management to arrest unsafe conditions and at-risk behaviours. Usually, unsafe conditions and at-risk behaviours are the main causes of accidents ^{T-18}. OHS management has resulted in considerable impact in reducing recordable cases of accidents ^{I-17}.

Nevertheless, Henshaw, J (2002) ^{I-33} has said: *Even though we have accomplished much, there is also a great deal left to do*. It therefore implies that there is much to be done considering the huge investment that has gone into OHS implementation. According to Fletcher, J and Douglas, M (1971) ^{T-22}, *the ultimate goal of eliminating accidents is still a long journey considering the relentless advances of technology and the introduction of new processes*. Such developments introduce new hazards to health and safety.

Sasol RCCs have been in operation since 2003 ^{I-20}. They are retail outlets franchised by Sasol Chemical Industry to dispense petrol, diesel and other petroleum products to the consuming public. Its safety activities are regulated by the S.A Occupational Health and Safety Act of 1993 and other health and safety regulations from the Government.

The rising concern for improvement in health and safety is gaining more attention from the South African government requiring improved safety performance from companies and organizations ^{J-7}. According to Xingwana, L ^{J-7} who is the South African Deputy Minister of Minerals and Energy: *there needs to be dramatic improvements in occupational safety and not incremental improvements*. This profound statement affects all business organizations and companies including Sasol RCCs.

Therefore by extension, there is need to revisit occupational health and safety management of Sasol RCCs in order to ensure that employees are truly working in safe environments. Also, customers can be assured of their health and safety as they patronise these fuelling stations. The concerns for improvement stem from the sorry state of occupational health and safety in recent times^{I-43}.

To further justify the need for this research, a report submitted by The Benjamin and Grief Committee^{I-43} of inquiry into National Occupational Health and Safety Council to the Minister of Labour on the 27th May 1997 states in part that:

- *occupational accidents and work-related ill-health impose a considerable cost on the South African economy and society (the dearth of data results in this cost being underestimated);*
- *with the exception of the mining industry, a dwindling level of resources are devoted to the prevention of occupational accidents and work related ill-health;*
- *there is inadequate reporting of occupational accidents and, to a greater extent, work-related ill-health. This prevents the determination of the full extent of these problems, the effective development of preventive strategies and deprives employees of compensation benefits;*
- *there is insufficient research on OHS and no coordinated research programme;*

In the opinion of the researcher, Sasol RCCs may not be exonerated from the conclusions of The Benjamin and Grief Committee^{I-43}. The reasons are quite justified from the findings in chapter four of this dissertation.

Sasol RCCs are branded fuelling stations dealing in petrol and diesel products. Petrol is highly flammable and diesel is combustible. Sasol RCCs' products are capable of constituting hazards both to employees and the buying public if the safety implications are compromised. Sasol RCCs, therefore, require a result oriented health and safety management system that would guarantee the health and safety of employees and the public.

This research work shall investigate the effectiveness of Sasol RCCs health and safety management system in managing occupational hazards.

As one of the ultimate intention of this research dissertation, management flaws undermining effective health and safety management shall be identified.

This dissertation will also serve as an intervention to proffer suggestive solutions through a critical analysis and evaluation of the present safety performance of Sasol RCCs.

The findings of this research dissertation would serve as a means to help eliminate accidents or reduce them to the barest minimum by understanding the safety challenges that confronts these fuelling stations.

The findings of this research dissertation would enable management of Sasol RCCs to understand the current challenges and other militating factors affecting the safety performance of their various outlets and the dynamics involved in OHS processes within the organization.

1.2 RESEARCH AIMS AND OBJECTIVES

1.2.1 Research Aim

This research dissertation intends to investigate the inadequacies and constraints affecting OHS management as it pertains to fuelling stations with particular inclination to Sasol RCCs. It is intended to promote the practice of health and safety in the workplace through constructive suggestive solutions that would serve as a guide to the management of Sasol RCC.

1.2.2 Scope

The coverage of the research dissertation shall be limited to Sasol RCCs in Sasolburg. Basically, there are four Sasol RCCs (two Sasol Convenience Centres and two Exel sites) in Sasolburg and the distribution of questionnaires and scientific investigation are limited to these fuelling stations, while a careful generalization shall be made in regards to the outcome of the investigations.

1.2.3 Objectives

The research objectives are enumerated below:

- To investigate the inadequacies of OHS management of Sasol RCCs in Sasolburg.
- To investigate the extent of operational constraints affecting OHS program implementation of Sasol RCCs.
- To determine the extent the management Sasol RCC's drives health and safety management.
- To suggest ways through a critical analysis and evaluation to improve OHS management.

1.3 METHOD OF INVESTIGATION

1.3.1 Analysis of Literature Sources

Analysis of literature sources to be used shall include;

- handbook sources
- Journals
- technical papers presented in conferences
- safety and business related magazines
- internet and intranet searches

Some of the aspects of these sources that will be considered shall include texts, models and data. These sources shall be studied, compared, analysed and critiqued while serving as a guide towards a quality presentation of scientific facts and arguments leading to thorough research dissertation presentation.

1.3.2 Empirical Investigation

Information obtained through scientific investigation shall be subjected to analysis. The findings and conclusions shall be presented in relevant chapters.

1.3.3 Nature of Investigation

The method that would be used to obtain data/information shall include the use of questionnaire and personal interviews.

1.3.3.1 Conducting Personal Interviews

During the course of investigation, the management representatives of the four Sasol RCCs in Sasolburg stations shall be interviewed. During the interview sessions, questions shall be drawn from the following areas: fire prevention and control, personal protective equipment, training, safety record analysis, investigation, motivation, health and hygiene, medical examinations of personnel and safety control measures.

1.3.3.2 Use of Questionnaire

A thought through questionnaire in relation to the health and safety of personnel and equipment shall be prepared. It shall be used to gather data that will be subjected to statistical analysis and the findings thereof shall invariably be of immense value to this dissertation. The questionnaire shall seek the views of employees about their perceptions to health and safety and its practice in the fuelling station as well as the operational constraints that compromise health and safety.

1.3.3.3 Use of Information

Information so obtained from the literature sources listed in the section 1.3.1 above shall form part of the basis for argument to support the need for the research dissertation. Health and safe work management practices are not limited to any region. For this reason statistical data and information as obtained in the United States and Britain shall be used extensively to buttress my argument where similar information about South Africa cannot be readily sourced.

1.4 DISSERTATION OUTLINE

This dissertation has five chapters; below is a brief description of the various subjects in each chapter;

1.4.1 Chapter One: Problem Statement and Substantiation

The focus of this chapter establishes the need for the research dissertation as a result of the challenges which affects the management of occupational health and safety in general. Specific challenges relating to Sasol RCCs in Sasolburg are explicitly stated in chapter four.

1.4.2 Chapter Two: Literature Review

This chapter reviews literatures on OHS with particular inclination to fuelling stations and Sasol RCCs. The need for research dissertation is further buttressed by presenting views of other researchers and authors. Detailed discussion on some of the essential literatures on this topic is presented. Also, relevant statistical data and information are cited from sources to support the need for this dissertation.

1.4.3 Chapter Three: Research Design and Methodology

Chapter three explains in details the design and methodology in gathering information using questionnaire and interview sessions. The method of analysing the information and data gathered are also discussed. Sources of error are also noted.

1.4.4 Chapter Four: Results, Interpretations and Discussions

In this chapter, the results of the survey using questionnaire and personal interviews are presented. The result presented are also interpreted and followed with the necessary discussions. The discussions lead to various suggestive solutions that may be used to improve safety performance after a critical evaluation of the current challenges faced by Sasol RCCs in Sasolburg. The suggestive solutions are benchmarked against some established safety standards as practiced in the chemical industry. Also, some of the benefits are implicitly enumerated.

1.4.5 Chapter Five: Conclusions and Recommendations

This dissertation is concluded by summarizing what has been done so far and the findings reached as well as the wider implication of health and safety management in other Sasol RCCs. Shortcomings on the research are discussed. Also appropriate recommendations are made with the objective of improving health and safety management in Sasol RCCs; and furthering of research in the field of OHS.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

Within the past three years there has been significant increase in the number of vehicles on the South African roads ¹⁻⁴. The increase in the number of vehicles has been favoured by reduced prices of automobiles and the emergence of a strong black middle class market ¹⁻⁴. The rise in the number of vehicles invariably need more fuel to service them. Such need for petroleum products has lead to the proliferation of fuelling stations which is still on the increase ¹⁻⁵.

Sasol Chemical Industry - a petrochemical industry and strong competitive player in the South African economy - has been attracted to the downstream involving the direct contact with the final consumers of petroleum products such as petrol and diesel through its Retail Convenience Centres (Sasol Convenience Centres and Exel) ¹⁻²⁰.

The entry of Sasol into the downstream is highly informed by the advantage its newly formulated petrol and diesel products offer to the consuming public. The quest to meet stipulated stringent regulation in producing environmentally friendly petroleum products propelled Sasol in developing petrol and diesel which are considered as friendly to the environment within the provisions of South African legislation ¹⁻¹².

A merger process between Sasol and Engen to create the largest oil retail market was halted (Business.iafrica.com, 2006) ¹⁻⁴⁷. The stalled process was as result of protest from other competitors such as British Petroleum South Africa. The stalled merger made Sasol to device an alternative of direct service to consumers in the retail market. Hence, the reason for Sasol Retail Convenience Centres (Sasol RCCs) (Engineering News, 2006) ¹⁻⁴⁸.

However, fuelling station has its associated hazards. Petrol and diesel are dangerous products for reasons that will be enumerated further in subsequent sections. They can result in fire. The possible inferno that

may result from petroleum products such as petrol and diesel cannot be ignored. Moreover, some of the RCCs are located in residential areas, which make the location of such fuelling stations a safety concern.

Workers in these fuelling stations are exposed to the hazards caused by petroleum products. The flammability and combustibility of petroleum products portend safety concerns.

An organization that operates health and safety management system focuses on the elimination or control of hazards. Such hazards pose danger to workers, investment assets and the consuming public will continue to stay in business.

Survivability stemming from safe work practices may confirm what Steyn, R (2007) ^{J-1} said about a business: *Organizations are under increasing scrutiny from suppliers, customers, shareholders, government and others*, hence, the need for a critical evaluation of Occupational Health and Safety management of Sasol RCCs.

2.2 SASOL RCC IN SASOLBURG

Sasol RCC has four fuelling stations located in strategic areas in Sasolburg with the major products on sale being petrol and diesel. Two of Sasol RCCs are branded as Exel fuelling station and the other two have their trade names as Sasol Delight.

The combined four stations form 50% of the fuelling stations out of the eight fuelling stations in Sasolburg (*see Appendix N for the location of the fuelling stations in Sasolburg*). This could mean that Sasol RCC dispenses petrol and diesel to about 50% of motorist in this area. Although the actual statistics of estimated motorist are not available but the industrial nature of Sasolburg couple with its population of about 141000 people is an indication of high number of motorists ^{I-22}.

The seemingly high market share of Sasol RCCs (as suggested by the percentage of Sasol RCCs among other fuelling stations) in Sasolburg

suggests a considerable exposure of employees to hazards and risks inherent in petroleum products.

For the purpose of this dissertation the four Sasol affiliated fuelling stations shall be designated as;

- Sasol Delight-1
- Sasol Delight-2
- Exel-1
- Exel-2

(See *Appendix H*)

2.3 CHEMISTRY OF PETROL and DIESEL

Petrol and diesel are hydrocarbons derived from petroleum (crude oil). Petroleum is a fossil fuel formed as a result of the effect of temperature and pressure on dead and decayed plant and animal remains over several years beneath the earth surface¹⁻⁶.

Petrol and diesel are produced from a process usually referred to as fractional distillation of crude oil. They can also be produced through the reformation of natural gas called reforming. Another process is the thermal cracking of heavy oil like bitumen¹⁻⁸.

2.3.1 Properties of Petrol and Diesel

2.3.1.1 Properties of Petrol

- Petrol is highly volatile(it readily evaporates)
- It easily ignites in cold weather conditions
- Petrol also reacts dangerously with certain common chemicals; for example, petrol and crystal Drāno (sodium hydroxide) react together in a spontaneous combustion¹⁻⁷.

Other properties of petrol are derivable from its constituent building blocks (see *Appendix K*).

2.3.1.2 The Dangers of Petrol

- Petrol is a highly flammable liquid which can give off flammable vapour, even at very low temperatures. This means there is always a hazard of fire or explosion if a source of ignition is present.
- It floats on the surface of water and may travel long distances, eventually causing danger away from the place where it escaped.
- Petrol vapour does not disperse easily and may also travel long distances. It tends to sink to the lowest possible level and may collect in tanks, cavities, drains, pits, or other enclosed areas, where there is little air movement.
- Flammable atmospheres may be present in empty tanks and petrol cans. There is also a danger if petrol is spilled on clothing, rags etc; Rags that are soaked with petrol can cause spontaneous combustion.
- Petrol vapour can be harmful if inhaled. It is often advised that petrol should not be swallowed and contact with the skin should be avoided.

HSE (1998) ¹⁻⁴¹

2.3.1.3 Properties of Diesel

- 1) Diesel is relatively less volatile than petrol
- 2) It is highly combustible but not flammable.

Appendix L lists the properties of diesel.

2.4 FUEL COMBUSTION PRINCIPLES

Fuel is a combustible substance. In the presence of the right quantity of air (oxygen) and source of flame, combustion can occur. The presence of these three factors is usually referred to as the triangle of combustion.



Figure 2.1 Triangle of Combustion
(Curled from: <http://www.answers.com/topic/fire-triangle?cat=biz-fin>)

The resulting fire from the interaction of the elements in the triangle might gulp a fuelling station in a terrible inferno. A fuelling station without proper health and safety management system will probably be a victim of such inferno.

What if an employee is involved in such an accident?

The cost of paying compensation, cost of replacement of damaged equipment and facilities, the cost of low motivation from other employees couple with the lost of customer patronage due to fear and lost of confidence in guaranteeing employees' safety, can spell business doom for fuelling stations.

A white paper series published by Hughes Professional Services (2003) ¹⁻²⁹ reports a recent Gartner Group survey which indicates that almost half of the enterprise interviewed declared they would lose up to \$50,000 (R355,375) per hour of downtime. This cost does not include the cost of paying compensation, cost of replacement of damaged equipment and facilities, and the cost of low motivation from employees etc.

For businesses such as Sasol RCCs a significant downtime due to major accident like fire can cause the downtime to amount to millions of

Rand. Recovery from a major accident could range from weeks to months and cost might be staggeringly high to cause bankruptcy.

Another similar phenomenon that can occur is explosion. It is associated with blast and shock waves. The effect can be devastating. However fire and explosion are initiated in the same way ^{T-20}. The associated cost of such accident will be x-rayed in subsequent sections.

2.4.1 Fuel Spills at the Fuelling station

Petrol spillages are cases of incidence which might occur in the fuelling station ^{I-14}. Spillage can occur from damage or misuse of dispensers; and dispensing petrol into unsuitable containers. Also, accident involving employees and customers becoming splashed with petrol are possible cases. However these cases constitute occupational hazards both to the employees and customers.

2.5 EFFECT OF PETROL AND DIESEL TO HEALTH

Many of the non-aliphatic hydrocarbons naturally present in petrol (especially aromatic ones like benzene), as well as many anti-knocking additives, are carcinogenic ^{I-10}. As a result, any large-scale or ongoing leaks of gasoline would pose a threat to the health of employees, the public and the environment should the gasoline reach a public supply of drinking water. The major risks of such leaks come from gasoline delivery truck accidents and leaks from storage tanks ^{I-2}.

Petrol and diesel are also some of the sources of pollutant gases. Petrol and diesel which do not contain lead or sulfur compounds still produce carbon dioxide, nitrogen oxides, and carbon monoxide in the exhaust of the engine which is running on them ^{I-44}.

Furthermore, partially combusted petrol and diesel and evaporation from the tank, when in the atmosphere, react in sunlight to produce photochemical smog. Addition of ethanol, for instance, increases the volatility of gasoline ^{I-30}.

Through misuse as inhalant, petrol and diesel also contribute to damage to health ^{I-35}. Petrol sniffing is a common way of obtaining a high for many people and some fuel attendants could indulge in such heinous act out of ignorant ^{I-35}.

2.6 OCCUPATIONAL ACCIDENTS IN FUELLING STATIONS

2.6.1 What is Accident?

Accident in fuelling stations just like any other workplace accident is an event that is unplanned and in some ways undesirable. It disrupts the normal functions of a person or persons and cause injury. *Accidents occur as a result of a failure in the organization, a deviation from what is 'normal' or 'should happen'* (The University of Manchester, 2006) ^{I-19}. *During an accident, a person's body comes into contact with or is exposed to some object, other persons or substance, which is injurious; or sudden movement of a person causes injury or creates the probability of injury* (Anton, J. T, 1979) ^{T-18}. Martin, F. W & Walters, B. J (2001) ^{T-4} describe it as either caused by human, situational, or environmental factors in which the cause may be directly or indirectly related to these three factors. Situational factors may be considered as operations tools, equipment and materials while environmental factors (workplace condition) are noise, vibration and poor illumination

Accidents are usually not planned; nobody expect it to happen at the time it happens. However accidents do not just happen, they are caused. Causes of accident might be as a result of inherent hazards associated with operating equipment and systems at the fuelling station or attendants' recklessness.

In most designs, identifiable hazards (called risk) that may be associated with an equipment or system are usually designed out and in situation where such risk cannot be designed out, appropriate measures are taken to mitigate the hazards ^{I-9}.

As a requirement to promote safe working environment, OHS Act 1993 ^{T-10} compels management to identify possible hazards in the workplace and take appropriate actions to manage occupational hazards. However, accidents still happen at the fuelling station ^{I-34} despite efforts to prevent them. A possible question is, why?

The critical evaluation of the OHS of Sasol RCCs and appropriate recommendation for possible improvement is the major focus of this research dissertation.

Although, enormous work have been done by research institutes, International Labor Organization and governmental agencies to improve occupational safety in general. In the researcher's opinion, borne out of intensive research and findings, few researches have been dedicated to health and safety at fuelling station despite the role fuelling stations play in every community, town or city.

This research dissertation, therefore, focuses absolutely on fuelling stations with inclination to Sasol RCCs in Sasolburg. However, this dissertation will further advance the frontiers in health and safety in petrol and diesel retail industry so as to eliminate or further reduce the occurrence of accident in the workplace.

2.6.2 Causes of Accident

The causes of accidents are either environmental or behaviouristic or a combination of both ^{T-4}. Sometimes an accident is caused by series of errors on the part of a fuel attendant, the supervisor, worker and co-worker couple with poor design, rickety equipment or poor layout of forecourt, or the ill-concerned layout of job ^{I-40}.

Horseplay and ignorance can contribute to accident. Unclear work instruction and direction can be detrimental as this may cause serious accident situation in the workplace ^{I-1}.

Careful study of accidents has shown that people, object (work equipment), the work environment and the job social climate are

basically the four factors that contribute to the occurrence of accident in the fuelling station^{T-4}. The University of Manchester (2006)^{I-19} sites HSE. It claimed that HSE has concluded a research on the causes of accident. The study reveals that 70% accidents in the workplace are attributable to poor health and safety management. The conclusions can be summarized thus:

- Failure to provide sufficient information about job hazard, and sufficient instructions about how to avoid (or adequately control) them.
- Lack of adequate training of personnel to use equipment and protective measures properly.
- Lack of management commitment to provide sufficient levels of supervision to ensure that their instructions and policies are fully implemented.

(The University of Manchester, 2006)^{I-19}

2.6.3 Cost of Accident

In any assessment of the overall burden of occupational injury and disease the main emphasis is the human cost - the pain and suffering, loss of function, diminished quality of life, and premature death^{I-39}.

Recently there has been an upsurge of interest in the economic cost of poor working conditions^{I-39}. There are several reasons for this:

Firstly, the economic costs are important in their own right. Damage to workers such as fuel attendants has a large collateral impact on enterprises, and recognizing this adds impetus to the demand for critical evaluation of the present OHS management for possible improvements in safety and health^{I-39}.

Secondly, the key decision-makers in this field are owners and managers of the fuelling stations, and their primary motivation is economic.

By analyzing the structure of economic costs we can better understand reasons why management is often wary to commit funds to health and safety ^{I-39}. Health and safety management is a requirement by law mandating employers to provide adequate protection for their employees.

Safety is an expensive business; however, the cost of not adopting appropriate and adequate safety measures at fuelling stations could far outweigh the cost of implementing it.

Broadly, cost of accident can be classified as direct and indirect. These two factors are analysed in subsequent sections. Fletcher, J & Douglas, M (1971) ^{T-22} cites the work of H. W. Heinrich which surveyed thousands of cases on accident cost in the US. The conclusion drawn was that management grossly underestimates the real cost of injuries on the job. The research revealed that for every 300 “*no injury accidents*” there are 29 “*minor injuries*” and out of the every 29 “*minor injuries*” there is a possible case of “*disabling injury*”. *Appendix M* presents the conclusion of the findings (Fletcher, J & Douglas, M 1971) ^{T-22}. The conclusion of a similar research conducted by Frank E Bird in Britain as reported by Fletcher, J & Douglas, M (1971) ^{T-22} is also presented in *Appendix M*

An estimation of the cost involved in accident is an indication for concern. In the United States alone the cost of occupational accidents was estimated as \$171 billion (R1.215 trillion) per annum ^{I-25}. This money is coughed out of the profits made by business organizations.

Mottiar, Z (2004) ^{I-25} cites Health and Safety Review (2002) that work related injuries, ill health and non-injury accidents may be costing the Northern Ireland economy as much as £500 million (about R7 billion) a year. About \$ 4.2 billion (R29.85 billion) is the annual cost of workplace accidents in New Zealand ^{I-25}.

Health and Safety at Work in SA (2007)^{J-2} reports that the South Africa Workers' Compensation Fund paid out R3.8 billion to workplace accident related cases for the 2005/2006 financial year^{J-2}.

H&SS of the University of Manchester cites HSE that:

- *cost to employers of workplace injuries is about £0.9 billion (R12.73 billion) a year (1995/6 figures);*
- *cost to employers of work related ill health is about £1.6 billion (R22.6 billion) a year (1995/6 figures);*
- *losses due to accidental events which do not result in injury are between £1.4 - 4.5 billion (R19.8 - 63.7 billion) a year;*
- *the total costs (including insurances) are between £3.5 –7.3 billion (R49.5 - 103.3 billion) a year*
- *this is between 4 - 8% gross trading profits;*
- *total costs to society as a whole (including losses to injured persons) is between £9.9 - 14.1 billion (R140 - 199 billion) a year.*

(The University of Manchester , 2006)^{I-19}

Though there is no specific cost estimate for the occurrence of accidents in fuelling stations, however, the cost of accidents in fuelling stations cannot be ignored putting into perspective the occupational hazard associated with such work environment. The incident which happened in a fuelling station in Cape Town suburb of Grassy Park as reported by HSRC^{I-34} is a further justification for a critical evaluation of OHS in Sasol RCCs. The cost of any human soul cannot be estimated by any standard. Its loss is irreparable.

It is unarguable that the health & safety of fuel attendants is crucial to any fuelling station. The interview with Kruger, S, the director of Sasol Delight-2 and Exel-2 was revealing. She recapped her experience in a robbery incident in Exel-2: *The incident claimed the life of a policeman and one of the robbers. For a period close to two years the business nosedived as motorists feared refuelling at Exel-2. Profit was adversely affected due to scanty sales. Paying of salary was a challenge to management (Appendix G: G2).*

In all, the death of the policeman was an irreparable to the family, friends, the police force, and the community at large. What if a fuel attendant was caught in the crossfire? That would have been an extra cost challenge; an additional burden for the fuelling station in compensating the family. This incident is one of the numerous daily security issues that confront fuelling stations which has to be addressed.

However, the critical evaluation of the present OHS practices can help give insight on a more proactive and pragmatic approach that will continue to make Sasol RCC a safe work environment for its employees and customers.

2.6.4 Economic Costs as an Incentive to Improve Health and Safety

The most important costs of accidents and diseases are non-economic. These include the direct physical cost to the victim, the emotional cost to the victim's family and community, and damage to social values like justice and solidarity.

Attempts have been made to place monetary values on some of the consequences mentioned above (and such attempts are unavoidable in the awarding of damages by the courts), but in the end no number can capture the losses which money can recompense¹⁻³⁹.

By definition, however, economic costs are those that *can* be calculated, at least in principle. Economic costs of accidents encompass damage to equipment or loss of services that either have a price in the market or that could be assigned an approximate price by an informed observer. These include financial costs to the fuel attendant, the loss of household services that have or can be given a market value, losses incurred by the fuelling station, and lost productive capacity available to the consumers of petrol and diesel products.

The economic consequences of a wanton destruction of equipment and property at the fuelling station may transcend beyond cost of

replacement of affected assets, it may also result in unemployment which has a negative ripple effect on the economy.

2.6.5 Direct and Indirect Costs

Related to the fixed/variable cost dichotomy but also somewhat different is the distinction between direct and indirect costs. Insurance premiums and direct payment to physicians will usually constitute direct costs at the company level. Insurance premiums are usually set on an industry rate or group basis.

Direct costs are usually compensated through workers compensation scheme which is protected by the Workers' Compensation Act of South Africa ^{I-38}. The act ensures that workers injured in the course of their employment receive benefits.

On the other hand, indirect cost refers to uninsurable cost of accident. It may include cost related to:

- interruption in production immediately following the accident;
- morale effect on co-workers;
- personnel allocated to investigating and writing up the accident;
- recruitment and training costs for replacing injured or deceased workers;
- reduced productivity of injured workers on light duty.

Dorman, P (2000) ^{I-39}

It is difficult to capture the total cost of accident. However researchers have been able to represent a rough estimate of accident cost using the ice-berg model. The reason is simple; most of the costs associated with accidents are usually difficult to estimate. Though the direct cost also known as insured cost can be calculated, however, it represents a fraction of the total cost of accident. The indirect cost (uninsured cost) of any accident is about the most costly part of any

accident. The amount of indirect cost varies between businesses and the type of incident; however, it is several times more than the direct cost. Though the ratio of direct cost of accident to indirect cost for fuelling station is not known, however, Heinrich presents an industry-wide ratio between direct and indirect costs (Fletcher, J & Douglas, M, 1971)^{T-22}. The ice-berg diagram below shows this relationship clearly.

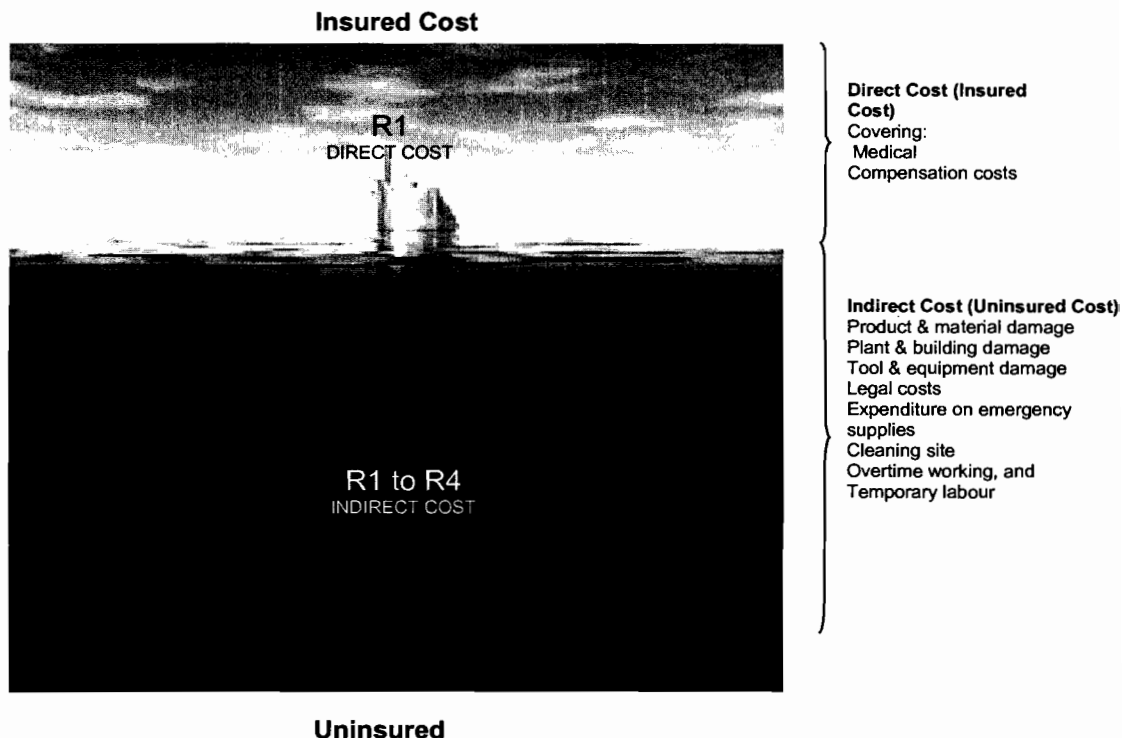


Figure 2.2 Iceberg of Accident Using H.W Heinrich Ratio

Fletcher, J & Douglas, M (1971)^{T-22} cites Heinrich, W. H work on the estimate of indirect costs of accident as a proportion of direct costs. The ratio was found to be 4:1. This implies that most of the cost associated with any accident is hidden. The choice to identify and take into consideration these costs can have a profound impact on a company's motivation to invest in workplace safety and health.

2.7 OCCUPATIONAL HAZARDS IN FUELLING STATIONS

2.7.1 Vehicle Movement

At fuelling stations there are considerable movement of cars and other vehicles on the forecourt which could result in accidental collision with structures, people and other vehicles. This is often likely when inexperience or learner drivers drive into the fuelling station to get their vehicle tank refilled ¹⁻³.

2.7.2 Hazardous Substances

Some items of stock and chemicals used in the car wash and for general cleaning can be harmful. Exposure to them through use or misuse, accidental spillage or leaks, can cause respiratory problems, dermatitis or chemical burns ¹⁻³.

2.7.3 Manual Handling

The removal of access covers to storage tanks, and positioning of large cleaning fluid containers may cause back injury or muscular strains. Such strains do cause body pain which may warrant the affected employee to visit the hospital ¹⁻³.

2.7.4 Slips, trips and falls

Wet or oily surfaces, flooring or other walking surfaces do not have the same degree of traction in all areas. Occasional spill of fuel and oil on the forecourt can present a slipping hazard. Hazards due to trips usually include obstructed view, poor lighting, clutter on the forecourt, wrinkled carpeting, uncovered cables, bottom drawers not being closed, and uneven walking surfaces (steps, thresholds) ¹⁻¹⁸.

2.7.5 Fire Risks

Obstructed exits e.g. accumulations of work tools and equipment can prevent escape from explosion or fires ¹⁻³.

2.7.6 Violence to Staff

Robbery of goods or cash may place staff at-risk of violence. In fact this act is very common in fuelling stations ^{I-3}.

2.7.7 Compressed Air Systems

Major risk may result from abuse of this equipment and from over inflation of vehicle tyres ^{I-3}.

2.8 OHS AS A LEGAL REQUIREMENT

OHS practice is a legal requirement as stipulated in the OHS Act for business employers. It therefore implies that all fuelling stations are involved in the implementation of the Act. OHS legislation provides general guidelines for the protection of employees and the public from occupational hazards and attempts to safeguard the environment against detrimental impacts. It requires that each and every member of an organization should be responsible for health and safety ^{T-22}.

The OHS Act contain minimum requirement which employers must comply with in order to guarantee the safety of personnel. Steyn, R (2007) ^{J-1} posits that organizations are under increasing scrutiny from suppliers, contractors, shareholders, government and other. Therefore, stakeholders have interest in how an organization manages it safety records.

The OHS Act places many duties on the employer. Failure to comply with safety duties and responsibilities are considered as criminal offences and as such punishable by penalties or imprisonment or both depending on the severity of such violation ^{T-10}. Stakeholders may also sanction organizations which are not compliant to safety regulations. Such sanction may negatively affect long-term sustainability of an organization.

Criminal and civil sanctions that an organization such as a fuelling station may attract as a result of non-compliance with legislation are listed by Steyn, R (2007) ^{J-1} to include;

- 1) *Financial ramification resulting from being portrayed as irresponsible corporate citizens and a loss of market share*
- 2) *Reputational damage, through public records and media attention, which in turn negatively impacts on investment of a company.*

Sasol RCCs are not exempted from the requirements spelt out in the SA OHS Act. The nature of Sasol RCC makes it answerable to the health and safety legislation. As an organization which deals in highly flammable and combustible liquids such as petrol and diesel, employees' health and safety as well as those of the customers cannot be compromised. A critical evaluation of OHS management of Sasol RCCs will prove invaluable and complementary to managements' effort in attaining and maintaining world class safety performance.

Some of the safety practices followed by Sasol RCCs are stated in chapter four.

2.9 CASE STUDIES OF HAZARDS IN FUELLING STATIONS

In South Africa, the rate of crime is unarguably one of the highest in the world ^{I-11}. Also, fuel attendants are one of the vulnerable working groups ^{I-11}. The open space where the fuel attendants work couple with their direct involvement with cash at the pump makes it a haven of attraction for robbers and hoodlums ^{I-12}.

Also, the fuel dispensed at the fuelling station and the exposure of fuel attendants to such substance is another case for concern ^{I-13}. Petrol is a highly inflammable liquid ^{I-16} which is susceptible to ignition in the presence of a close spark.

HSRC (2002) ^{I-34} reports that there are an estimated 50,000 fuel attendants spread across the country who earn their living at the garages and depots ^{I-34}. The average pay rate of 4.65 per hour indicates that these people constitute one of the economically marginalize working class ^{I-34}.

The consequences of overlooking the implications of poor OHS practices in fuelling stations are monumental. Such effect transcend

beyond the individual involved. The socio-economic challenges and psychological trauma the impact of the death of an attendant has on the family, friends, neighbour, co-employees and the community cannot be monetized. There is high tendency that the morale and productivity of colleagues at work would be greatly compromised ^{I-34}.

The incident that happened at a fuelling station in Cape Town in the suburb of Grassy Park claiming the lives of five fuel attendants (HSRC 2002) ^{I-34} has further boosted OHS research focus on fuelling station. As reactive as petrol station 5 safety project might appear to some scholars, one cannot undermine the awareness such research would create for management of fuelling stations to evaluate their OHS program in line with the OHS Act and the prevailing challenges confronting the sector for possible improvement.

Maris, R (2004) ^{I-27} reports an incident in which a fuel attendant had a spillage without noticing it while taking delivery of stock from a petrol tanker into underground storage tank in a fuelling station. The overflow which resulted in a spillage ran into a pipe that had not had its cap replaced and the incident went unnoticed. Though the smell alerted the fire brigade on standby, this happened several hours after the delivery. This incident can be considered as a near-miss case. However, the consequences would have caused the fuelling station being razed in an uncontrollable fire had there been a spark or heat source within the vicinity of the spillage.

This incident reinforces cooperation and commitment to safety from the employees. However, such commitment can be obtained when employees know and understand management commitment and contribution to the safety of personnel and equipment ^{I-15}. Thomas, Y (2007) ^{I-15} reiterates that *the more awareness and cooperation you can create, the better will be your safety performance.*

Employers in the fuelling station business can achieve the desired commitment and cooperation from employees towards effective health

and safety management system. This assertion has informed the need for this research which focuses on Sasol RCCs being a petrol and diesel sale outlet. Sasol RCCs can achievement such commitment from it employees through a critical evaluation of its safety program in order to meet the present safety challenges in the industry.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 Motivating the Need for Adopting Statistical Tools for Measuring Safety Performance for Sasol RCCs

OHS rely largely on the use of statistical tools to analyse safety data. Safety Performance measurement using statistics has been in existence since the beginning of organized attempts to control workplace accidents ^{T-14}. According to Browning, L. R (1980) ^{T-16}; *Occurrence of accident or incidents due to occupational hazards is tracked statistically.*

Statistics can be defined as that branch of science which describe and analyse empirical observation for the purpose of predicting certain events as a basis for decision making in the face of uncertainty (Pall, A. G, 1987) ^{T-12}.

Any critical evaluation of safety management for performance of an organization need to employ statistical tools to determine how the organization has faired and what should be done to improve the status quo. Statistical tools and processes provide the opportunity of gaining insight to the historic performance of safety plans and programs and how management can effectively improve performance.

Browning, L. R (1980) ^{T-16} affirms that *system analysis depends largely on statistical information to manage conditions which are likely to deviate from the intended state of performance.* Systems and equipment as well as conditions which cause incidents or accidents are usually modified until the hazards are eliminated or reduced to an acceptable range. Such modifications are usually tracked by statistical means to determine the best possible way of managing the hazard associated with a system. In most cases the resulting modification becomes the agreed standard, procedure or process of operating a system.

Safety management of unwanted occurrence using statistical measurement is essential in order to:

1. locate and describe problem areas,
2. identify causal relationship,

3. make decisions concerning the optimal allocation of resources to promote safety performance,
4. evaluate the effectiveness of applied safety management process,
5. detect safety management deterioration towards unacceptable limits of control.

Tarrants, E. W (1980) ^{T-14} argues that safety measurement is an absolute prerequisite for control. No control can be possible without available data to measure performance. Germain L.G, Arnold R.M, Rowan J.R, Roane J.R (1998) ^{T-5} assert that measurement leads to improved performance. Germain et al (1998) ^{T-5} further state that the use of appropriate statistical measurement has benefits which have the potential to improve safety at workplace. Such benefits include:

- 1) *Indication of improved workplace performance.*
- 2) *Serves as motivation for management and employees to take appropriate actions for the reduction of incidence.*
- 3) *Statistical outcomes are easy to calculate and understand.*
- 4) *They have long history of use which gives them credibility.*
- 5) *They are good for self-comparison and trend analysis.*

Germain et al (1998) ^{T-5}

Pall, A. G (1987) ^{T-12} posits that statistical method may or may not be the best tool for the solution of a given problem. However convincing this may sound, he failed to provide an alternative approach. The question is: what tool would be handy in keeping track of safety performance improvement?

In the absence of any possible means of tracking safety performance in the mean time, this research shall adopt the use of simple statistical measurements and tools to gain knowledge and insight into Sasol RCCs health and safety management. It shall be used to reveal some of the challenges of OHS management. Also, appropriate solution shall be proffered on how to improve Sasol RCCs health and safety management.

3.2 DATA COLLECTION

3.2.1 Interview with Managers

In order to make informed discussion and conclusion on the dissertation subject matter, a means of gathering information from management and employees of Sasol RCCs was devised.

Management representatives were interviewed. The interview focused on health and safety issues as they affect Sasol RCCs (see *Appendices D, E, F and G*). The interview sessions were interactive. Interview questions were used as guides during the interview sessions.

Some of the questions contained in the questionnaire have fundamental relevance to the requirement of the South African Occupational Health and Safety Act of 1993^{T-10}. Topics covered include: general safety matter; fire prevention & control; personal protective equipment; training; record & analysis; investigation; competition & contests; occupational health & hygiene; medical examination; safety control measures.

Sasol RCCs are fuelling stations. There are four Sasol RCCs in Sasolburg of which two are Sasol Delight and two are Exel site. The four fuelling stations were interviewed. *Appendix H* presents a list of management representatives that were interviewed. It also contains the locations of the fuelling stations.

The interview was taken by the manager of Exel-1 and the safety rep for Sasol Delight-1. Sasol Delight-2 and Exel-2 are controlled by a single director. The director took the interview for the two fuelling stations differently.

3.2.2 Questionnaires served to Employees

The average number of employees in Sasol RCC Sasolburg is twenty five (*Appendix I*). Most of the fuel attendants operate shift system. As a result, it was practically difficult to have personal interviews with the employees. It is also unethical interrupting or engaging a busy attendant

on the forecourt for safety reasons. These constitute some of the reasons that resulted in the adoption of questionnaire for the employees.

The questionnaire was designed to have the perception of the employees about health and safety management of Sasol RCC. The questionnaires contain twenty seven questions. Response to each question ranges from “strongly agree” to “strongly disagree”. The format is shown in *Appendix J*.

3.2.3 Concept of Using Interview and Questionnaires

The interview was to get the management plans and actions on health and safety while the questionnaire was to feel the perception of the employee. The concept is to enable a check of management over exaggerations of its position, action and plans as regards health and safety.

Employees are the ultimate beneficiary of OHS program. The better equipped they are the more proactive they become in handling occupational hazard and other safety issues that confront them. A bifocal approach using the questionnaires for the employees and organizing interviews with management, therefore, present checks and balances on management claims and employees.

A critical evaluation of Sasol RCC without comparative views of management and employees will be inadequate.

Though there was minimum interaction between the researcher and the employees, however, the enthusiasm displayed by the employees in filling the questionnaires showed a group of people who feel they now belong to a system that cares. This was the researcher’s personal observation during employees’ involvement in filling the questionnaires.

3.2.4 Comparison of Data Gathered

Data gathered from the four fuelling stations shall be analysed. The challenges common to the four stations shall be identified.

Complex statistical tools could be employed in the analysis of the data gathered; however, this was not done. The reason is that the outcome of complex statistical tools may not be relevant in arriving at plausible conclusion.

Statistical tools such as bar chart and percentages shall be used in synthesizing the data gathered. The tools shall be used to present a comparison of the four fuelling stations. Information resulting from the use of the statistical tools will be used extensively in chapters 4 and 5 for intensive discussion as well as drawing valid conclusions for possible improvement in the health and safety management of Sasol RCC.

3.2.5 Sources of Errors

Errors during the course of sampling of employers and employees' views on the management of safety of Sasol RCCs could be attributed to the following:

1. inability to obtain information from all staff;
2. possibilities in the different ways of interpreting questions;
3. possibilities in the unwillingness on the part of respondents to provide correct information;
4. likelihood of errors made in processing the data;
5. incomplete filling of questionnaires.

3.2.6 Assumptions

In carrying out the necessary task towards the accomplishment of this research dissertation, various assumptions were made. The assumptions made were; that:

1. the information provided by the responders are true reflection of the safety system in place;
2. the employees did not consult with management before filling the questionnaires;

3. the management response to the questions are reliable;
4. non-sampling error was not committed throughout the collection, analysis, presentation and interpretation of data;
5. every employee understood the reason for the research dissertation.

3.3 VERIFICATION AND VALIDATION

3.3.1 Verification

In verifying the interview questions and the questionnaires, both documents were designed in compliance with the requirements of the South African OHS Act. The OHS Act outlines the minimum safety requirement for any business outfit. The fuelling stations spread across the country are bound by the requirement of the OHS Act. Other literature materials used in verifying the interview questions and the questionnaire include:

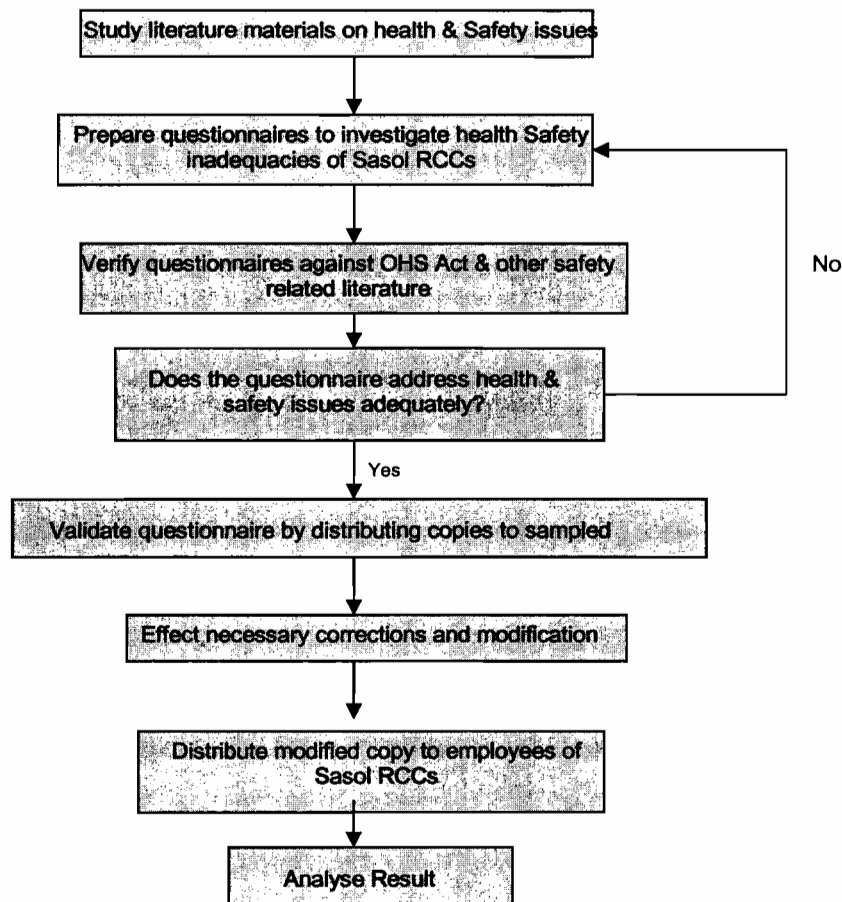
- *Explaining the Occupational Health and Safety Act* (Darlow, S & Louw, J, 2007) ^{T-1}.
- *Management Systems for Safety* (Stranks, J, 1994) ^{T-9}.
- *Total Loss Control within the Industrial Environment* (Fletcher, J & Douglas, M, 1971) ^{T-22}.

3.3.2 Validation

To ensure that the right questionnaires have been designed for the purpose of this dissertation, sample interviews were conducted among selected persons. Their feedback aided a better redesign of the questionnaires for clarity and easy understanding of the questions.

The diagram in the page overleaf is a flow chart showing the steps taken to verify and validate the questionnaire and the interview questions.

Figure 3.1 A flow chart showing the verification and validation processes of the questionnaires



3.3.3 Adjustment made to Questionnaire

The validation process shed more light on some grey areas of the questionnaires and the interview questions. As a result, ambiguous questions were tracked and necessary corrections were made. The following modifications were made on the questionnaire:

1. Any question that expressed a thought that had been previously captured by an earlier question was removed to avoid repetition.
2. Tautological statements were amended.
3. Questions misinterpreted as a result of typographical errors were corrected.

Attempt was made to ensure that the purpose and intention of the questionnaire for the employees and the interview questions for the

management was exclusively captured after the necessary amendments were effected.

3.4.1 Recordable Case Rate (RCR)

During the course of the interviews, one of the information gathered is the number of incident cases the fuelling station had in the previous year. This information was subjected to analysis using RCR (see *Appendix O*).

The RCR as defined by the US Occupational Safety and Health Administration Rule ^{T-24}:

$$RCR = \left[\frac{RC \times 200000}{E \times H} \right]$$

RCR: Recordable Case Rate (number per 200 000 hours)

RC: Number of Recordable Cases (number); i.e. all work related incident, lost workday case (LWDC) and work-related injuries requiring medical treatment beyond first aid, or involving loss of consciousness or restriction of work motion

E: Number of employees at the fuelling station

H: Average hours worked per employee per year (hour per year).

200,000: The base for 100 full-time equivalent workers working 40-hours per week 50weeks per year (200 000 hours per year).

3.4.2 Shortcoming of Using RCR in this Dissertation

It was not possible to compare the RCR for various years. The reason is that Sasol RCC management was not keeping safety records. This made it difficult to trace the historical performance of the fuelling stations.

CHAPTER 4

RESULTS, INTERPRETATIONS AND DISCUSSIONS

4.1 RESULTS FROM SURVEY

ISSUES	INTERVIEWEES	COMMENTS FROM INTERVIEWEES			
		SASOL DELIGHT -1	SASOL DELIGHT-2	EXEL-1	EXEL-2
Staff strength	Management	42	23	20	15
Average vehicular patronage per day	Management	350	700	95	400
Safety policy	Management	Operate the same policy as Sasol Chemical Industry but do not have it displayed as required by section 7 subsection 3 of SA OHS Act	It has a written health & safety policy but there was no evidence to show. Health & safety policy not pasted on the work premises.	Management claimed it has a safety policy but without evidence to prove it. Health & safety policy is not pasted on the work premises.	It has a written health & safety policy but there was no evidence to show. Health & safety policy not pasted on the work premises.
	Employees	81.3% understand the safety policy of Sasol RCC	70.6% understand the safety policy of Sasol RCC	70.9% understand the safety policy of Sasol RCC	57.1% understand the safety policy of Sasol RCC
Safety Rep.	Management	There is a dedicated safety rep.	There is safety rep. The forecourt supervisor is considered the safety rep.	There is safety rep. The forecourt supervisor is considered the safety rep.	There is safety rep. The forecourt supervisor is considered the safety rep.
Safety training on Regular basis	Management	Employees are sent on a regular safety training in Sasol Chemical industry to acquire safety knowledge and skills	Management was at the verge of sending employees for formal safety training during the course of the research survey.	Staffs are not given formal safety training. They simply learn it on the job	Management was at the verge of sending employees for formal safety training during the course of the research survey.
	Employees	56.3% disagree, 43.8% agree	58.8% disagree, 17.7% agree	50% agree, 50% disagree	46.2% disagree, 15% agree and 38% are neutral
Safety record	Management	Do keep safety record	Do not keep safety record	Do not keep safety record	Do not keep safety record
PPE	Management	Management issues PPE to employees	Management issues PPE to employees	PPE issuance to employees is jointly funded by management and the employees	Management issues PPE to employees
Safety equipment	Management	The premises has fire extinguishers, surveillance camera, fire hydrant, fire hose rim, gas alarm, gas monitors and first aid box	The premises has fire extinguishers, surveillance camera, alarm and first aid box	The premises has fire extinguishers, surveillance camera, alarm and first aid box	The premises has fire extinguishers, surveillance camera, alarm and first aid box

Table 4.1: Sample of summary of survey outcomes. (See Appendix C for complete result)

1a	Work environment is prone to high risk.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	23	20	7	3	1	54
	Exel-1	4	3	0	0	0	7
	Exel-2	4	7	2	2	0	15
	Sasol Delight-1	8	5	1	1	0	15
	Sasol Delight-2	7	5	4	0	1	17

Table 4.2: Sample of aggregate responses of employees obtained from the questionnaires (see Appendix A)

1b	Work environment is prone to high risk.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	42.6	37.0	13.0	5.6	1.9	100
	Exel-1	57.1	42.9	0.0	0.0	0.0	100
	Exel-2	26.7	46.7	13.3	13.3	0.0	100
	Sasol Delight-1	53.3	33.3	6.7	6.7	0.0	100
	Sasol Delight-2	41.2	29.4	23.5	0.0	5.9	100

Table 4.3: Sample of percentage aggregate of employees' responses obtained from the questionnaires (see Appendix B)

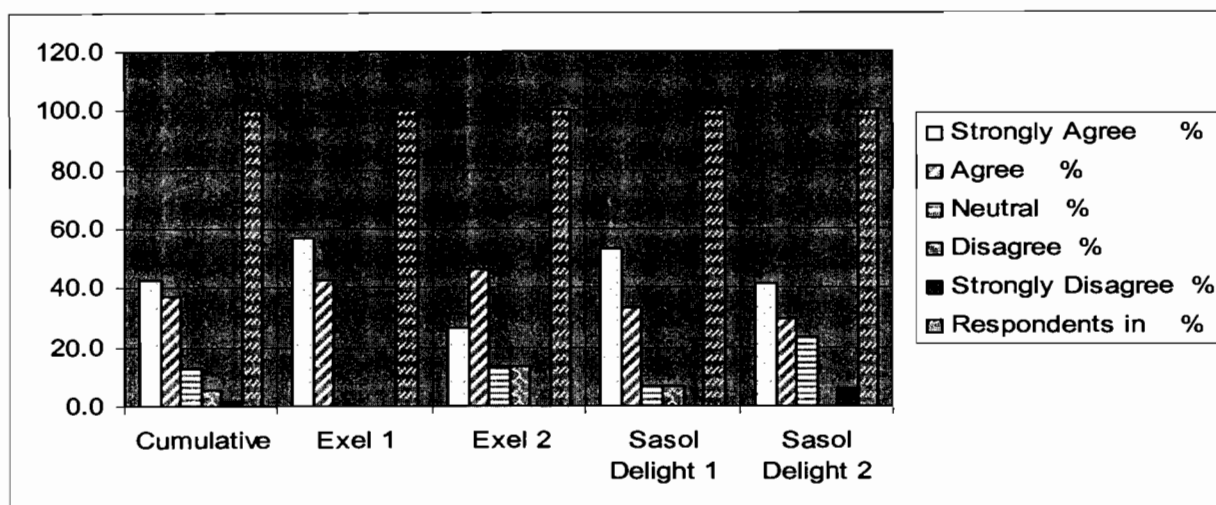


Figure 4.1 shows the graphical analysis of responses from employees. (See Appendix B for complete result)

4.1.1 Observation on Appendices B & C

The results in *Appendix B* are approximated to one decimal place using Microsoft excel. As a result of the approximation, some of the values would not add up to give exactly 100% (see "*Respondents in %*" in *Appendix B*:B1-B27). There is, in some cases, maximum error of +/- 0.2%. The approximation also affects *Appendix C* because some of the values in *Appendix C* are lifted from *Appendix B*.

However, the approximation does not have significant effect on the results.

4.2 INTERPRETATION OF RESULTS

4.2.1 Summary of Survey Outcome

Table 4.1 shows a sample of summary of the outcomes obtained from the interview with the employers' representatives on safety matters and the employees of Sasol RCCs in Sasolburg (see *Appendix C:C1-C5*). The outcomes are derived from *Appendices B, D, E, F and G*. It captures in summary the interviews held with management representatives on safety matters of the four Sasol RCCs. Employers comments and their views are captured in *Table 4.2, Table 4.3* and *Figure 4.1 (Appendix B:B1-B27)* for easy comprehension. Issues in summary include:

- fire prevention and control;
- PPE;
- Training;
- safety record;
- safety performance;
- Investigation;
- motivation;
- Occupational health and hygiene;
- medical examination;
- other safety control measures and general safety matters.

The reasons for the use of a different questionnaire format for the employees have been emphasized in chapter three. The responses from the employees are graded accordingly i.e. “*strongly agree*”, “*agree*”, “*neutral*”, “*disagree*” and “*strongly disagree*” as shown in *Tables 4.2 and 4.3*. However, in using the percentages of employees' choice of response in *Table 4.1* “*strongly agree*” and “*agree*” are summed as a single response, this also apply to “*strongly disagree*” and “*agree*”. The reason is simple; though the responses are of varying degree of opinion, however, each pair form the same opinion. It, therefore, make the result quite easy to analyse.

Some issues as presented in *Table 4.1* represent the response of the employers or the employees or both. In situations where the employers and

the employees' opinions are expressed they present a check against the claims of the employers. It is important to note that OHS are implemented to benefit the employees. It therefore put the employees in position to express the impact of health and safety practice in the workplace.

As it may be observed in *Appendix C* some of the responses of the employers are difficult to reconcile with that of the employees. In the views of the researcher, the employees opinions might be more valid.

4.2.2 Interpretation of Table 4.1, Table 2 and Figure 4.2

Table 4.2 and *Table 4.3* are samples of *Appendices A and B*. *Table 4.2* is an aggregate response of the employees of the four Sasol RCCs in Sasolburg. The responses of the employees in each of the fuelling station are tabulated and compared. The values in the row having “*cumulative*” as the word in the first cell are obtained by summing the values of the four fuelling stations (e.g. $4+4+8+7=23$). The number of respondents is obtained by adding the values in each row.

Table 4.3 provides percentages of the values in each of the column in *Table 4.2*. Consider the intersection of “*cumulative*” and “*strongly agree*”. The value is 42.6%. This value is obtained by summing the numbers on each row and scaling it to 100% (*respondents in %*). 42.6% is the value obtained when you find the ratio of the second cell in the cumulative row and seventh cell of the same row in *Table 4.2* multiplied by 100%.

Figure 4.1 shows the graphical analysis of responses of the employees. It shows in comparative terms the opinions of the employees in each fuelling station. At a glance it is easy to read *Tables 4.2* and *4.3* simply by looking at *Figure 4.1*. Some of the responses in *Appendix A and B* are used to prepare *Appendix C*

4.3 DISCUSSION OF RESULTS

In discussing the results of the survey, exposition are made on some of the inadequacies and constraints affecting OHS management in Sasol RCCs. References are made to *Appendices B, C, D, E, F and G*.

4.3.1 Sasol Delight-1

4.3.1.1 Safety Policy

From the interview session held with Werner de Toit (*Appendix D:D1-D7*) on the 23rd July 2007, Sasol Delight-1 operates on Sasol Chemical health and safety policy which provides the framework upon which safety plans and programs are initiated. Sasol Chemical industry safety policy emphasises commitment to the following:

- care for people:
- responsible utilisation of natural resources:
- continuous improvement in health and safety;
- compliance with all applicable legal and other requirement as regards safety;
- dialogue on health and safety matter with stake holders of which employees are part; etc

(Sasol SHE Policy, 2005)¹⁻²⁴

Sasol Delight-1 safety policy is skewed towards the objectives of Sasol Chemical Industry. The policy serves as an indicator of where the management is heading as regards health and safety and also as a benchmark for management health and safety performance.

However, the fuelling station has not complied with section (7) subsection (3) of the South African OHS Act of 1993^{T-10} which stipulates a prominent display of health and safety policy within the work premises. A prominent display of health and safety policy is necessary to create continuous awareness among employees and other stakeholders of an organisation's safety policy.

However, the summary of survey outcomes (*Appendix C:C1*) indicates that 81.3% of the employees understand the health and safety policy of Sasol Delight-1. Though the figure represents majority of the employee, management should take effort to educate all employees about the policy.

4.3.1.2 Training

Sasol Delight-1 organizes formal training program for its employees through external facilitators from Sasol Chemical Industry. Management also perform forecourt assessment on every employee to ascertain employee competence and safety practice. In ensuring that health and safety training is continuous, management engages the service of an in-house training officer to facilitate the training of staffs. Adequate provision is also made in the budget to cater for the health and safety expenses within the financial year.

On a simple majority, 56.3% of the employees claim that safety training is not regular. However, 93.8% of the employees agree that further training in health and safety will have a positive effect on their awareness and practice of health and safety (*Appendix C:C2, C5*).

Regular safety training provides a platform for continuous awareness of occupational hazards and the necessary skills to manage them. It helps to remind employees of the importance of health and safety practices. Management commitment to regular health and safety training will create a safe work environment and thereby protect investment as well as human capital.

4.3.1.3 Personal Protective Equipment (PPE)

From the survey conducted, employees of Sasol Delight are issued PPE. Adequate instructions are also given on the use of PPE. Such instructions are given during the induction training of new employees. According to Werner Du Toit (*Appendix D:D4*), the use of PPE is strictly enforced. Invariably, employees are not allowed to use any other clothing material except the safety uniform issued by management.

4.3.1.4 Safety Representative

Sasol Delight-1 complies with section (16) subsection (2) and section (17) subsection (1) of the South African OHS Act of 1993 ^{T-10} which mandate employers to have safety representatives; the fuelling station has safety representative who is responsible for the under listed responsibilities as required by the South African OHS Act ^{T-10}:

- reviews health and safety measures for effectiveness;
- identifies potential hazards and potential major incidents at workplace;
- investigates complaints by any employee on health and safety matters;
- inspects the workplace; etc

4.3.1.5 Safety Records & Safety Performance

The summary of survey outcomes (*Appendix C:C1*) show that Sasol Delight-1 keeps record of safety performance. Safety record enables management to know the effectiveness of its health and safety program. According to Werner du Toit, Sasol Delight-1 proof of supplier status rose from a woeful value of 31% in September 2005 to 91% in July 2006 (*Appendix D:D2*). This value is beyond the benchmark of 80% set by Sasol Safety Quality Assurance System. Management also promotes health and safety practice by enforcing the use of face shield to prevent contamination.

However, there has been instability within the management circle which has undermined management focus on health and safety. The instability is as a result of employee turnover at the management level.

4.3.1.6 Workplace Inspection

Sasol Delight-1 monthly inspection tour is undertaken by the safety representative. Such tour covers the inspection of the safety gadgets and equipment; identification of potential hazard and deviation. This form of inspection is done once a month. Also, every thirteen weeks, the safety representative and some safety personnel from Sasol Chemical Industry do joint inspection of the fuelling station for the purpose of health and safety.

Werner Du Toit (*Appendix D:D5*) says that there is no written procedure for reporting results of inspection.

4.3.1.7 Incident Investigation

The fuelling station undertakes investigation regarding any incident such as injury to personnel and property damage. It also has a procedure for reporting injury and property accidents. The persons that are usually in attendance during an investigation of an incident include the safety officer, admin safety rep., the injured employee(s) if any, and the witness.

4.3.1.8 Motivation

Motivation of employees does not involve the use of cash, merchandise prize, certificate and letters of commendation. Instead, employees are taken on a boat cruise during a safety rep function. Attempt to motivate staff through the use of tangible gift failed due to management oversight of the plan. From the sampled opinions of the workers; 43.8% agree that the motivation is encouraging and 43.8% disagree while 12.5% are neutral. However, 87.6% of the employees are of the opinion that an increment in motivation will further boost their commitment to safety.

Motivation plays a very important role in encouraging employees; it helps to boost commitment to health and safety and serves as a means of appreciating employees for their contributions to safety.

4.3.1.9 Safety Equipment, Fire Prevention & Control Procedure

According to Werner Du Toit (*Appendix D:D3*), Sasol Delight-1 has formulated fire prevention and control procedure. This document contains the process to be followed in the event of fire. However, the necessary contact list has not been prepared. A contact list should contain a list of emergency telephone numbers of relevant authorities and fire brigades who could be called upon in the event of fire or any eventuality. Also, the contact list needs to be communicated to petrol and diesel tankers that patronise the fuelling station.

For combat readiness against fire and other hazards Sasol Delight-1 has fire extinguishers, surveillance camera, fire hydrant, fire hose, gas monitor and alarms as well as first aid box.

4.3.1.10 Safety Meeting

According to Werner Du Toit (*Appendix D:D7*) safety talks are held weekly. The meeting discusses issues that border on safety of the fuelling station. Safety reps meeting is held once every month while a site safety meeting holds once every six weeks. Though Werner claims the existence of these meetings, in contrast, 73.8% of the employees are of the opinion that safety meetings are scarcely held. This could rather imply that the safety meetings are non-functional or that the employees are not part of such meetings. It could also mean that communication channels between the management and the employees are not effective.

Safety meeting is an avenue by which employees can be abreast with information regarding health and safety issues in the workplace. Awareness of the need for effective safety practice can also be emphasized in such meetings. It also creates the opportunity for employees to ask questions and clarify issues as it pertains to health and safety.

Therefore, management should consider the importance of safety meetings and explore the benefits of such meetings. Management should also promote greater involvement of employees, if meaningful results are to be obtained towards the improvement of health and safety performance in Sasol Delight-1.

4.3.1.11 Other Safety Control Measures and General safety Matters

Good house keeping is promoted by Sasol Delight-1. This helps to eliminate or control possible diseases that could cause sickness to employees. It also helps to prevent the occurrence of accident. Employees are advised to look at the HAZCOM before attending to any vehicle.

The recordable case rate of Sasol Delight-1 as calculated in *Appendix O* is 3.17. When compared to Sasol Chemical Industry target of 0.5¹⁻²⁴ the value shows that the fuelling station has to improve on its safety performance.

According to Werner (*Appendix D:D2*), the buildings within the work premises lack emergency exits. The absence of emergency exits could result in stampede in an emergency situation; it could also pose problem during an evacuation under such conditions. However, the cost of restructuring the building to create emergency exits is prohibitive. Another problem often experienced is over speeding when some vehicles are approaching the fuelling station. This could lead to serious accident and consequent loss of life and property. Furthermore, employees are of the opinion that communication is a challenge which requires a redress.

Sasol Delight-1 conducts entrance medical tests, exit medical examinations, as well as periodic medical examinations on its employees. The tests help management to know the extent to which the job is affecting the health of workers. As part of the periodic examination employees are sent for yearly audiometric test; and medical check every two years. A simple majority of 43.8% of the employees agree that they are sent for medical examination. With 25.1% of employees in disagreement, it might suggest that some of the employees have not experienced regular medical examination (*Appendix B:B27*).

A medical examination which would not discriminate against employees on the basis of their health status should be encouraged. Information from such test can help an employee take adequate care of his health. Also, it would help management to take proactive steps in protecting the health of employees.

4.3.2 Sasol Delight-2

4.3.2.1 Safety Policy

Kruger, S, the director of Sasol Delight-2 (*Appendix E:E1*), claims that the fuelling station has a safety policy which states the commitment of management to the realisation of a safe work environment. Primary to the objectives is the safety of employees, customers and other stakeholders.

As part of commitment to health and safety, management issue safety information and use safety signs to inform employees and other stakeholders of the inherent hazards on site.

Although 70.6% of the employees understand the health and safety policy of Sasol Delight-2, however, the fuelling Sasol Delight-2 does not comply with section (7) subsection (3) of the South African OHS Act of 1993¹⁰. Section (7) subsection (3) of the South African OHS Act of 1993 mandates employers to display a copy of the health and safety policy within the work premises where employees report for service.

4.3.2.2 Training

As at the time Kruger, S (Appendix E:E4) was interviewed, formal training on health and safety was not organized for employees. According to Kruger (Appendix E), employees are about to be sent on formal training. Prior to this decision, employees simply learn on the job without proper safety training. They learn from their colleagues and from personal experience while they are exposed to the hazards of the job.

4.3.2.3 Personal Protective Equipment

Sasol Delight-2 issues PPE to employees. Appropriate safety uniform, safety boot and facial mask are issued to employees. Management is financially responsible for the provision of PPE. Instructions are also given to employees on the use of PPE.

Furthermore, the wearing of PPE is strictly enforced. Employees are not allowed to use any other clothing material at work other than the PPE issued to them (Appendix E:E4).

4.3.2.4 Safety Representative

Sasol Delight-2 has safety reps. According to Kruger, S (Appendix E:E2), the safety reps are usually the supervisors. Therefore, management complies with section (16) subsection (2) and section (17) subsection (1) of the OHS Act.

4.3.2.5 Safety Record and Safety Performance

Sasol Delight-2 does not have safety performance record from which to determine the trend of its safety performance.

In the views of Kruger, S (Appendix E:E5) the safety performance has been good and encouraging but there is no record to substantiate the claim. It is, however, difficult for the organisation to keep track of its safety performance and identify areas that require attention. Without adequate information resulting from lack of safety record, employees are not able to determine their safety performance level over time. They could only guess.

It therefore behoves on management to consider record keeping of health and safety performance as imperative.

4.3.2.6 Workplace Inspection

Inspection is conducted when there is shift take over (Appendix E:E5). Shift take over takes place daily. Inspection tour is usually done with the aid of a check list. During inspection observable hazards are reported to the manager.

4.3.2.7 Incident Investigation

The fuelling station undertakes investigation of accident which results in injury or property damage when it is deemed necessary. The panel of investigation usually include the director, FBA and the affected employee(s).

4.3.2.8 Motivation

Sasol Delight-2 does not use any form of incentive to motivate safety practice. Although there is other form of incentive given to employees, such incentive is purely related to the volume of sale of petroleum products (Appendix E:E6). From the summary of survey outcomes (Appendix C:C2) employees are dissatisfied with the form of incentive they get from management. 70.6% of the employees agree that an increment in motivation would further boost their commitment to safety (Appendix C:C5).

4.3.2.9 Safety Equipment, Fire Prevention and Control Procedure

Sasol Delight-2 does not have fire prevention and control procedure. The work premises does not have fire prevention regulation posted neither is it emphasized nor enforced. Safety equipment available to combat fire and other eventualities in the premises include: fire extinguishers, first aid, panic button, surveillance camera and spill control kit (*Appendix E:E2*).

Fire extinguishers are serviced twice yearly to ensure that they are functional when required for use. The numbers of fire extinguishers, according to Kruger, S (*Appendix E:E3*), are adequate to combat fire. Mock emergency has never been conducted to check the readiness of employees for emergency situation. The director simply states that management has no knowledge of conducting mock emergency activities (*Appendix E:E3*).

4.3.2.10 Safety Meeting

Safety meeting is only organized on a case by case basis i.e., when there is a safety concern. There is no regular safety meeting where employees can gain knowledge by discussing issues on health and safety. The absence of safety meeting coupled with lack of a safety record is an indication that there is need for concerted effort from the management to improve its health and safety practice through regular safety meetings and effective safety record.

4.3.2.11 Other Safety Control Measures and General Safety Matters

The recordable case rate as calculated in *Appendix O* is 43.48. It is the highest among the four Sasol RCCs in Sasolburg. The figure indicates an abysmally poor health and safety management when compared with Sasol Chemical Industry benchmark value of 0.5^{I-24}.

The management of the fuelling station does not conduct periodic medical examination on the employees. However, employee's medical bill is absorbed by management when any of the employees are sick

Management welcome employee's contribution when taking health and safety related decisions. However employees are of the opinion that communication is a challenge (*Appendix C:C5*).

Furthermore, the fuelling station makes contribution to workers compensation scheme. The scheme is responsible for caring for disabled or partially disabled employee in the event of an accident.

4.3.3 Exel-1

4.3.3.1 Safety Policy

Rensburg, M (*Appendix F:F1*), the manager of Exel, claims that the fuelling station has a safety policy but she failed to provide evidence of the document. The policy is not displayed anywhere in the premises. This contravenes section (7) subsection (3) of the South African OHS act of 1993. However, 70.9% of the employees claim that they understand the health and safety of Exel-1.

4.3.3.2 Training

Exel-1 does not organize regular safety training for employees. New employees learn about the hazards associated with the job. Although the manager claims that management allocate fund for training, evidence was not provided to prove it.

4.3.3.3 Personal Protective Equipment

Personal protective equipment is issued to employees and necessary instructions are given on appropriate use of issued PPE. According to Rensburg, M (*Appendix F:F4*) PPE is purchased by a joint contribution between management and the employees.

However, the law does not permit employees to contribute financially to the purchase of PPE. This indicates a contravention of section (23) of South Africa OHS act of 1993. Section (23) of the OHS act prohibits the deduction from the remuneration of employees for the purpose of health and safety.

4.3.3.4 Safety Representative

The safety representative of Exel-1 is the supervisor (*Appendix F:F2*). The petrol station therefore complies with section (16) subsection (2) and section (17) subsection (1) of South African OHS act.

4.3.3.5 Safety Record and Safety Performance

Exel-1 has no written safety record (*Appendix F:F2*). The manager depends on the surveillance camera in monitoring the forecourt. There is no record to determine the safety performance of Exel-1.

4.3.3.6 Workplace Inspection

Exel-1 undertakes inspection tours for the purpose of health and safety. Check list is often used to guide such inspections.

4.3.3.7 Incident Investigation

The fuelling station undertakes investigation of any accident which results in injury or property damage. The police are usually involved when the case is of criminal nature (*Appendix F:F5*).

4.3.3.8 Motivation

Incentive relating to health and safety is not given to employees. Exel-1 does not use any form of incentive to motivate safety practice. Incentive given to employees is related to sales of petroleum. From the summary of survey outcomes (*Appendix c:c2*) 71.4% of employees are satisfied with the form of incentive given to them by management. However, 71.5% of the employees agree that an increment in motivation would further boost their commitment to safety (*Appendix c:c9*).

4.3.3.9 Safety Equipment, Fire Prevention and Control Procedure

Exel-1 does not have elaborate fire prevention and control procedure. The procedure it has is basically against robbery incident. It does not have safety procedure to measure performance. Safety equipment available to combat fire and other eventuality in the premises include: fire extinguishers, first aid, panic button, surveillance camera and spill control kit.

4.3.3.10 Safety Meeting

Exel-1 does not hold meetings dedicated to health and safety. Issues on health and safety are discussed during business meetings (*Appendix F:F7*).

4.3.3.11 Other Safety Control Measures and General Safety Matters

The current recordable case rate of Exel-1 is 10.00 (see *Appendix O*). This figure deviates widely when compared with Sasol Chemical Industry benchmark value of 0.5 (Sasol, 2006) ¹⁻²⁴. This figure indicates a need for management to reduce the occurrence of incidents within the premises.

The management of Exel-1 does not conduct periodic medical examination on the employees. However, employee's medical bill is absorbed by management when any of the employees is sick

Also, management encourages employee's contribution when taking health and safety related decision.

Furthermore, good house keeping is promoted by Exel-1. This helps to eliminate or control diseases that cause sickness to employees. It also helps in to prevent contamination of food and drink.

4.3.4 Exel-2

4.3.4.1 Safety Policy

Kruger, S, the director of Exel-2, claims that the fuelling station has a safety policy which states the commitment of management to health and safety (*Appendix G:G1*). The objectives of the policy are skewed towards the safety of employees, customers and other stakeholders.

Although 57.1% of the employees claim to understand the health and safety policy (*Appendix c:c1*) of Exel-2, the fuelling station does not comply with section (7) subsection (3) of the South African OHS Act of 1993 which mandates employers to display a copy of the health and safety policy within the work premises where employees report for service.

4.3.4.2 Training

As at the time Kruger, S was interviewed, formal training on health and safety was not organized for employees (*Appendix G:G4*). According to Kruger, S, employees are about to be sent on formal training. Prior to this decision, employees simply learn on the job without proper safety training. They learn from their colleagues and from personal experience while they are exposed to the hazards of the job.

4.3.4.3 Personal Protective Equipment

Exel-2 issues PPE to employees. Appropriate safety uniform, safety boot and facial mask are issued to employees. Management is financially responsible for the provision of PPE. Instructions are also given to employees on the use of PPE.

Furthermore, the wearing of PPE is strictly enforced. Employees are not allowed to use any other clothing material at work other than the PPE issued to them.

4.3.4.4 Safety Representative

Exel-2 has a safety rep. According to Kruger (*Appendix G:G2*), the safety rep. is usually the supervisor. Hence, management complies with section (16) subsection (2) and section (17) subsection (1) of the OHS Act ^{T-10}.

4.3.4.5 Safety Record and Safety Performance

Exel-2 does not have safety performance record from which to determine the trend of its safety performance. Although in the views of Kruger the safety performance has been good and encouraging. However, there is no record to substantiate the claim. It is, difficult for the organisation to keep track of its safety performance and identify areas that require attention without safety records.

Without adequate information resulting from lack of safety record, employees are not able to determine their safety performance level with time. They might only guess it.

It therefore behoves on management to consider keeping record of health and safety performance.

4.3.4.6 Workplace Inspection

Inspection is conducted when there is shift take over. Shift take over takes place daily. Inspection tour is usually done with the aid of a check list. During inspection observable hazards are reported to the manager.

4.3.4.7 Incident Investigation

The fuelling station undertakes investigation of accident which results in injury or property damage when it is deemed necessary. The panel of investigation usually include the director, FBA and the affected employee(s).

4.3.4.8 Motivation

Exel-2 does not use any form of incentive to motivate safety practice. Although there are other forms of incentives given to employees, such incentives are purely related to the volume of sale of petroleum products. From the summary of survey outcomes (*Appendix c:c2*) employees are dissatisfied with the form of incentives which management gives to employees. 64.3% of the employees believe that an increment in motivation would further boost their commitment to safety.

4.3.4.9 Safety Equipment, Fire Prevention and Control Procedure

Exel-2 does not have elaborate fire prevention and control procedure. The work premises does not have fire prevention regulation posted neither is it emphasized nor enforced. Safety equipment available to combat fire and other eventuality in the premises include: fire extinguishers, first aid, panic button, surveillance camera and spill control kit.

Fire extinguishers are serviced twice yearly to ensure that they are functional when required for use. The numbers of fire extinguishers according to Kruger, S (*Appendix G:G3*) are adequate to combat fire. Mock emergency has never been conducted to check the readiness of employees for

emergency situation. The director simply states that management does not have knowledge of conducting much emergency activities (*Appendix G:G3*).

4.3.4.10 Safety Meeting

Safety meeting is only organized on a case by case basis, i.e., when there is safety concern. There is no regular safety meeting where employees can gain knowledge by discussing issues on health and safety. The absence of safety meeting couple with lack of safety record is an indication that there is need for concerted effort from the management to improve its health and safety practice through regular safety meeting and effective safety record.

4.3.4.11 Other Safety Control Measures and General Safety Matters

The current recordable case rate is 22.22 (*Appendix O*). This figure deviates widely when compared with Sasol Chemical Industry benchmark value of 0.5¹⁻²⁴. This figure indicates a need for management to reduce the occurrence of incidents in its work environment.

The management of Exel-2 does not conduct periodic medical examination on the employees. However, employee's medical bill is absorbed by management when any of the employees are sick.

Management welcomes employees' contribution when taking health and safety related decision.

Furthermore, the fuelling station makes contribution to workers compensation scheme. The scheme is responsible for caring for disabled or partially disabled employee in the event of an accident.

4.4 OBSERVATIONS

The discussion in *section 4.3* reveals the some of the flaws that undermine the effectiveness of health and safety management in each of the four Sasol RCCs in Sasolburg. Some of the inadequacies and constraints affecting OHS management as observed in Appendix C, D, E, F and G are highlighted in the sections below.

4.4.1 Sasol Delight-1

- Sasol Delight-1 has not complied with section (7) subsection (3) of the South African OHS Act which stipulates a prominent display of health and safety policy within the work premises;
- Irregular safety training;
- Instability at the management level due to high rate of job turnover which has undermined management focus on health and safety;
- The incompleteness of the fire prevention and control procedure due to delay in the readiness of the contact list;
- Inconsistency of safety meetings as expressed by the employees;
- Poor recordable case rate (RCR);
- Lack of emergency exit;
- Over speeding of approaching vehicles;
- Discontinuation of mock emergency;
- Lack of written procedure for reporting inspection.

4.4.2 Sasol Delight-2

- Sasol Delight-2 has not complied with section (7) subsection (3) of the South African OHS Act which stipulates a prominent display of health and safety policy within the work premises;
- There is no formal training organized for employees. The workers simply learn about health and safety from their colleagues and from personal experience while they are exposed to the hazards of the job;

- There is no health and safety record to determine the trend of safety performance;
- Motivation through the use of incentive for health and safety practice does not exist;
- Absence of fire prevention and control procedure;
- Safety meeting is irregular;
- Abysmal recordable case rate;
- Management inadequate knowledge of safety matters;
- Inconsistent reporting of incidents such as near misses;
- Communication is a challenge that needs redress.

4.4.3 Exel-1

- Non compliance to section (7) subsection (3) of the South African OHS Act of 1993 which stipulates a prominent display of health and safety in the workplace;
- There is no formal training organized for employees;
- Violation of section (23) of the South African OHS act which prohibits deduction from employee's remuneration for the purpose of Health and safety;
- Lack of safety record necessary to determine the safety performance of the fuelling station;
- Incentive relating to health and safety is not given to employees;
- Absence of fire prevention and control procedure;
- No dedicated health and safety meetings;
- Poor recordable case rate.

4.4.4 Exel-2

- Exel-2 contravenes section (7) subsection (3) of the South African OHS Act which stipulates a prominent display of health and safety policy within the work premises;
- No formal training organized for employees.
- There is no health and safety record to determine the trend of safety performance;

- Motivation through the use of incentive for health and safety practice does not exist;
- Absence of fire prevention and control procedure;
- Irregular safety meetings;
- Very poor recordable case rate compare to Sasol Chemical Industry benchmark;
- Management inadequate knowledge of safety matters;
- Inconsistent reporting of incidents such as near misses;
- Communication is a challenge that needs redress.

4.5 RESEARCHER'S PERSONAL OBSERVATION

Though there was minimum interaction between the researcher's and the employees, however, the enthusiasm displayed by the employees in filling the questionnaires showed a group of people who can be motivated for higher performance in safety practices.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

This dissertation evaluates the occupational health and safety management of Sasol RCCs. The findings of this dissertation have revealed some of the major factors militating against health and safety management in Sasol RCCs.

To some extent, the four Sasol RCCs in Sasolburg practice health and safety management in an attempt to meet some of the requirements stipulated by the OHS Act. Considerable investment has gone into providing safety gadgets and equipment in an effort to create a safe work environment. However there is still much to be achieved. The observations made in chapter four indicate some similarities in the constraints and inadequacies affecting OHS management in Sasol RCC, Sasolburg. They include:

- Insufficient health and safety training of staff or lack of training;
- low motivation of employee or outright absence of it;
- lack of safety records;
- non display of health and safety policy;
- absence of fire prevention and control procedure;
- Inconsistent safety meeting.

Other constraints and inadequacies mentioned in chapter four are peculiar to each of the fuelling stations.

From the observations made in chapter four, it is evident that management has taken steps to address some of the issues on health and safety in their various petrol stations, however, there is still much to be done to eliminate some of the existing challenges affecting health and safety as enumerated in chapter four. Management should be willing to accept the responsibility for occupational health and safety in their fuelling stations by stimulating awareness of safety among employees and showing more interest in human capital development in health and safety practice.

Another conclusion that can be drawn from the findings is lack of vertical flow of information. Lack of vertical flow of information can be observed from the responses of 35.9% employees who claim that communication has impaired safety performance (*Appendix B20*).

Vertical flow of information requires that information about decisions as well management plans which border on health and safety is communicated to employees; and the provision of adequate avenue through which employees can be heard. If employees' contribution to health and safety is to be reckoned with, then it is important that they are kept abreast with information..

5.3 Research Constraints

Attempt at benchmarking the suggested recommendation against Sasol Chemical Industry safety practice was impossible due to resistance from the safety authorities of the company. Most information relating to health and safety are termed classified. Hence, they are not made available to the public. However literature materials used to benchmark some of the recommendation are quoted as references along side with the recommendations proffered.

Another constraint is the refusal of the interviewees to allow the use of tape recorder. However, they allowed the researcher to write their comments and provided the option of being called on the telephone to confirm that the interview did hold, hence, the reason for *Appendix H*.

5.2 Recommendations

In order to improve the health and safety status of Sasol RCCs the following remedial actions are necessary:

- Sasol RCCs need to examine their safety and health policy with the objective of operating an employee-driven health and safety management system.
- Considerable investment should be committed to train personnel in health and safety.
- There is need to promote a unified health and safety practice among all Sasol RCCs, and encourage cross-communication among Sasol

RCCs. Cross-communication could serve as a valuable means for possible collaboration and cooperation. Information about the challenges and successes of one of the fuelling stations can be shared and brainstormed among other Sasol RCCs. This provides a seemingly limitless access to solutions to any health and safety challenge that may be confronting any of the Sasol RCCs.

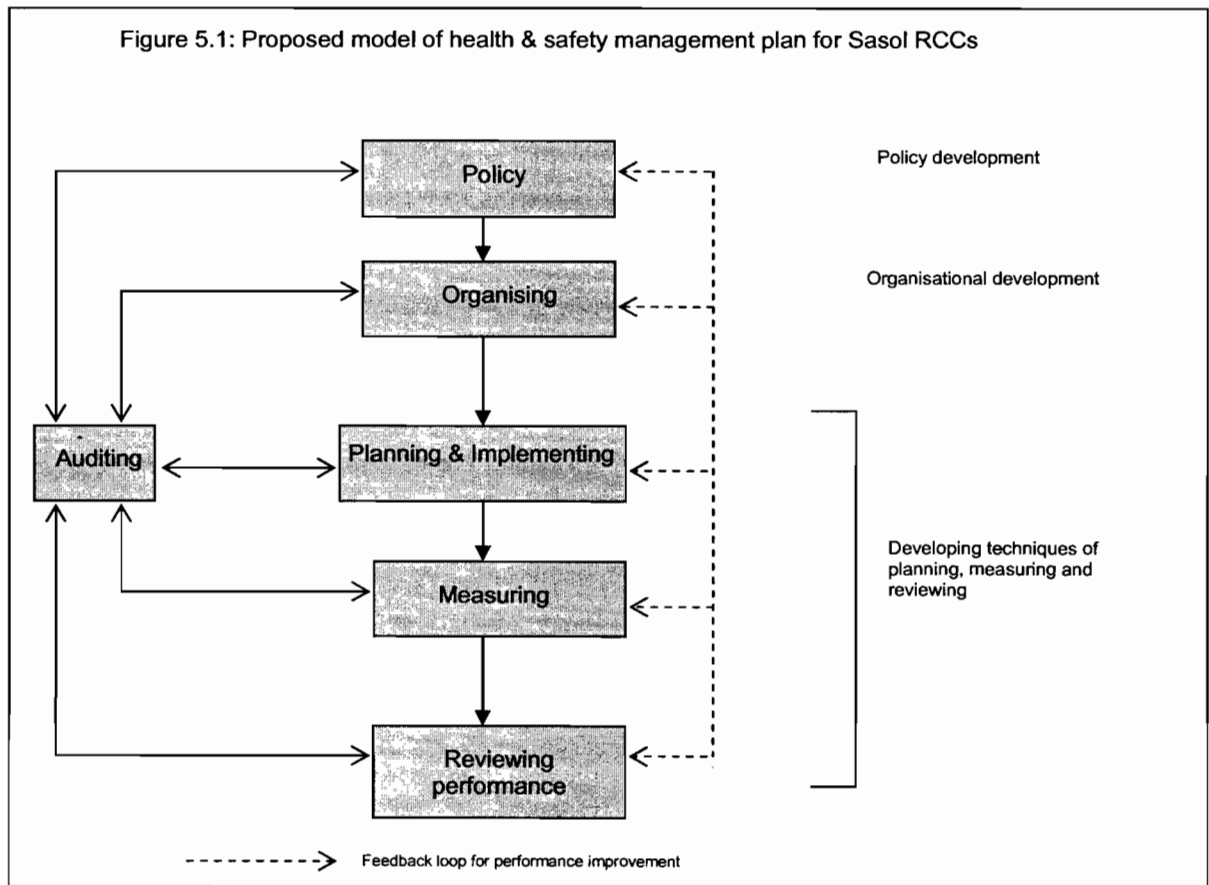
- Management should bridge the barrier in communication between management and employees. This can be achieved through a functional safety meeting where issues relating to safety awareness could be discussed and knowledge could be shared for the benefit of the employees and the establishment.
 - Adequate motivation in promoting health and safety will further help management to achieve the desired health and safety objectives. Motivation created using contest could prove effective; it has the potential to create safety awareness necessary in reducing the frequency of accidents.
 - One of the most important aspects of health and safety management is record keeping. Accident records are one of the primary means by which any organization can measure its health and safety performance. As required by the OHS Act, Sasol RCC would need to keep the following safety records;
 - Occupational injuries and illnesses record
 - Accident investigation record
- (Anton, J. T, 1979) ^{T-18}

Information gathered from such records could be used to measure the health and safety performance of Sasol RCCs in quantitative terms.

At the core of these recommendations is the need for management commitment. Consequently, management commitment is primary to the achievement of any reasonable improvement in health and safety as it affects the Sasol RCC work environment.

Suggestively, a health and safety management plan can assist the management of Sasol RCCs achieve tremendous improvement. A health and safety plan outlines how an organization intends to management safety in the

workplace. It will also assist in demonstrating compliance with legal responsibilities. To this end a health and safety management model is hereby proffered. The model is shown in Figure 5.1 below.



Other issues that are necessary for consideration in each of the elements of the proposed model are presented in block and oval form below.

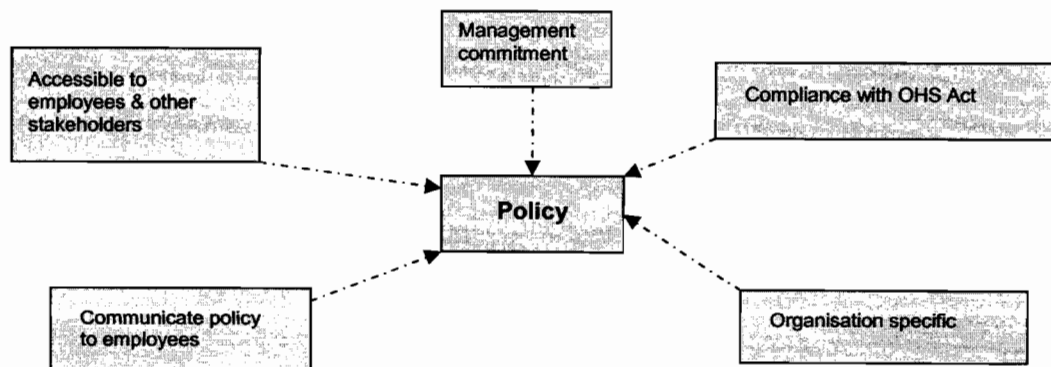


Figure 5.2 Issues to be considered during health and safety policy formulation

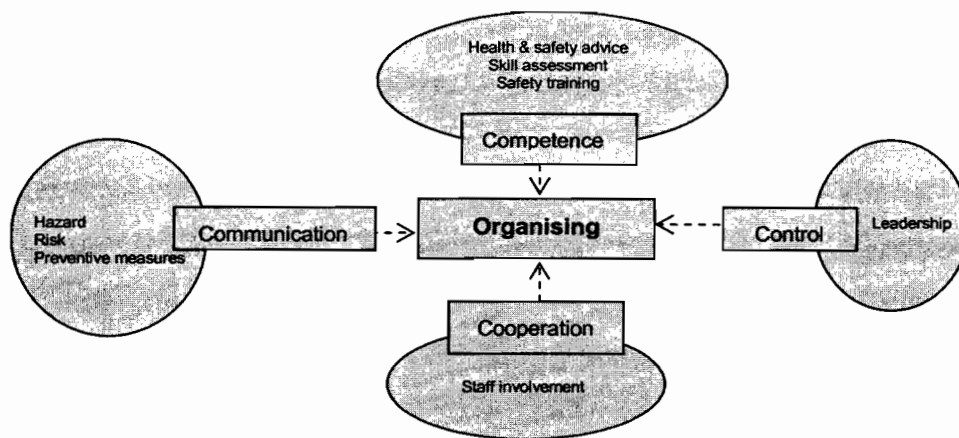
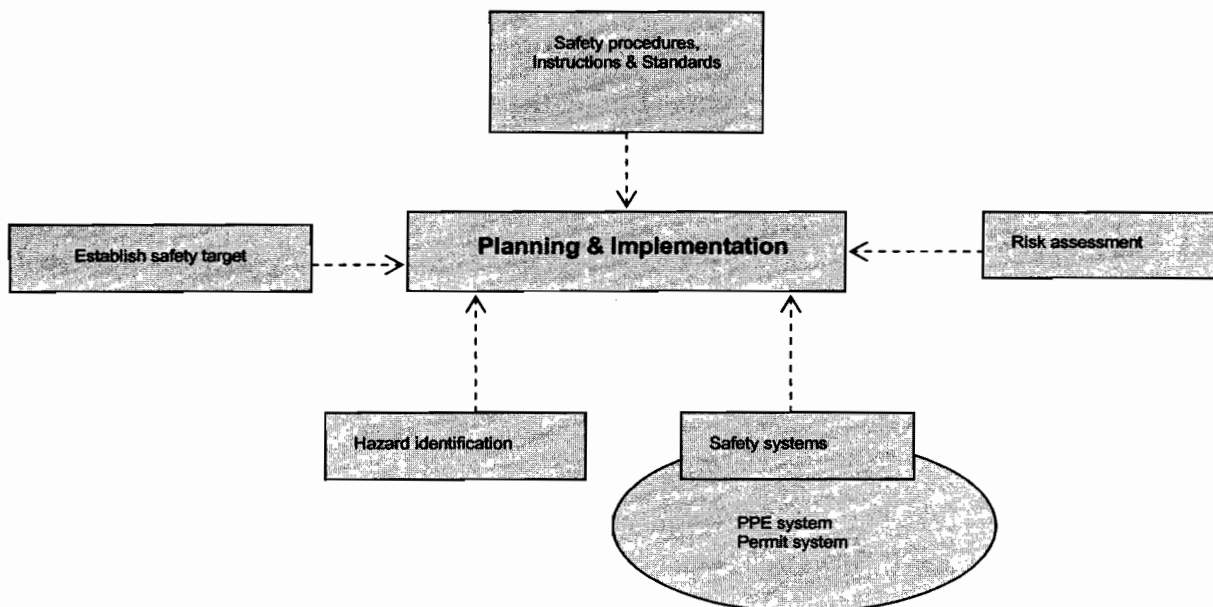


Fig 5.3 Features of organising for health & safety management



Figures 5.4 Elements of health and safety planning and implementation

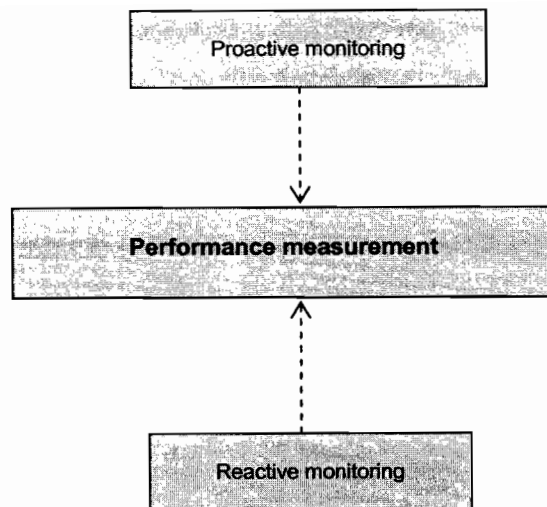


Fig 5.5 Performance measurement

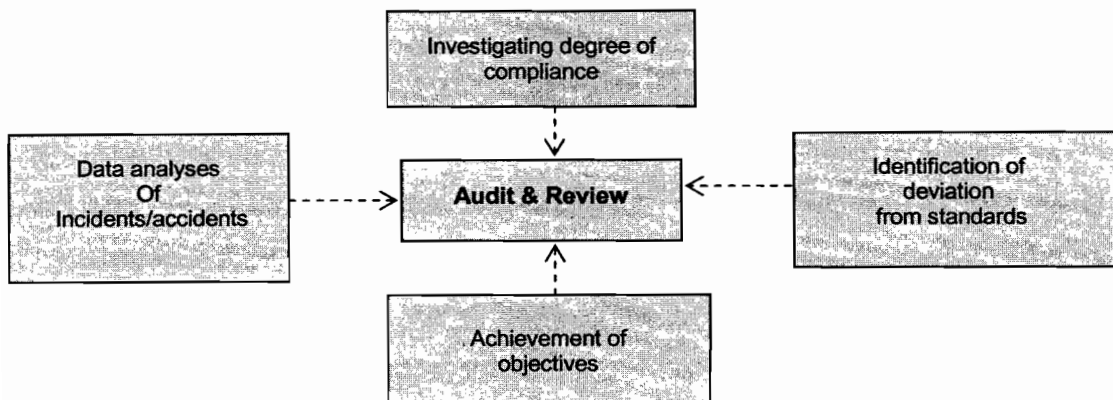


Fig 5.6 Audit & Review

A redesign of OHS any existing policy can demonstrate management renewed commitment and strong leadership towards OHS management. The policy should be specific in addressing unique health and safety challenges in Sasol RCCs. It should be concisely written and signed by the most senior accountable person in the fuelling station. To get employees' commitment, the policy has to be borne out of consultation with the workers. It should be communicated and readily accessible to all persons at fuelling station. The policy should contain at least the minimum requirements specified in the

South African OHS Act of 1993. Furthermore, it should, from time to time, be subjected to review for continual improvement.

In order to achieve an organized health and safety system, management should ensure that OHS is a line-management responsibility which is known and accepted at all levels. In practice, OHS should be everyone's responsibility. Effective supervision to ensure the protection of employees' health and safety should be provided. Through the process of organizing, management should fulfil the principles of OHS management systems as contained in the South African OHS Act of 1993. Appropriate resources should be provided to ensure that persons responsible for OHS can perform their functions properly.

Another aspect of organizing for safety is competence and training. New employees' training should include general safety orientation, safety regulations and emergency procedure. Retraining of employees should be explored to create continuous awareness necessary to sustain the practice of health and safety. Training should be provided at no cost to the employees.

Planning and implementation should reflect Sasol RCCs OHS objectives in concrete terms with defined responsibility and clear performance criteria; the selection of measurement criteria for confirming that the objectives are achieved; as well as the provision of adequate resources, including human and financial resources and technical support. During planning and implementation, potential hazards and risks to health and safety should be identified, anticipated and assessed. Effort should be made to determine whether planned or existing controls are adequate to eliminate hazards or control risks. Appropriate documentation and record keeping is important to keep track of OHS performance at all time.

In order to monitor and measure OHS performance, appropriate performance indicators should be devised. Qualitative and quantitative measurement should be adopted towards the realization of Sasol RCCs OHS objectives. Monitoring should provide adequate room for feedbacks on OHS performance. Information should be provided to determine whether hazard and risk identification, prevention and control are operating effectively.

Monitoring should be both proactive and reactive but with more emphasis on proactive OHS management. Such proactivity should include:

- monitoring of achievement of specific plans;
- systemic inspection of work systems, premises and equipment;
- surveillance of workers' health;
- compliance with applicable requirements of the South African OHS Act of 1993.

While reactive approach to managing OHS should include:

- work-related injuries, ill health, diseases and incidents;
- losses such as damage to property;
- deficient safety and health performance, and
- OHS management system failures.

Audit is an evaluation process that can provide the necessary feedback for the improvement of OHS management. It should be used to determine whether the OHS management system and its elements are in place, adequate and effective in protecting the health and safety of employees and preventing incidents. Aspects that should be covered during an audit include:

- OHS policy;
- worker participation;
- responsibility and accountability;
- competence and training;
- OHS management system documentation;
- communication;
- system planning, development and implementation;
- emergency prevention, preparedness and response;
- performance monitoring and measurement;
- preventive and corrective action; and
- continual improvement.

In adhering to the health and safety management plan proffered above, it will be easy for management of Sasol RCCs to capture all the requirements as stipulated in the OHS Act. Each block in the model is capable of addressing numerous health and safety concerns affecting Sasol RCCs. It is worthy of note that further research work will be required to develop a more

comprehensive and detailed plan on health and safety management to address Sasol RCC safety challenges. However, the proposed model provides a guide upon which further work can be done.

Further research should be conducted to investigate workplace violence and the consequential effect on fuelling stations and their employees. Research should also be extended to study the best practices required to prevent filling petrol tank with diesel. Security issues that confront fuelling stations need to be addressed through research.

It is evident from the interview conducted that managements of the four are divided over the use of cell phones; while some allow it, others do not permit the use of cell phone simply because of the uncertainty surrounding the use of cell phones at the fuelling station. Therefore scientific research should be directed to investigate the danger associated with the use of cell phones at the fuelling station and come up with a scientific conclusion on the issue.

The wider implication of this dissertation might suggest a similar trend in other Sasol RCCs that are not within Sasolburg. It therefore implies that some of the recommendations that are proffered will be applicable to such fuelling stations. Other fuelling stations which do not belong to Sasol RCCs can also benefit from the recommendation

5.3 Closure

Occupational health and safety is a dynamic field of research. The Increasing concern for employee safety will continue to create challenges which management and employers must have to cope to be in business. It is noteworthy at this juncture that safety is a good practice. It improves occupational safety. Therefore, management must take responsibility for its employees irrespective of any sector of business.

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APPENDIX A

Result of employees' views on Sasol RCCs Health & Safety Management

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	No of Respondents
1	Work environment prone to high risk.	23	20	7	3	1	54
2	The safety responsibilities associated with employee's work are clearly spelt out.	10	22	13	6	0	51
3	Employee is familiar with all possible hazards associated with assigned job.	22	27	2	3	0	54
4	Employee is familiar with all possible hazards associated with the job of colleagues.	18	20	11	1	1	51
5	Regular safety meetings	4	6	4	12	28	54
6	Employee is aware of hazards management associated with assigned job	9	24	12	5	4	54
7	The whole essence of safety management program is fully understood.	3	30	7	8	6	54
8	Availability of adequate Safety equipment for employee's job	8	25	9	6	3	51
9	Management do issue personal protective equipment (PPE) annually basis	10	19	5	13	5	52
10	Employee understands the safety policy of Sasol RCCs	18	21	14	2	0	55

11	Reward/motivation associated with safety is encouraging.	5	12	11	16	7	51
12	Employee believes that an increment reward/motivation will further boost commitment to safety.	23	17	3	4	7	54
13	work productivity and quality usually have higher priority than work safety	18	11	11	9	4	53
14	The manager/management care about safety and try to reduce risk level as much as possible.	9	20	13	5	6	53
15	Management places most of the blame for an accident on the injured or affected employee.	3	10	28	10	1	52
16	"Near misses" incident cases are consistently reported and investigated.	7	9	15	11	9	51
17	Employees know how to do their job safely.	33	18	2	1	0	54
18	Safety trainings are organised on regular basis.	6	8	9	13	14	50
19	Further training in safety and health will have a quantum effect on employee safety performance.	16	24	8	2	2	52
20	Communication is a problem which has impaired safety performance.	13	9	12	16	3	53

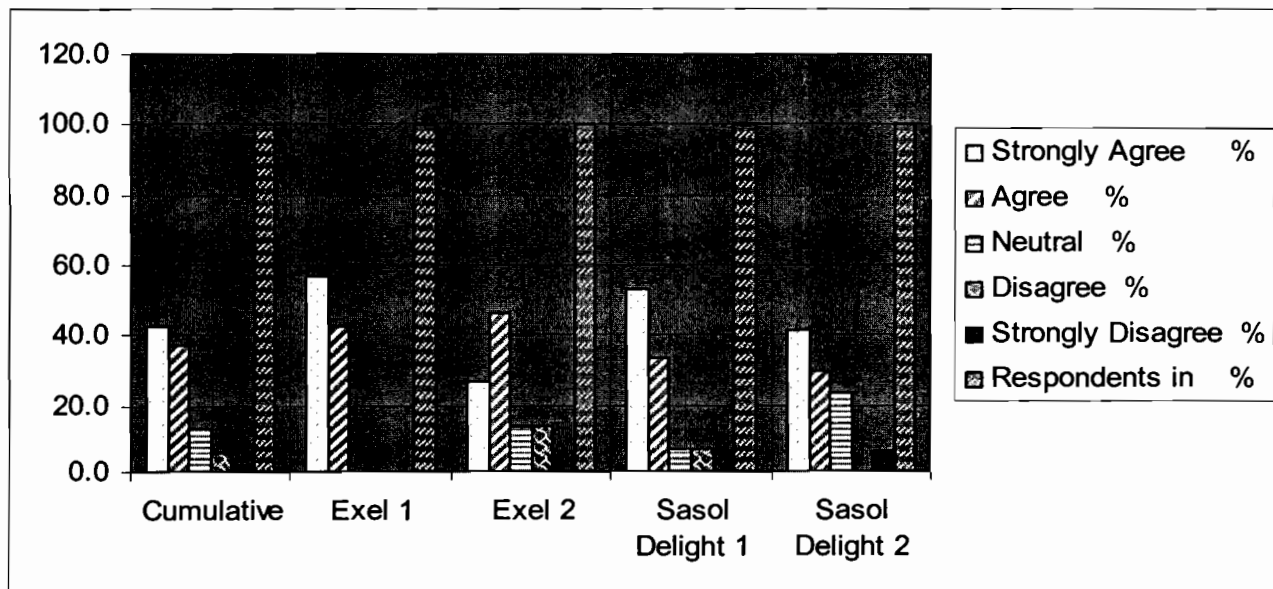
21	Employees are conversant with the South African legislation on Occupational Health & safety.	11	18	9	7	7	52
22	Employees are aware their organisation has a copy of the South African Occupational Health and Safety Act with the management.	6	14	11	10	12	53
23	Employee has read the South African Occupational Health and Safety Act.	7	14	10	9	13	53
24	My organisation has safety standard written procedures guiding our operation on site.	5	24	10	4	11	54
25	My company has taken an insurance policy on behalf of employees against occupational hazards.	8	4	21	9	11	53
26	Sasol RCC has safety incentive program which helps to motivate safety practice at work.	5	6	10	20	12	53
27	Employee does periodic medical examination sponsored by Sasol to determine the status of my health.	8	5	11	8	20	52

APPENDIX B

Analysis of Result of Employees' Opinion about Sasol RCCs Health & Safety management

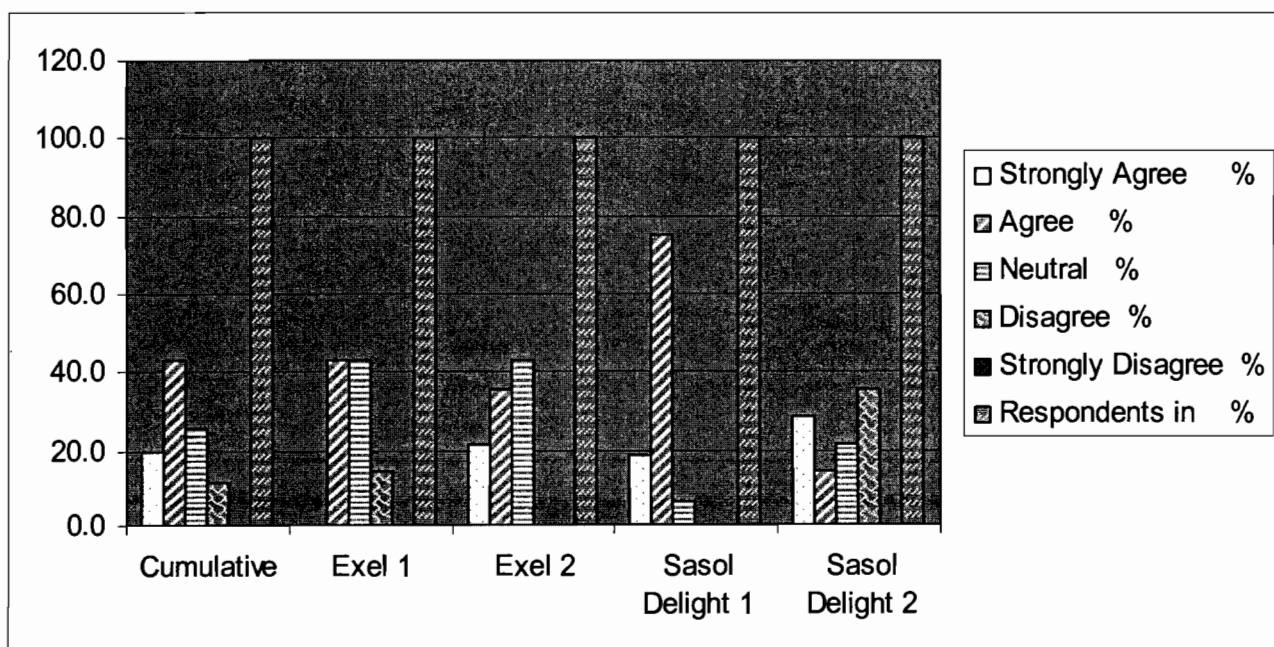
1a	Work environment is prone to high risk.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	23	20	7	3	1	54
	Exel 1	4	3	0	0	0	7
	Exel 2	4	7	2	2	0	15
	Sasol Delight 1	8	5	1	1	0	15
	Sasol Delight 2	7	5	4	0	1	17

1b	Work environment is prone to high risk.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	42.6	37.0	13.0	5.6	1.9	100
	Exel 1	57.1	42.9	0.0	0.0	0.0	100
	Exel 2	26.7	46.7	13.3	13.3	0.0	100
	Sasol Delight 1	53.3	33.3	6.7	6.7	0.0	100
	Sasol Delight 2	41.2	29.4	23.5	0.0	5.9	100



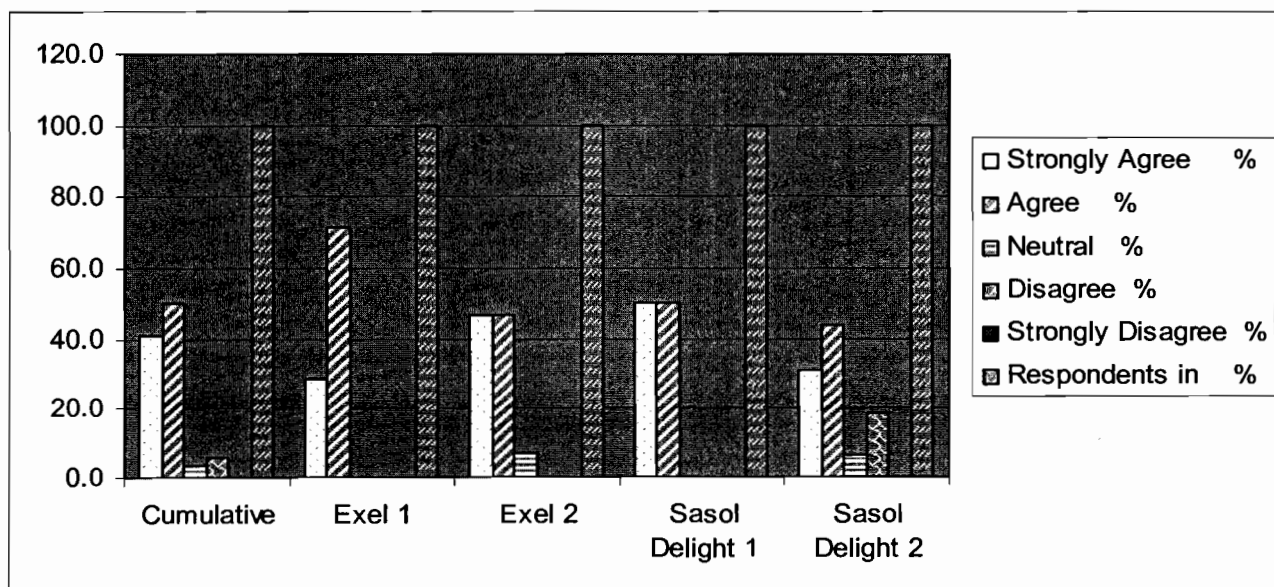
2a	The safety responsibilities associated with employee's work are clearly spelt out.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	10	22	13	6	0	51
	Exel 1	0	3	3	1	0	7
	Exel 2	3	5	6	0	0	14
	Sasol Delight 1	3	12	1			16
	Sasol Delight 2	4	2	3	5	0	14

2b	The safety responsibilities associated with employee's work are clearly spelt out.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	19.6	43.1	25.5	11.8	0.0	100
	Exel 1	0.0	42.9	42.9	14.3	0.0	100
	Exel 2	21.4	35.7	42.9	0.0	0.0	100
	Sasol Delight 1	18.8	75.0	6.3	0.0	0.0	100
	Sasol Delight 2	28.6	14.3	21.4	35.7	0.0	100



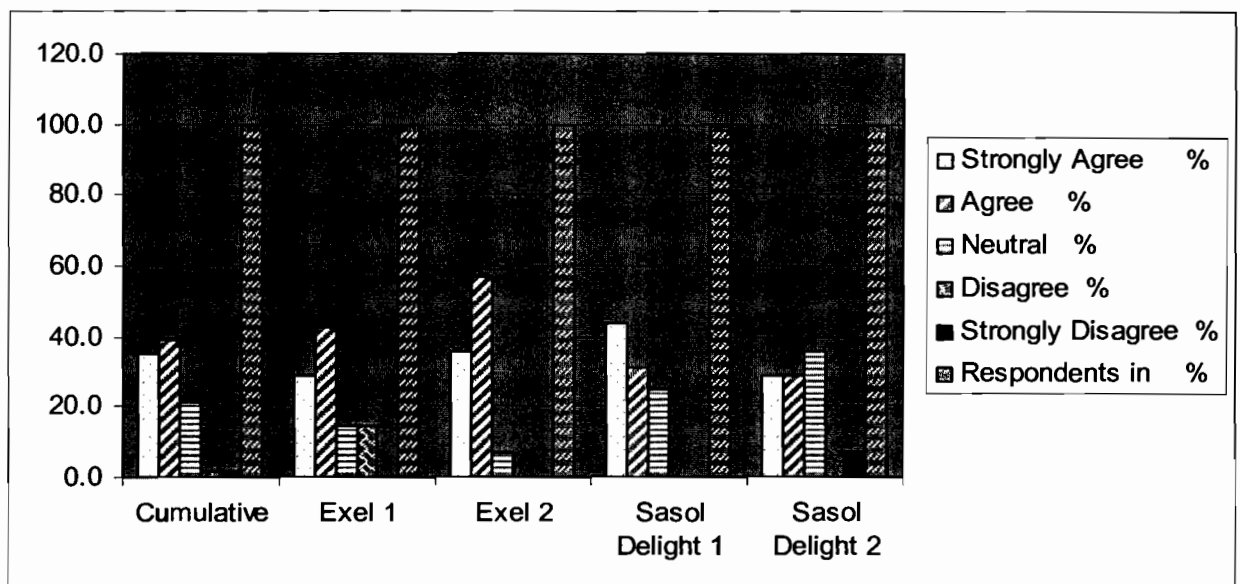
3a	Employee is familiar with all possible hazards associated with assigned job.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	22	27	2	3	0	54
	Exel 1	2	5	0	0	0	7
	Exel 2	7	7	1	0	0	15
	Sasol Delight 1	8	8	0	0	0	16
	Sasol Delight 2	5	7	1	3	0	16

3b	Employee is familiar with all possible hazards associated with assigned job.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	40.7	50.0	3.7	5.6	0.0	100
	Exel 1	28.6	71.4	0.0	0.0	0.0	100
	Exel 2	46.7	46.7	6.7	0.0	0.0	100
	Sasol Delight 1	50.0	50.0	0.0	0.0	0.0	100
	Sasol Delight 2	31.3	43.8	6.3	18.8	0.0	100



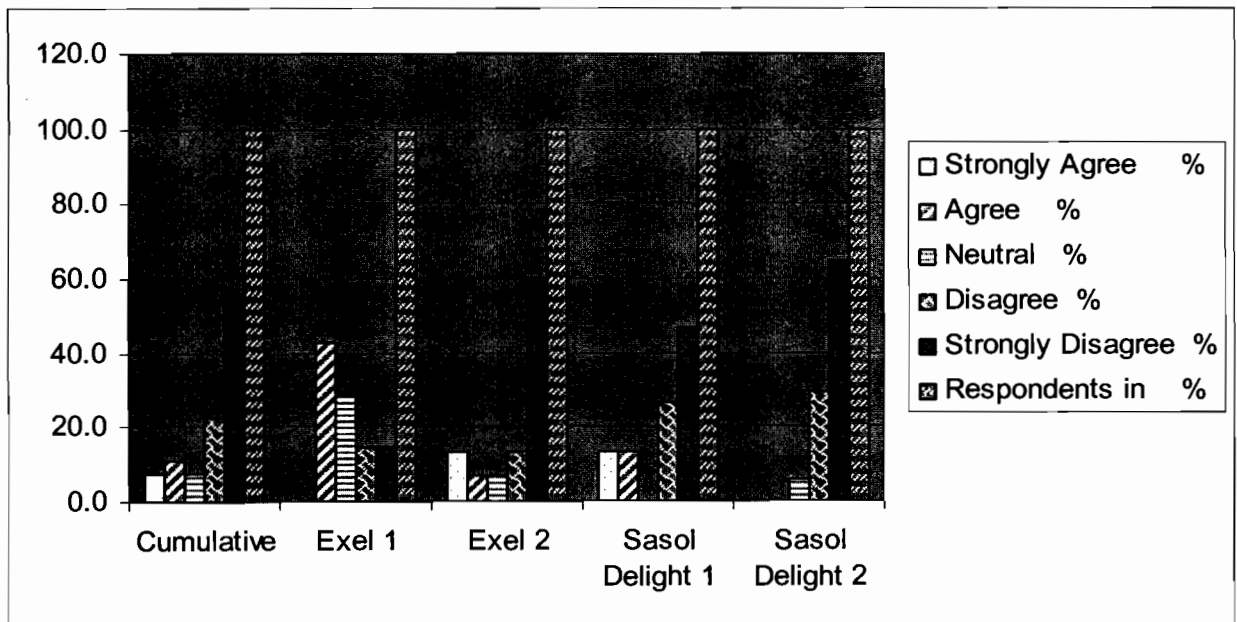
4a	Employee is familiar with all possible hazards associated with the job of colleagues.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	18	20	11	1	1	51
	Exel 1	2	3	1	1	0	7
	Exel 2	5	8	1	0	0	14
	Sasol Delight 1	7	5	4			16
	Sasol Delight 2	4	4	5	0	1	14

4b	Employee is familiar with all possible hazards associated with the job of colleagues.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	35.3	39.2	21.6	2.0	2.0	100
	Exel 1	28.6	42.9	14.3	14.3	0.0	100
	Exel 2	35.7	57.1	7.1	0.0	0.0	100
	Sasol Delight 1	43.8	31.3	25.0	0.0	0.0	100
	Sasol Delight 2	28.6	28.6	35.7	0.0	7.1	100



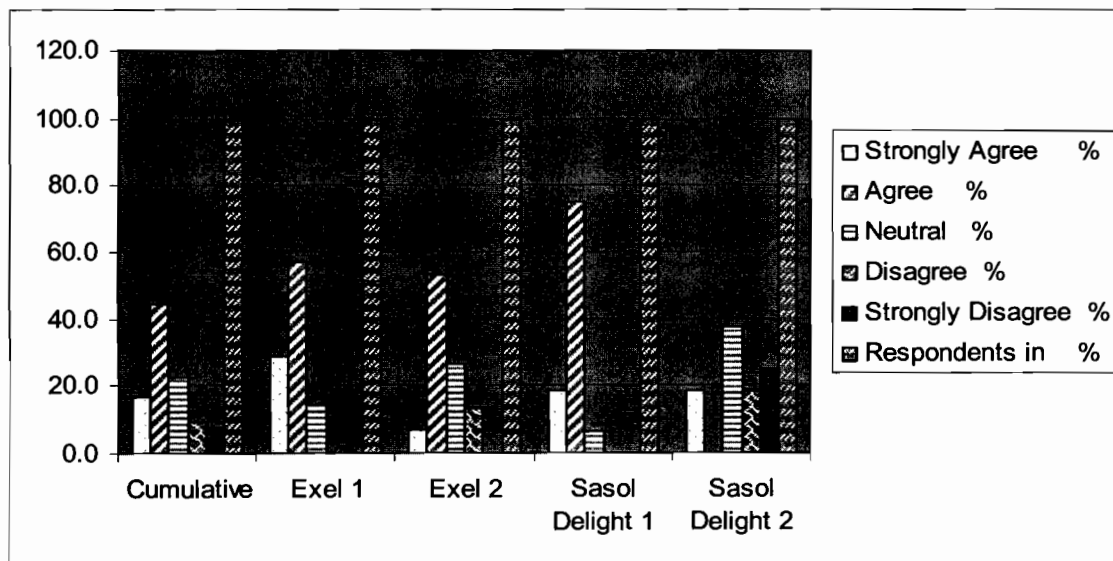
5a	Regular safety meetings	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	4	6	4	12	28	54
	Exel 1	0	3	2	1	1	7
	Exel 2	2	1	1	2	9	15
	Sasol Delight 1	2	2	0	4	7	15
	Sasol Delight 2	0	0	1	5	11	17

5b	Regular safety meetings	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	7.4	11.1	7.4	22.2	51.9	100
	Exel 1	0.0	42.9	28.6	14.3	14.3	100
	Exel 2	13.3	6.7	6.7	13.3	60.0	100
	Sasol Delight 1	13.3	13.3	0.0	26.7	46.7	100
	Sasol Delight 2	0.0	0.0	5.9	29.4	64.7	100



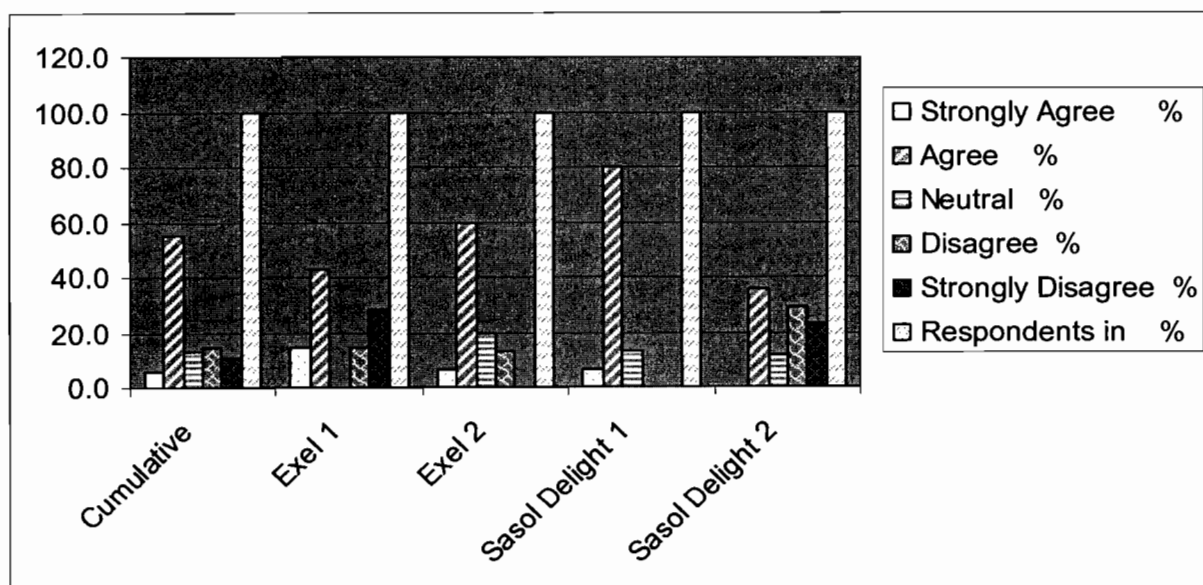
6a	Employee is aware of hazards associated with assigned job	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	9	24	12	5	4	54
	Exel 1	2	4	1	0	0	7
	Exel 2	1	8	4	2	0	15
	Sasol Delight 1	3	12	1	0	0	16
	Sasol Delight 2	3	0	6	3	4	16

6b	Employee is aware of hazards associated with assigned job	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	16.7	44.4	22.2	9.3	7.4	100
	Exel 1	28.6	57.1	14.3	0.0	0.0	100
	Exel 2	6.7	53.3	26.7	13.3	0.0	100
	Sasol Delight 1	18.8	75.0	6.3	0.0	0.0	100
	Sasol Delight 2	18.8	0.0	37.5	18.8	25.0	100



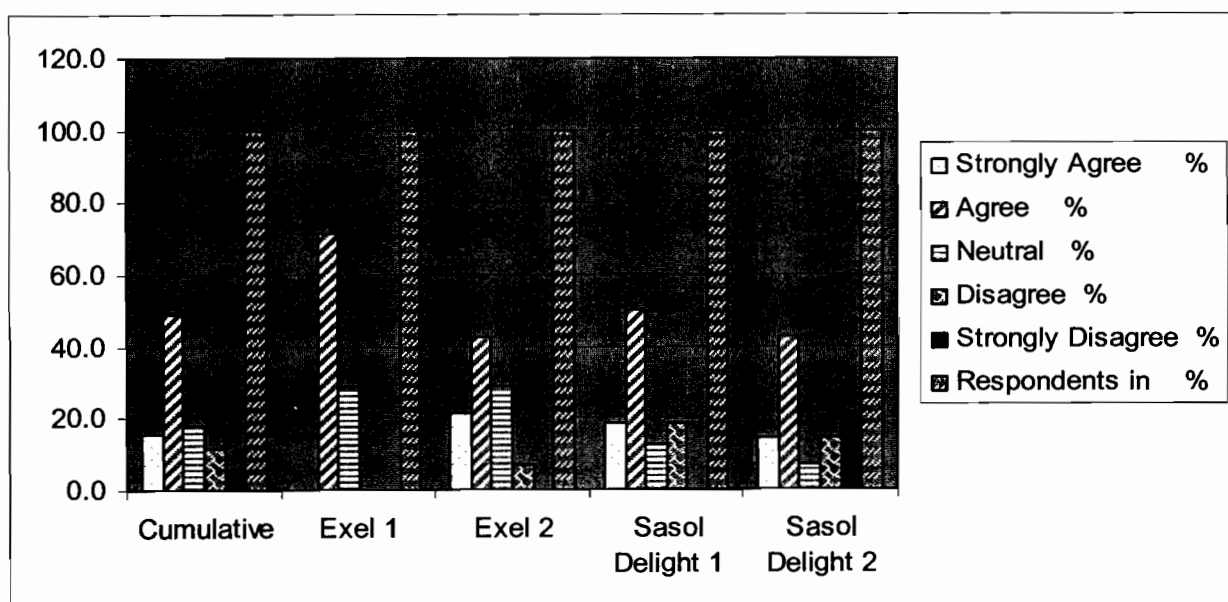
7a	The whole essence of safety management program is fully understood.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	3	30	7	8	6	54
	Exel 1	1	3	0	1	2	7
	Exel 2	1	9	3	2	0	15
	Sasol Delight 1	1	12	2	0	0	15
	Sasol Delight 2	0	6	2	5	4	17

7b	The whole essence of safety management program is fully understood.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	5.6	55.6	13.0	14.8	11.1	100
	Exel 1	14.3	42.9	0.0	14.3	28.6	100
	Exel 2	6.7	60.0	20.0	13.3	0.0	100
	Sasol Delight 1	6.7	80.0	13.3	0.0	0.0	100
	Sasol Delight 2	0.0	35.3	11.8	29.4	23.5	100



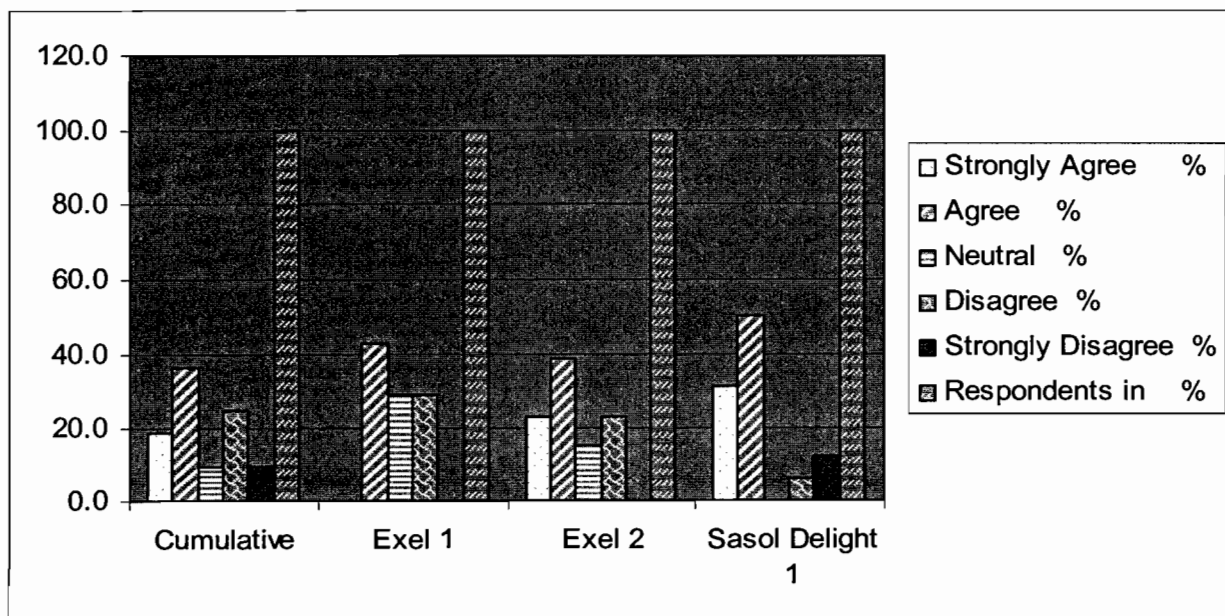
8a	Availability of adequate Safety equipment for employee's job	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	8	25	9	6	3	51
	Exel 1	0	5	2	0	0	7
	Exel 2	3	6	4	1	0	14
	Sasol Delight 1	3	8	2	3	0	16
	Sasol Delight 2	2	6	1	2	3	14

8b	Availability of adequate Safety equipment for employees' job	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	15.7	49.0	17.6	11.8	5.9	100
	Exel 1	0.0	71.4	28.6	0.0	0.0	100
	Exel 2	21.4	42.9	28.6	7.1	0.0	100
	Sasol Delight 1	18.8	50.0	12.5	18.8	0.0	100
	Sasol Delight 2	14.3	42.9	7.1	14.3	21.4	100



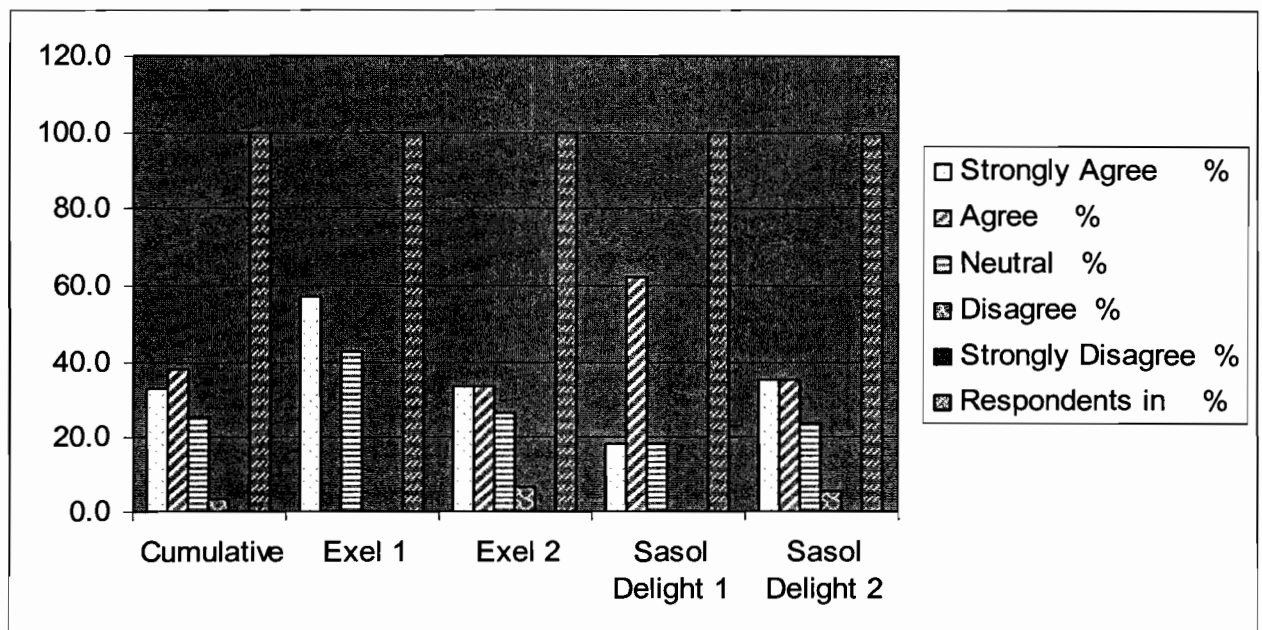
9a	Management do issue personal protective equipment (PPE) annually basis	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	10	19	5	13	5	52
	Exel 1	0	3	2	2	0	7
	Exel 2	3	5	2	3	0	13
	Sasol Delight 1	5	8		1	2	16
	Sasol Delight 2	2	3	1	7	3	16

9b	Management do issue personal protective equipment (PPE) annually basis	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	19.2	36.5	9.6	25.0	9.6	100
	Exel 1	0.0	42.9	28.6	28.6	0.0	100
	Exel 2	23.1	38.5	15.4	23.1	0.0	100
	Sasol Delight 1	31.3	50.0	0.0	6.3	12.5	100
	Sasol Delight 2	12.5	18.8	6.3	43.8	18.8	100



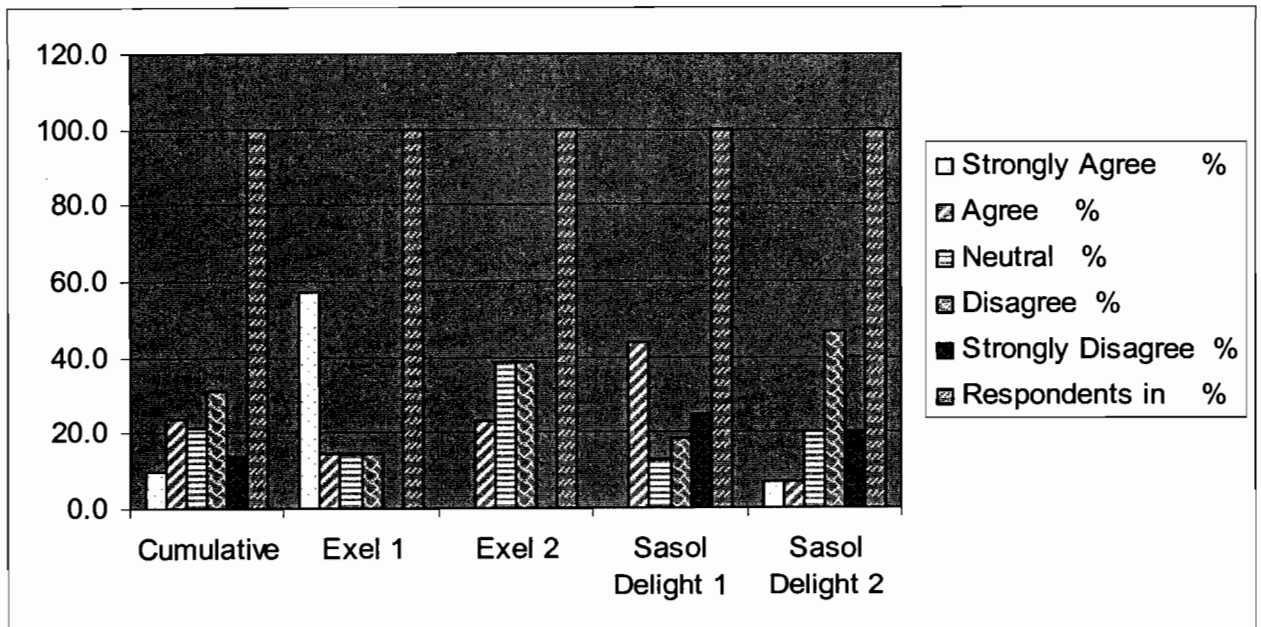
10a	Employee understand the safety policy of Sasol RCCs	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	18	21	14	2	0	55
	Exel 1	4	0	3	0	0	7
	Exel 2	5	5	4	1	0	15
	Sasol Delight 1	3	10	3		0	16
	Sasol Delight 2	6	6	4	1	0	17

10b	Employee understands the safety policy of Sasol RCCs	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	32.7	38.2	25.5	3.6	0.0	100
	Exel 1	57.1	0.0	42.9	0.0	0.0	100
	Exel 2	33.3	33.3	26.7	6.7	0.0	100
	Sasol Delight 1	18.8	62.5	18.8	0.0	0.0	100
	Sasol Delight 2	35.3	35.3	23.5	5.9	0.0	100



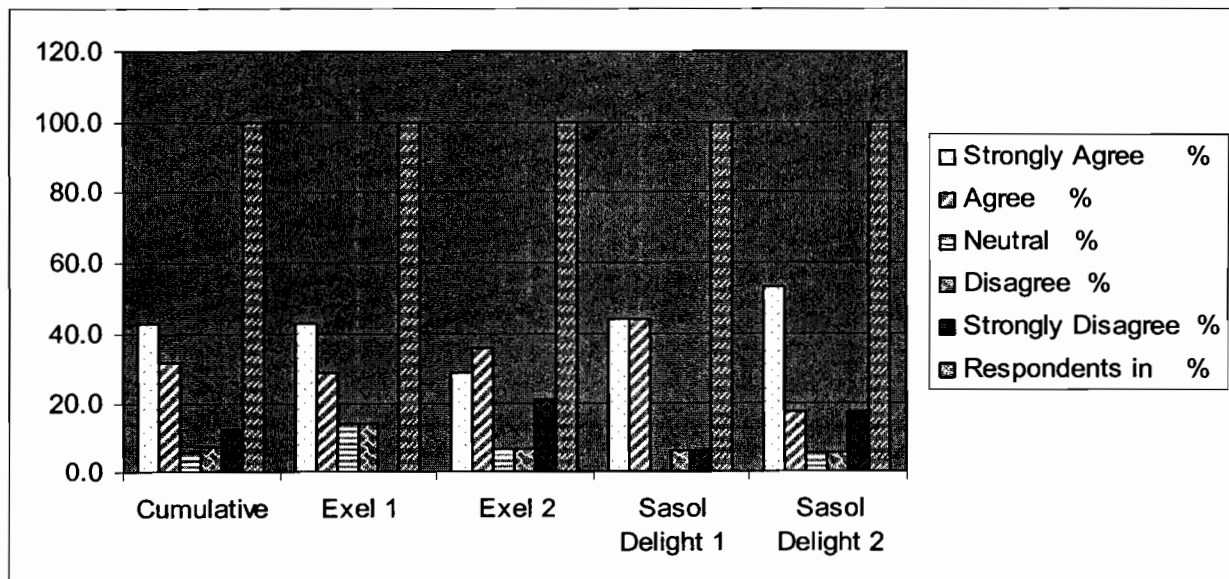
11a	Reward/motivation associated with safety is encouraging.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	5	12	11	16	7	51
	Exel 1	4	1	1	1	0	7
	Exel 2	0	3	5	5	0	13
	Sasol Delight 1		7	2	3	4	16
	Sasol Delight 2	1	1	3	7	3	15

11b	Reward/motivation associated with safety is encouraging.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	9.8	23.5	21.6	31.4	13.7	100
	Exel 1	57.1	14.3	14.3	14.3	0.0	100
	Exel 2	0.0	23.1	38.5	38.5	0.0	100
	Sasol Delight 1	0.0	43.8	12.5	18.8	25.0	100
	Sasol Delight 2	6.7	6.7	20.0	46.7	20.0	100



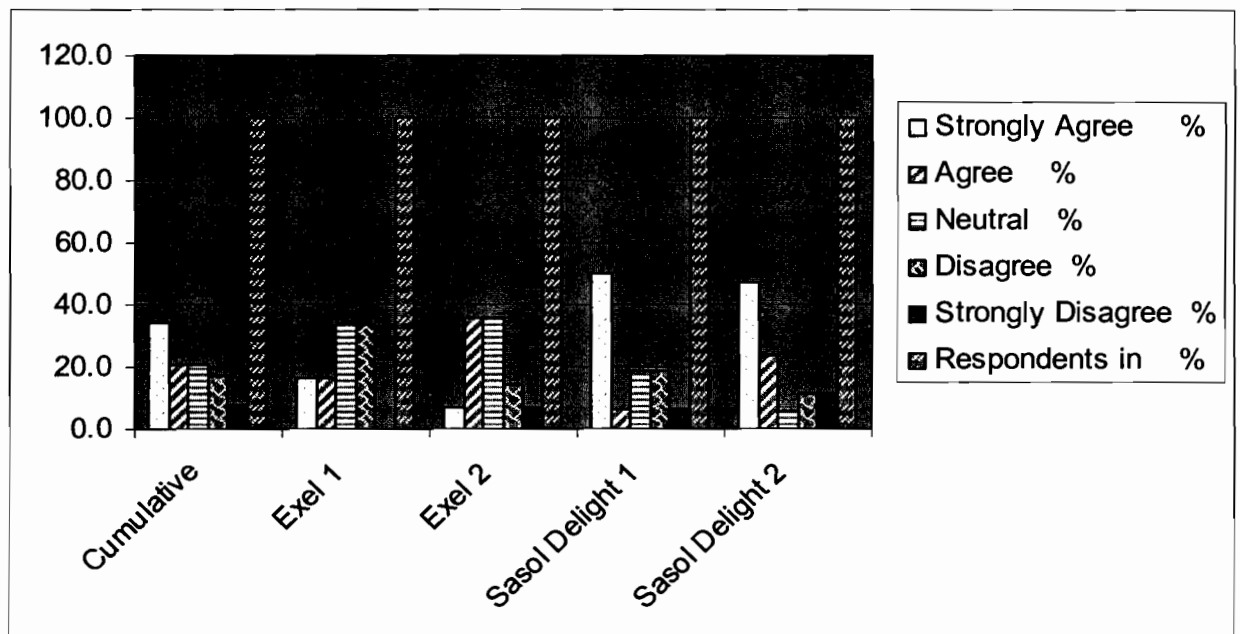
12a	Employee believes that an increment reward/motivation will further boost commitment to safety.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	23	17	3	4	7	54
	Exel 1	3	2	1	1	0	7
	Exel 2	4	5	1	1	3	14
	Sasol Delight 1	7	7		1	1	16
	Sasol Delight 2	9	3	1	1	3	17

12b	Employee believes that an increment reward/motivation will further boost commitment to safety.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	42.6	31.5	5.6	7.4	13.0	100
	Exel 1	42.9	28.6	14.3	14.3	0.0	100
	Exel 2	28.6	35.7	7.1	7.1	21.4	100
	Sasol Delight 1	43.8	43.8	0.0	6.3	6.3	100
	Sasol Delight 2	52.9	17.6	5.9	5.9	17.6	100



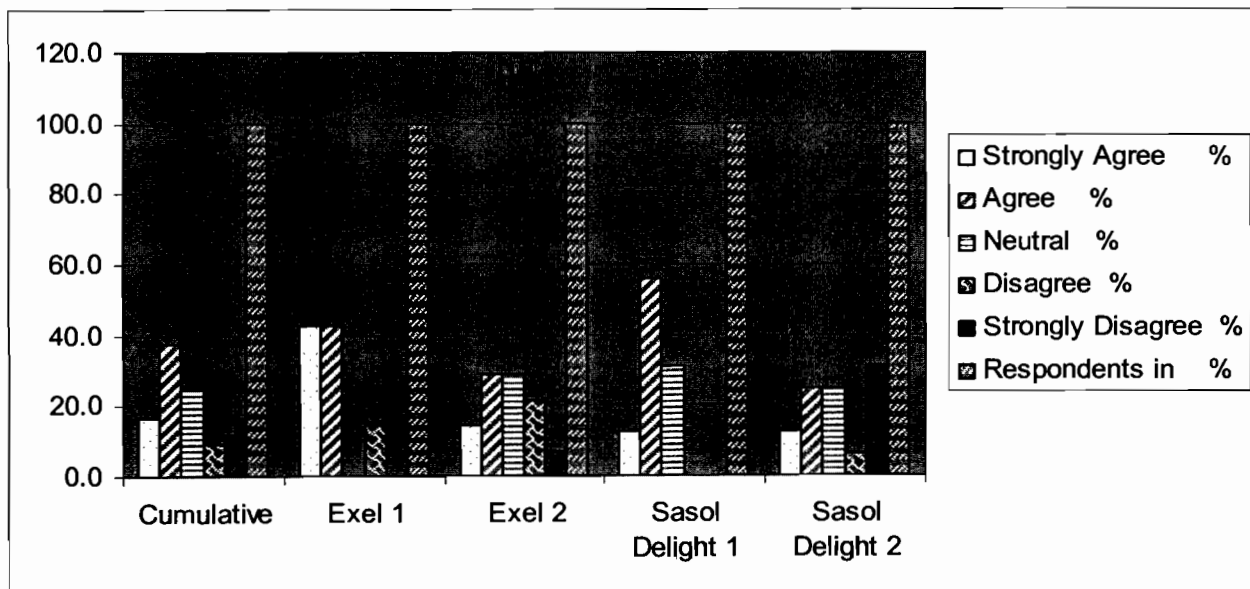
13a	work productivity and quality usually have higher priority than work safety	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	18	11	11	9	4	53
	Exel 1	1	1	2	2	0	6
	Exel 2	1	5	5	2	1	14
	Sasol Delight 1	8	1	3	3	1	16
	Sasol Delight 2	8	4	1	2	2	17

13b	work productivity and quality usually have higher priority than work safety	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	34.0	20.8	20.8	17.0	7.5	100
	Exel 1	16.7	16.7	33.3	33.3	0.0	100
	Exel 2	7.1	35.7	35.7	14.3	7.1	100
	Sasol Delight 1	50.0	6.3	18.8	18.8	6.3	100
	Sasol Delight 2	47.1	23.5	5.9	11.8	11.8	100



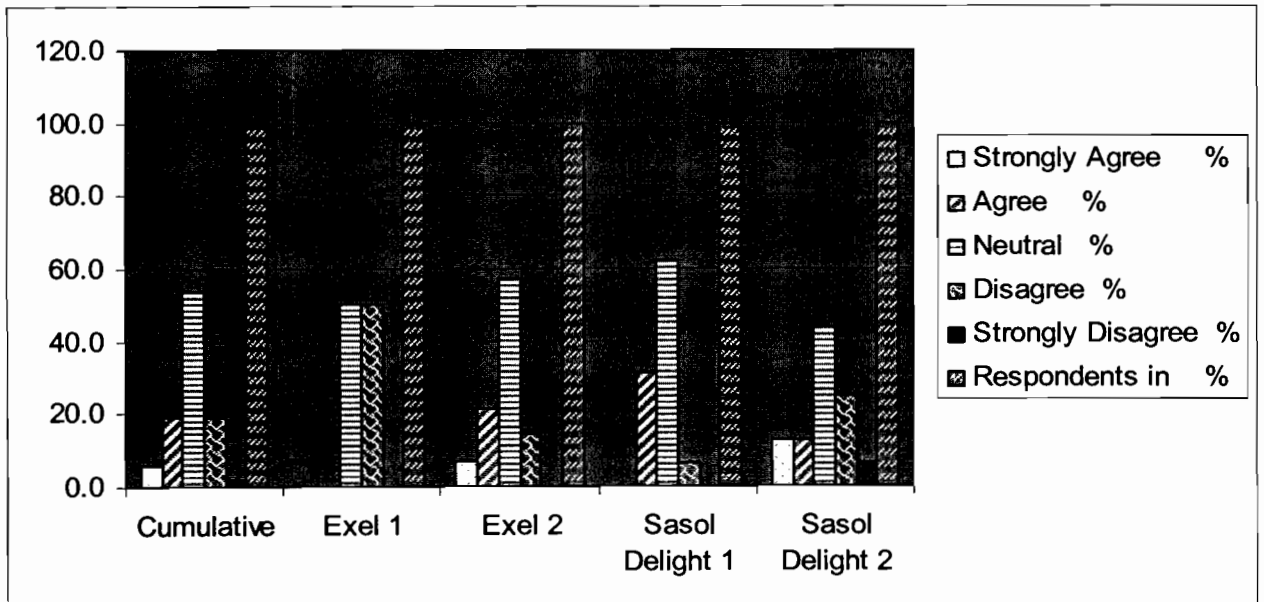
14a	The manager/management care about safety and try to reduce risk level as much as possible.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	9	20	13	5	6	53
	Exel 1	3	3	0	1	0	7
	Exel 2	2	4	4	3	1	14
	Sasol Delight 1	2	9	5	0	0	16
	Sasol Delight 2	2	4	4	1	5	16

14b	The manager/management care about safety and try to reduce risk level as much as possible.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	17.0	37.7	24.5	9.4	11.3	100
	Exel 1	42.9	42.9	0.0	14.3	0.0	100
	Exel 2	14.3	28.6	28.6	21.4	7.1	100
	Sasol Delight 1	12.5	56.3	31.3	0.0	0.0	100
	Sasol Delight 2	12.5	25.0	25.0	6.3	31.3	100



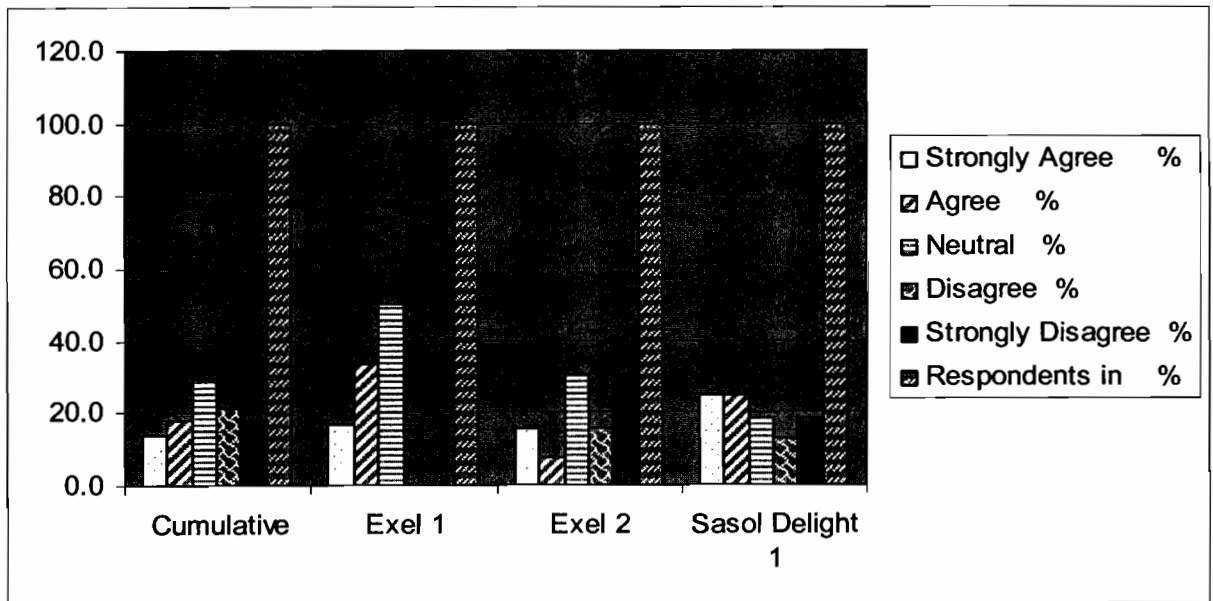
15a	Management places most of the blame for an accident on the injured employee.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	3	10	28	10	1	52
	Exel 1	0	0	3	3	0	6
	Exel 2	1	3	8	2	0	14
	Sasol Delight 1		5	10	1	0	16
	Sasol Delight 2	2	2	7	4	1	16

15b	Management places most of the blame for an accident on the injured employee.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	5.8	19.2	53.8	19.2	1.9	100
	Exel 1	0.0	0.0	50.0	50.0	0.0	100
	Exel 2	7.1	21.4	57.1	14.3	0.0	100
	Sasol Delight 1	0.0	31.3	62.5	6.3	0.0	100
	Sasol Delight 2	12.5	12.5	43.8	25.0	6.3	100



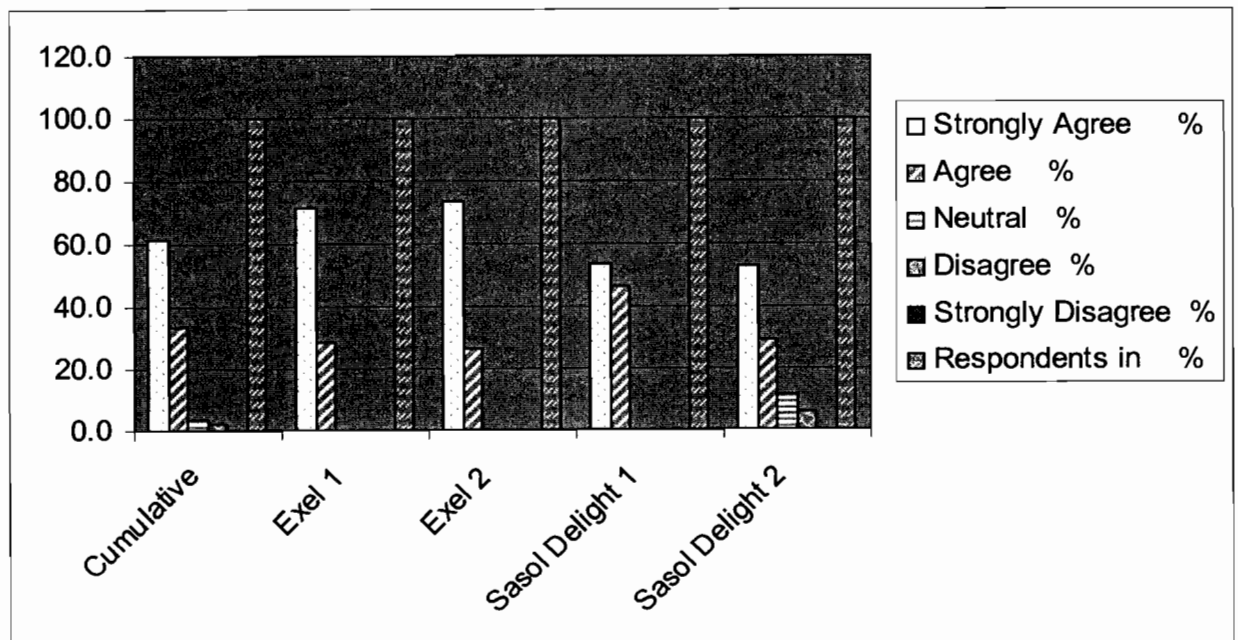
16a	"Near misses" incident cases are consistently reported and investigated.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	7	9	15	11	9	51
	Exel 1	1	2	3	0	0	6
	Exel 2	2	1	4	2	4	13
	Sasol Delight 1	4	4	3	2	3	16
	Sasol Delight 2	0	2	5	7	2	16

16b	"Near misses" incident cases are consistently reported and investigated.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	13.7	17.6	29.4	21.6	17.6	100
	Exel 1	16.7	33.3	50.0	0.0	0.0	100
	Exel 2	15.4	7.7	30.8	15.4	30.8	100
	Sasol Delight 1	25.0	25.0	18.8	12.5	18.8	100
	Sasol Delight 2	0.0	12.5	31.3	43.8	12.5	100



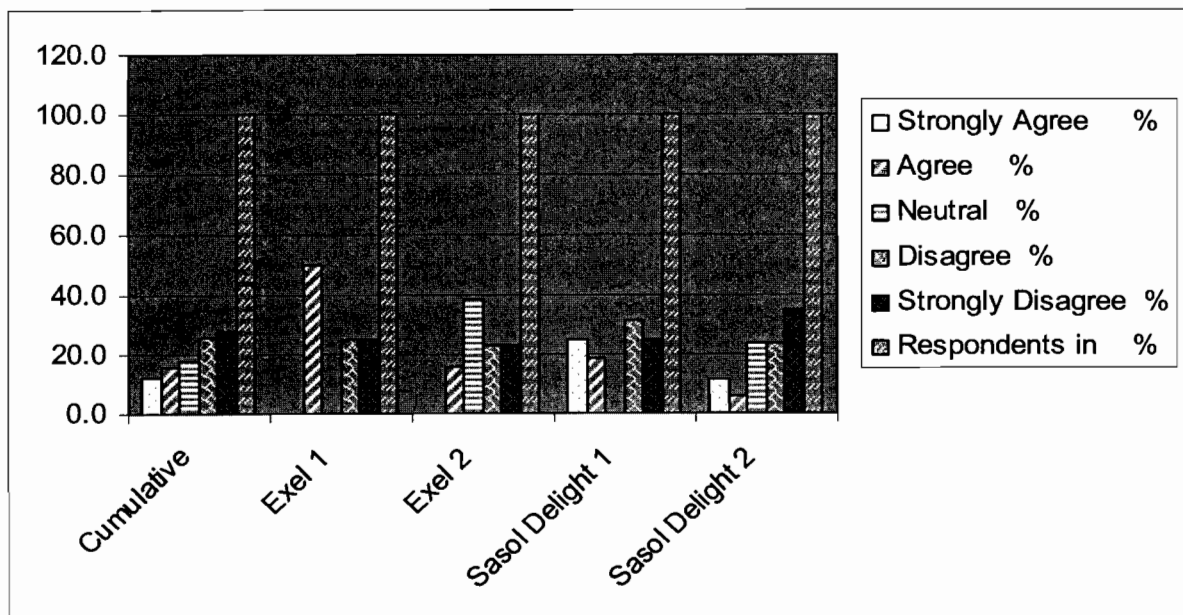
17a	Employees know how to do their job safely.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	33	18	2	1	0	54
	Exel 1	5	2	0	0	0	7
	Exel 2	11	4	0	0	0	15
	Sasol Delight 1	8	7	0	0	0	15
	Sasol Delight 2	9	5	2	1		17

17b	Employees know how to do their job safely.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	61.1	33.3	3.7	1.9	0.0	100
	Exel 1	71.4	28.6	0.0	0.0	0.0	100
	Exel 2	73.3	26.7	0.0	0.0	0.0	100
	Sasol Delight 1	53.3	46.7	0.0	0.0	0.0	100
	Sasol Delight 2	52.9	29.4	11.8	5.9	0.0	100



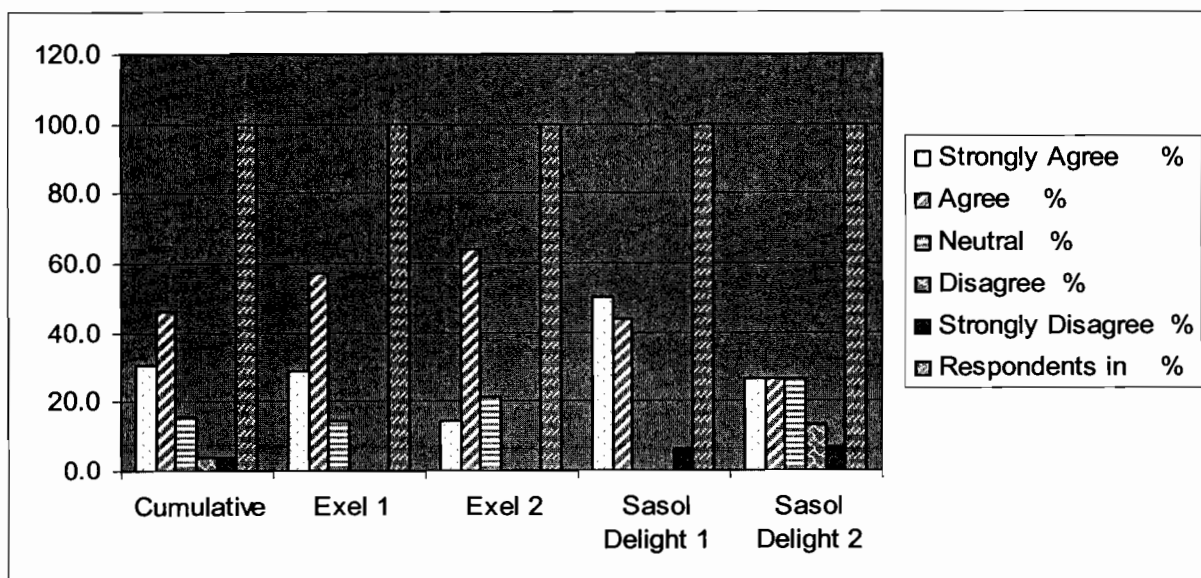
18a	Safety trainings are organised on regular basis.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	6	8	9	13	14	50
	Exel 1	0	2	0	1	1	4
	Exel 2	0	2	5	3	3	13
	Sasol Delight 1	4	3	0	5	4	16
	Sasol Delight 2	2	1	4	4	6	17

18b	Safety trainings are organised on regular basis.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	12.0	16.0	18.0	26.0	28.0	100
	Exel 1	0.0	50.0	0.0	25.0	25.0	100
	Exel 2	0.0	15.4	38.5	23.1	23.1	100
	Sasol Delight 1	25.0	18.8	0.0	31.3	25.0	100
	Sasol Delight 2	11.8	5.9	23.5	23.5	35.3	100



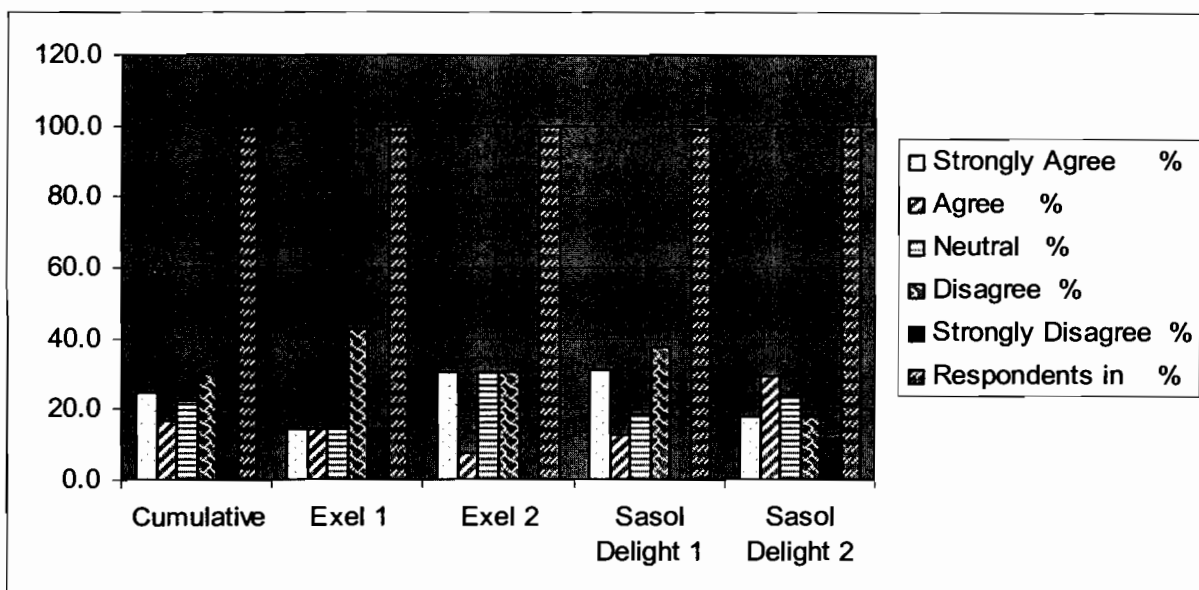
19a	Further training in safety and health will have a quantum effect on employee safety performance.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	16	24	8	2	2	52
	Exel 1	2	4	1	0	0	7
	Exel 2	2	9	3	0	0	14
	Sasol Delight 1	8	7		0	1	16
	Sasol Delight 2	4	4	4	2	1	15

19b	Further training in safety and health will have a quantum effect on employee safety performance.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	30.8	46.2	15.4	3.8	3.8	100
	Exel 1	28.6	57.1	14.3	0.0	0.0	100
	Exel 2	14.3	64.3	21.4	0.0	0.0	100
	Sasol Delight 1	50.0	43.8	0.0	0.0	6.3	100
	Sasol Delight 2	26.7	26.7	26.7	13.3	6.7	100



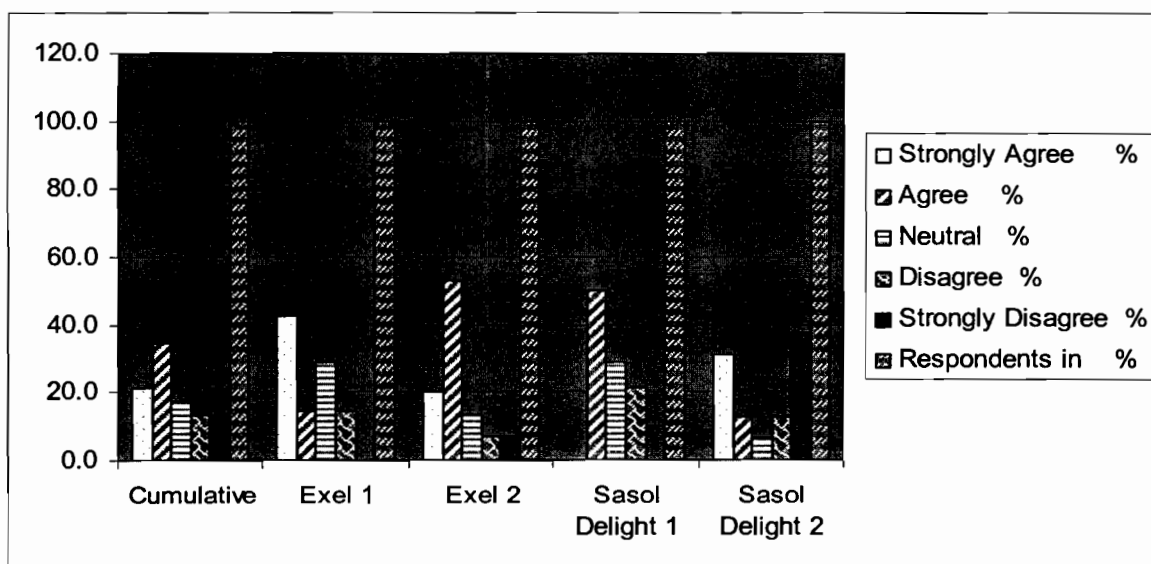
20a	Communication is a problem which has impaired performance.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	13	9	12	16	3	53
	Exel 1	1	1	1	3	1	7
	Exel 2	4	1	4	4	0	13
	Sasol Delight 1	5	2	3	6		16
	Sasol Delight 2	3	5	4	3	2	17

20b	Communication is a problem which has impaired performance.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	24.5	17.0	22.6	30.2	5.7	100
	Exel 1	14.3	14.3	14.3	42.9	14.3	100
	Exel 2	30.8	7.7	30.8	30.8	0.0	100
	Sasol Delight 1	31.3	12.5	18.8	37.5	0.0	100
	Sasol Delight 2	17.6	29.4	23.5	17.6	11.8	100



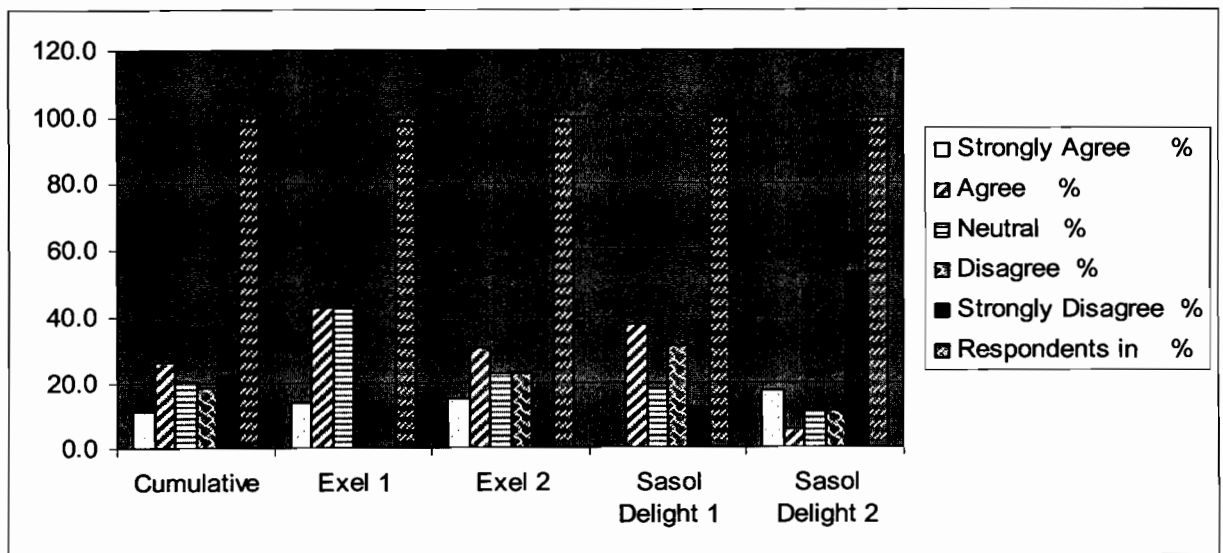
21a	Employees are conversant with the South African legislation on Occupational Health & safety.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	11	18	9	7	7	52
	Exel 1	3	1	2	1	0	7
	Exel 2	3	8	2	1	1	15
	Sasol Delight 1		7	4	3		14
	Sasol Delight 2	5	2	1	2	6	16

21b	Employees are conversant with the South African legislation on Occupational Health & safety.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	21.2	34.6	17.3	13.5	13.5	100
	Exel 1	42.9	14.3	28.6	14.3	0.0	100
	Exel 2	20.0	53.3	13.3	6.7	6.7	100
	Sasol Delight 1	0.0	50.0	28.6	21.4	0.0	100
	Sasol Delight 2	31.3	12.5	6.3	12.5	37.5	100



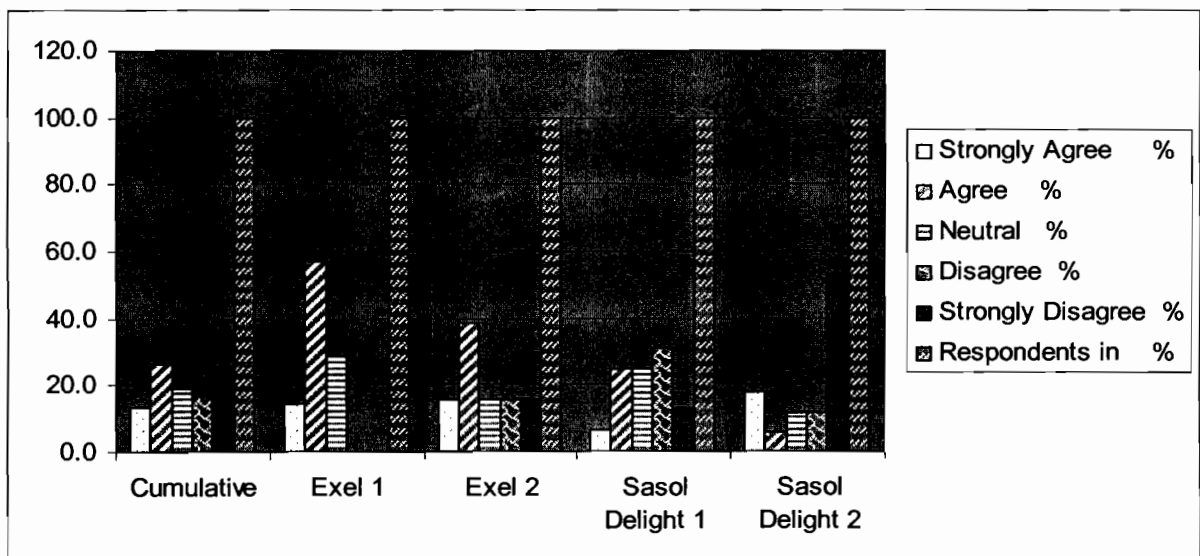
22a	Employees are aware their organisation has a copy of the South African Occupational Health and Safety Act with the management.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	6	14	11	10	12	53
	Exel 1	1	3	3	0	0	7
	Exel 2	2	4	3	3	1	13
	Sasol Delight 1		6	3	5	2	16
	Sasol Delight 2	3	1	2	2	9	17

22b	Employees are aware their organisation has a copy of the South African Occupational Health and Safety Act with the management.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	11.3	26.4	20.8	18.9	22.6	100
	Exel 1	14.3	42.9	42.9	0.0	0.0	100
	Exel 2	15.4	30.8	23.1	23.1	7.7	100
	Sasol Delight 1	0.0	37.5	18.8	31.3	12.5	100
	Sasol Delight 2	17.6	5.9	11.8	11.8	52.9	100



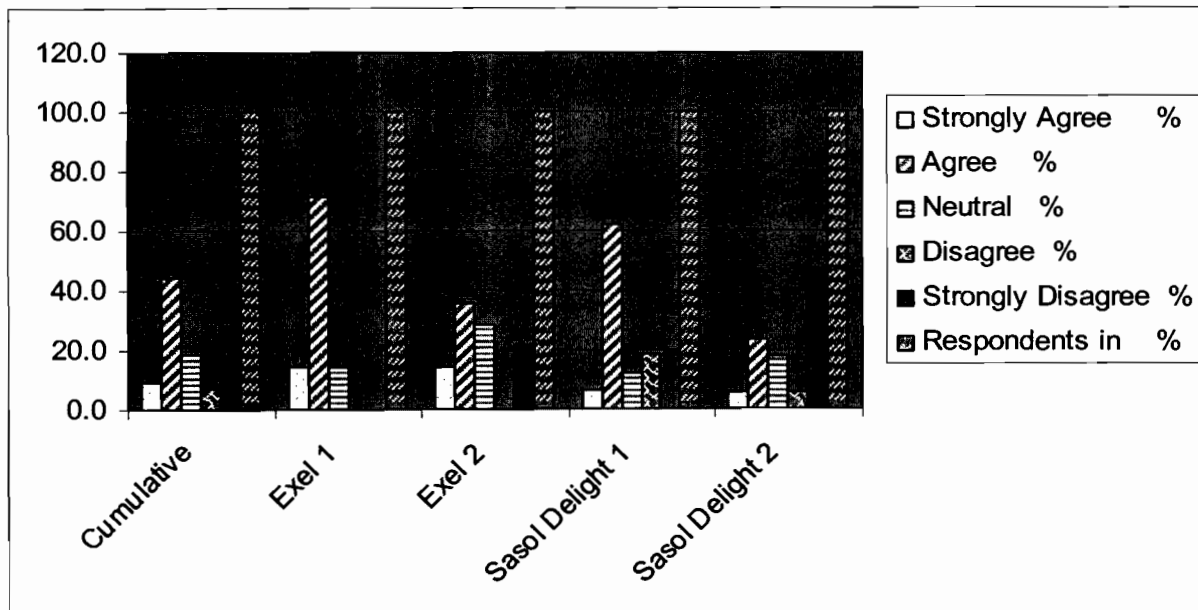
23a	Employee has read the South African Occupational Health and Safety Act.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	7	14	10	9	13	53
	Exel 1	1	4	2	0	0	7
	Exel 2	2	5	2	2	2	13
	Sasol Delight 1	1	4	4	5	2	16
	Sasol Delight 2	3	1	2	2	9	17

23b	Employee has read the South African Occupational Health and Safety Act.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	13.2	26.4	18.9	17.0	24.5	100
	Exel 1	14.3	57.1	28.6	0.0	0.0	100
	Exel 2	15.4	38.5	15.4	15.4	15.4	100
	Sasol Delight 1	6.3	25.0	25.0	31.3	12.5	100
	Sasol Delight 2	17.6	5.9	11.8	11.8	52.9	100



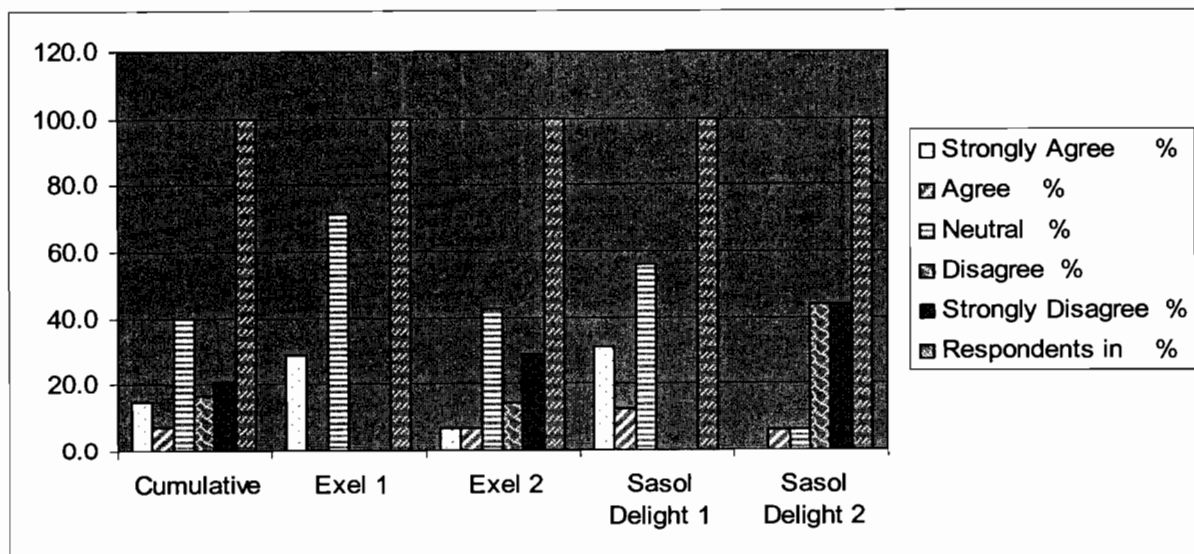
24a	My organisation has safety standard written procedures guiding our operation on site.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	5	24	10	4	11	54
	Exel 1	1	5	1	0	0	7
	Exel 2	2	5	4		3	14
	Sasol Delight 1	1	10	2	3		16
	Sasol Delight 2	1	4	3	1	8	17

24b	My organisation has safety standard written procedures guiding our operation on site.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	9.3	44.4	18.5	7.4	20.4	100
	Exel 1	14.3	71.4	14.3	0.0	0.0	100
	Exel 2	14.3	35.7	28.6	0.0	21.4	100
	Sasol Delight 1	6.3	62.5	12.5	18.8	0.0	100
	Sasol Delight 2	5.9	23.5	17.6	5.9	47.1	100



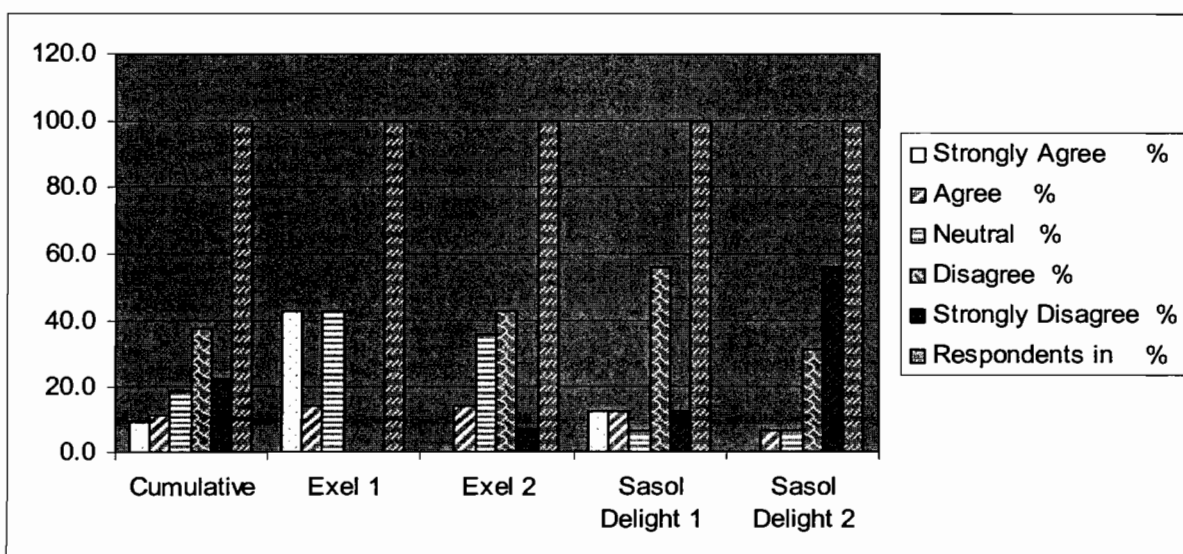
25a	Sasol RCCs have taken an insurance policy on behalf of employees against occupational hazards.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	8	4	21	9	11	53
	Exel 1	2		5	0	0	7
	Exel 2	1	1	6	2	4	14
	Sasol Delight 1	5	2	9			16
	Sasol Delight 2	0	1	1	7	7	16

25b	Sasol RCCs have taken an insurance policy on behalf of employees against occupational hazards.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	15.1	7.5	39.6	17.0	20.8	100
	Exel 1	28.6	0.0	71.4	0.0	0.0	100
	Exel 2	7.1	7.1	42.9	14.3	28.6	100
	Sasol Delight 1	31.3	12.5	56.3	0.0	0.0	100
	Sasol Delight 2	0.0	6.3	6.3	43.8	43.8	100



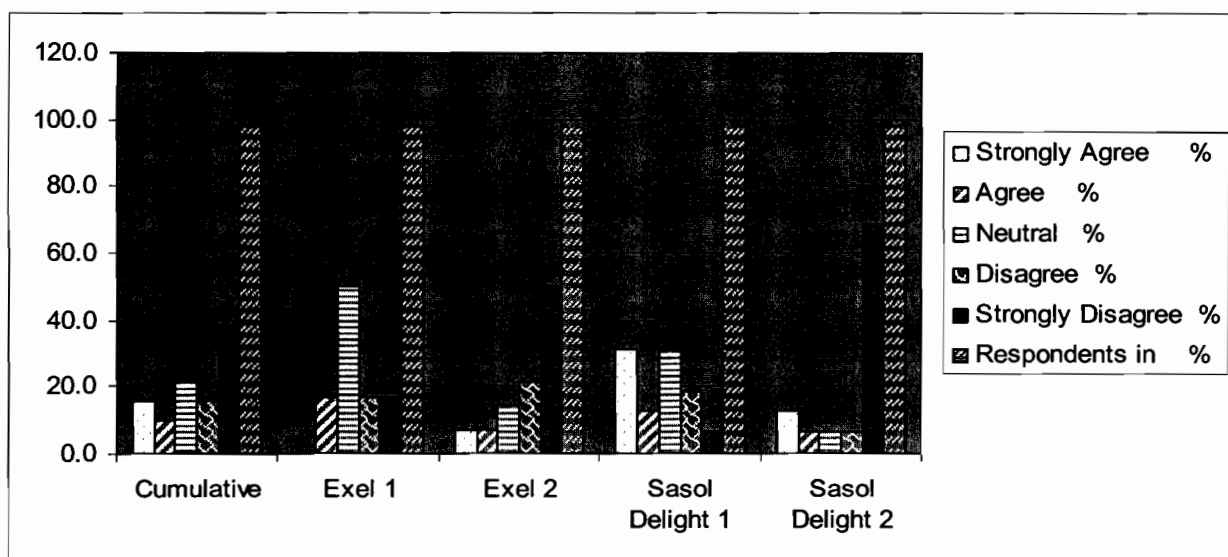
26a	Sasol RCCs have safety incentive program which helps to motivate safety practice at work.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	5	6	10	20	12	53
	Exel 1	3	1	3	0	0	7
	Exel 2		2	5	6	1	14
	Sasol Delight 1	2	2	1	9	2	16
	Sasol Delight 2		1	1	5	9	16

26b	Sasol RCCs have safety incentive program which helps to motivate safety practice at work.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	9.4	11.3	18.9	37.7	22.6	100
	Exel 1	42.9	14.3	42.9	0.0	0.0	100
	Exel 2	0.0	14.3	35.7	42.9	7.1	100
	Sasol Delight 1	12.5	12.5	6.3	56.3	12.5	100
	Sasol Delight 2	0.0	6.3	6.3	31.3	56.3	100



27a	Employee does periodic medical examination sponsored by Sasol delight to determine the status of my health.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Number of Respondents
	Cumulative	8	5	11	8	20	52
	Exel 1	0	1	3	1	1	6
	Exel 2	1	1	2	3	7	14
	Sasol Delight 1	5	2	5	3	1	16
	Sasol Delight 2	2	1	1	1	11	16

27b	Employee does periodic medical examination sponsored by Sasol delight to determine the status of my health.	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Respondents in %
	Cumulative	15.4	9.6	21.2	15.4	38.5	100
	Exel 1	0.0	16.7	50.0	16.7	16.7	100
	Exel 2	7.1	7.1	14.3	21.4	50.0	100
	Sasol Delight 1	31.3	12.5	31.3	18.8	6.3	100
	Sasol Delight 2	12.5	6.3	6.3	6.3	68.8	100



APPENDIX C

ISSUES	INTERVIEWEES	COMMENTS FROM INTERVIEWEES			
		SASOL DELIGHT-1	SASOL DELIGHT-2	EXEL-1	EXEL-2
Staff strength	Management	42	23	20	15
Average vehicular patronage per day	Management	350	700	95	400
Safety policy	Management	Operate the same policy as Sasol Chemical Industry but do not have it displayed as required by section 7 subsection 3 of SA OHS Act	It has a written health & safety policy but there was no evidence to show. Health & safety policy not pasted on the work premises.	Management claimed it has a safety policy but without evidence to prove it. Health & safety policy is not pasted on the work premises.	It has a written health & safety policy but there was no evidence to show. Health & safety policy not pasted on the work premises.
	Employees	81.3% understand the safety policy of Sasol RCC	70.6% understand the safety policy of Sasol RCC	70.9% understand the safety policy of Sasol RCC	57.1% understand the safety policy of Sasol RCC
Safety Rep.	Management	There is a dedicated safety rep.	There is safety rep. The forecourt supervisor is considered the safety rep.	There is safety rep. The forecourt supervisor is considered the safety rep.	There is safety rep. The forecourt supervisor is considered the safety rep.
Safety training on Regular basis	Management	Employees are sent on a regular safety training in Sasol Chemical industry to acquire safety knowledge and skills	Management was at the verge of sending employees for formal safety training during the course of the research survey.	Staffs are not given formal safety training. They simply learn it on the job	Management was at the verge of sending employees for formal safety training during the course of the research survey.
	Employees	56.3% disagree, 43.8% agree	58.8% disagree, 17.7% agree	50% agree, 50% disagree	46.2% disagree, 15% agree and 38% are neutral
Safety record	Management	Do keep safety record	Do not keep safety record	Do not keep safety record	Do not keep safety record
PPE	Management	Management issues PPE to employees	Management issues PPE to employees	PPE issuance to employees is jointly funded by management and the employees	Management issues PPE to employees
Safety equipment	Management	The premises has fire extinguishers, surveillance camera, fire hydrant, fire hose rim, gas alarm, gas monitors and first aid box	The premises has fire extinguishers, surveillance camera, alarm and first aid box	The premises has fire extinguishers, surveillance camera, alarm and first aid box	The premises has fire extinguishers, surveillance camera, alarm and first aid box
Regular Safety meetings	Management	1. Weekly safety talks 2. Monthly safety rep. Meeting 3. Site safety meetings of reps from all department	Safety meeting is organised when there is a safety concern.	There is no dedicated safety meeting where safety related matters are discussed. Safety issues are merely discussed in rear occasion during business meetings	Safety meeting is organised when there is a safety concern.
	Employees	26.6% agree, 73.4% disagree	94.7% disagree and 5.9 are neutral	28.6% disagree, 42.9% agree, 28.6% neutral	73.3% disagree, 20% disagree

ISSUES	INTERVIEWEES	COMMENTS FROM INTERVIEWEES			
		SASOL DELIGHT-1	SASOL DELIGHT 2	EXEL-1	EXEL-2
Good house keeping	Management	Management do practice good house keeping	Management do practice good house keeping	Management do practice good house keeping	Management do practice good house keeping
Inspection of facilities & fire control equipment	Management	1. Inspection of facilities and fire control equipment is done by the safety rep on a monthly basis 2. Sasol fire brigade does similar inspection every three months	Inspection is done everyday using a checklist	Inspection is done during change of shift	Inspection is done everyday using a checklist
Mock emergency	Management	Mock emergency has been organised twice since the inception of Sasol Delight1. However, the result of the exercise was not encouraging as employees were confused of what to do. This made management to stop such activity.	Management states that mock emergency has never been organised for employees. Management said it does not know how to carry out such exercise.	Muck emergency is organised once a year.	Management states that muck emergency has never been organised for employees. Management said it does not know how to carry out such exercise.
Motivation	Management	Rewards such as financial, merchandise prizes, certificates and letter of commendation are not used to motivate staffs, however, safety functions are organised whereby employees are taken on a boat cruise.	Motivating staffs for safety performance is not a practice in Sasol Delight-2		Motivating staffs for safety performance is not a practice in Exel-2
	Employees	43.8% agree that the motivation is encouraging, 43.8% disagree, 12.5% neutral	66.7% disagree that the motivation is encouraging, 13.4% agree, 20% neutral	71.4% agree that the motivation is encouraging, 14.3% disagree, 14.3% neutral	23.1% agree that the motivation is encouraging, 38.5% disagree, 38.5% neutral
Injury/ Incident investigation	Management	Injury and incident are usually investigated with the following persons in attendance: 1. safety officer, 2. admin safety rep. 3. the injured/witness	Management said that investigation is executed. Such investigation process would usually involve management, Franchise business adviser (FBA) and the affected employees.	Management claimed that injuries and incidents are investigated. The manager and the police are usually involved in a case involving robbery.	Management said that investigation is executed. Such investigation process would usually involve management, Franchise business adviser (FBA) and the affected employees.

ISSUES	INTERVIEWEES	COMMENTS FROM INTERVIEWEES			
		SASOL DELIGHT-1	SASOL DELIGHT -2	EXEL-1	EXEL-2
Insurance/ compensation contribution	Management	Sasol Delight-1 outsource labour to a contractor company who supplies contract staffs to the petrol station when need. Hence, Sasol Delight-1 is not directly responsible for paying compensation for employees. Management expressed optimism that the contractor should be doing it	Contributions are made to worker compensation fund who takes. Such fund is used to care for injured workers	Compensation contributions are made on behalf of employees to care of injured workers	Contributions are made to worker compensation fund who takes. Such fund is used to care for injured workers
	Employees	43.8% agree that insurance/ compensation contribution is taken on their behalf. 56.3% are neutral about it but none of the employees disagree	87.6% disagree, 6.3% agree and 6.3% are neutral	71.4% are neutral, 28.6 disagree and none of the employees disagree.	42.9% disagree, 42.9% are neutral and 14.2% agree
Fire extinguishers	Management	Fire extinguishers on site are adequate to fight any insurgent fire. Fire extinguishers are serviced quarterly in a year	Fire extinguishers on site are adequate to fight any insurgent fire. Fire extinguishers are serviced twice a year	Fire extinguishers on site are adequate to fight any insurgent fire.	Fire extinguishers on site are adequate to fight any insurgent fire. Fire extinguishers are serviced once a year
Use of cell phones	Management	The use of cell phones is not allowed within the premises. Management claims that it constitute hazard.	The use of cell phones is not allowed within the premises. Management claims that it constitute hazard.	Management allow the use of cell phone everywhere within the premises. It does not see it as constituting hazard.	The use of cell phones is not allowed within the premises. Management claims that it constitute hazard.
Recordable case Rate	Management	3.17	43.48	10	22.22

ISSUES	INTERVIEWEES	COMMENTS FROM INTERVIEWEES			
		SASOL DELIGHT-1	SASOL DELIGHT 2	EXEL-1	EXEL-2
Medical Examination	Management	Medical examination is conducted before and at the end of the service period of an employee. Also employees are subjected to audiometric test conducted annually is to determine the effect the job has on their hearing ability. In addition, every second year employees go for medical check up. However medical treatment are given to sick employees on the account of the organisation	No medical examination is conducted for prospective employees before and during the service period. However medical treatment are given to sick employees on the account of the organisation	No medical examination is conducted before and during the service period of an employee. However medical treatment is given to sick employees on the account of the organisation. Management claimed that government law does not permit pre-examination	No medical examination is conducted for prospective employees before and during the service period. However medical treatment are given to sick employees on the account of the organisation
Employee participates in safety matters	Employers	Employees' contributions are noted during safety meetings	Employees views are sort when decisions relating to health & safety are taken	Employees views are sort when decisions relating to health & safety are taken	Employees views are sort when decisions relating to health & safety are taken
Work environment is prone to high risk	Employees	86.3% agree that their work environment is prone to high risk. 6.7% disagree with this statement and 6.7% are neutral.	70.6% agree that their workplace is prone to high risk, 5.9% disagree while 23.5% are neutral	100% of the employees agree that their work environment is prone to risk	73.4% agree that their workplace is prone to high risk. 13.3% disagree while 13.3% are neutral
Employees are aware of hazards controllability associated with assigned job	Employees	93.8% said they are well able to control hazard associated with their jobs. However, about 6% are neutral.	43.8% disagree being able to control hazard associated with their work. 37.5% are neutral and 18.8% disagree	85.7% agree that they are able to control hazard associated with their work. 14.3% are neutral about it but none of the employee disagreed	60% agree, 26.7% disagree and 13.3% are neutral

ISSUES	INTERVIEWEES	COMMENTS FROM INTERVIEWEES			
		SASOL DELIGHT-1	SASOL DELIGHT 2	EXEL-1	EXEL-2
Sasol RCCs have safety incentive program which helps to motivate safety practice at work.	Employees	68.8% disagree that their petrol station has safety incentive program which helps to motivate safety practice at work. However, 25% agree to it while 6.3% are neutral	87.6% disagree that their petrol station has safety incentive program which helps to motivate safety practice at work. 6.3% agree to it while 6.3% are neutral	57.2% agree that their petrol station has safety incentive program which helps to motivate safety practice at work while 42.9% are neutral. None of the employees disagreed	50% disagree that their petrol station has safety incentive program which helps to motivate safety practice at work. 14.3% agree to it while 35.7% are neutral
Increment in reward/motivation will further boost commitment to safety.	Employees	87.6% agree that an increment in reward/motivation will further boost commitment to safety. But 12.6% of employees disagree with it	70.6% agree that an increment in reward/motivation will further boost commitment to safety. However, 23.5% of employees disagree, while 5.9% are neutral	71.5% agree that increment in reward/motivation will further boost commitment to safety but 14.3% of employees disagree	64.3% agree that an increment in reward/motivation will further boost commitment to safety. However, 28.5% of employees disagree, while 7.1% are neutral
work productivity and quality usually have higher priority than work safety	Employees	56.3% agree, 25.1% disagree and 18.8% are neutral	70.6% agree, 23.6% disagree and 5.6% are neutral	33.4% agree, 33.3% disagree and 33.3% are neutral	42.8% agree, 21.4% disagree and 35.7% are neutral
Management places most of the blame for an accident on the injured or affected employee.	Employees	62.5% are neutral, 31.3% agree and 6.3% disagree	43.8% are neutral, 25% agree and 31.3% disagree	50% are neutral and 50% disagree	57.1% are neutral, 28.5% agree and 14.3% disagree
"Near misses" incident cases are consistently reported and investigated.	Employees	50% agree that "near misses" incident cases are consistently reported and investigated, 31.3% disagree and 18.8% are neutral	56.3% disagree that "near misses" incident cases are consistently reported and investigated, 12.5% agree and 31.3% are neutral	50% agree that "near misses" incident cases are consistently reported and investigated. However, 50% are neutral	46.2% disagree that "near misses" incident cases are consistently reported and investigated, 23.1% agree and 30% are neutral
Communication is a problem which has impaired safety performance.	Employees	43.8% agree, 37.5% disagree and 18.8% are neutral	47% agree, 29.4% disagree and 23.5% are neutral	57.2% disagree, 28.6% agree and 14.3% are neutral	38.5% agree, 30.8% disagree and 30.8% are neutral
Further training in health & safety will have a quantum effect on employee safety performance.	Employees	93.8% agree, about 6% disagree	53.4% agree, 20% disagree and 26.7% are neutral	85.7% agree, and 14.3% are neutral	78.6% agree, and 21.4% are neutral

APPENDIX D

INTERVIEW SESSION HELD WITH WERNER DU TOIT OF SASOL DELIGHT-1

QUESTIONNAIRE ON CRITICAL EVALUATION OF OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT OF SASOL RETAIL CONVENIENCE CENTRES DESIGNED TO INTERVIEW MANAGERS

The interview questions are designed for Sasol Retail Convenience Centres to evaluate the occupational safety and health practices with the objective of making recommendation for improvement.

- The interview is designed for the presentation of a research thesis on critical evaluation of Occupational Health and safety Management in Sasol Retail Convenience Centres
- Every information given herein shall be treated as anonymous.
- This questionnaire has nothing to do with enforcement or spy of any kind neither is it government related. It is for pure academic purpose.

RESPONDENT'S INFORMATION.

Name (optional):

Phone Number:

Gender: ☒ Male ☐ Female

Age: under 18 ☐ 18-29 ☒ 30-39 ☐ 40-50 ☐ over 50 ☐

Educational level:

Less than high school ☐ high school ☒ Diploma ☐ Graduate degree & above ☐

Job Title

SAFETY MATTERS

- (1) What is the average vehicle visit to your petrol station per day?
- (2) Which government organization is responsible for regulating & licensing of petroleum product and petrol station?
- (3) What is the present strength of your staff?
- (4) What are the objectives of your safety policy?

(5) Do you have safety representative for your employees?

(6) What are the present safety challenges confronting your station?

(7) Do you take insurance policy for your employees against possible case of fatality?

(8) Do you seek the views of your employees when taking safety related decision?

(9) How has your safety performance record fared?

(10) What are the measures your are taking to improve your safety record

FIRE PREVENTION & CONTROL

(1) What safety equipment and gadgets do you have for preventing cases of fire and other incidents?

(2) Do you think the safety equipment & gadgets available are adequate to meet emergencies? What other consideration are you making?

- (3) How often do you service fire extinguishers and other, safety facilities?
- (4) Have fire prevention and control and procedures been formulated and issued to all personnel involved?
- (5) Is there a regular, detailed inspection of facilities and fire control equipment?
- (6) How often do you do mock emergency as a way of preparedness for any eventualities?
- (7) Do you think there are sufficient fire extinguishments installed?
- (8) If no, what other areas in the station do you think need such facility?
- (9) Are fire prevention regulation posted, emphasized and enforced
- (10) In the event of fire outbreak, do you think employees know what to do?
- (11) To what extent do you allow the use of cell phones in your station?
- (12) Have you ever experienced filling a diesel car tank with petrol or filling a petrol tank with diesel? How are you able to prevent the occurrence of such?

PERSONAL PROTECTIVE EQUIPMENT

- (1) Are specification issued on correct personal protective equipment used by employees?
- (2) Do you issue instruction on the use of personal protective equipment?
- (3) Is necessary personal protective equipment issued to all employees?
- (4) Is the wearing of personal protective equipment enforced?
- (5) Are there times when you allow employees to work in mufti?

TRAINING

- (1) How often do you train your staff?
- (2) Are formal training program done on regular basis?
- (3) Do you set fund aside for the purpose of health and safety training?
- (4) Do you have external safety facilitators or trainers?

RECORD & ANALYSIS

(1) What is your current recordable case rate (RCR)?

(2) What are the factors you consider in computing RCR?

(3) In your views how will you rate your safety performance?

INVESTIGATION

(1) Do you undertake inspection tour for safety purposes?

(2) Is there a procedure for reporting results of inspection and how effective are controls to ensure correction of fault?

(3) Are all injuries and incidents investigated?

(4) If yes, who are those involved in the investigation process?

(5) Is there a procedure followed in reporting injuries and property damage accident?

(6) Also, do you investigate all reported property damage accidents?

(7) How effective is the reporting?

COMPETITION & CONTESTS

(1) What are the incentives used to motivate safety consciousness?

(2) Do you make use of merchandise prizes, certificates, and letters of commendation as a means to motivate safety performance of staff?

OCCUPATIONAL HEALTH & HYGIENE

(1) How are you able to ensure that employees do not inhale the fumes from petroleum products?

(2) What are the plans in place to ensure that skin and eyes of employees are protected?

(3) Do you practice good house keeping?

MEDICAL EXAMINATION

(1) Are periodic examinations made for workers on how the job is affecting health?

(2) Is there a pre-employment examination for all employees?

SAFETY CONTROL MEASURES

- (1) How do you execute and manage your safety program?
- (2) Is your present safety procedure meeting present safety standards?
- (3) Considering the nature of this job, do you have safety meetings?
- (4) How regular is the meeting?
- (5) How has the safety meeting help to improve your safety record?
- (6) What changes do you think are necessary in promoting safe practices among staff?
- (7) How do you manage pollution if any?
- (8) Do you have a permissible discharge limit allowable either by law or company policy?

APPENDIX E
INTERVIEW SESSION HELD WITH SANET KRUGER OF
SASOL DELIGHT-2

QUESTIONNAIRE ON CRITICAL EVALUATION OF
OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT OF
SASOL RETAIL CONVENIENCE CENTRES
DESIGNED TO INTERVIEW MANAGERS

The interview questions are designed for Sasol Retail Convenience Centres to evaluate the occupational safety and health practices with the objective of making recommendation for improvement.

- The interview is designed for the presentation of a research thesis on critical evaluation of Occupational Health and safety Management in Sasol Retail Convenience Centres
- Every information given herein shall be treated as anonymous.
- This questionnaire has nothing to do with enforcement or spy of any kind neither is it government related. It is for pure academic purpose.

RESPONDENT'S INFORMATION

Name (optional):

Phone Number:

Gender: ☐ Male ☒ Female

Age: under 18 ☐ 18-29 ☐ 30-39 ☒ 40-50 ☐ over 50 ☐

Educational level:

Less than high school ☐ high school ☐ Diploma ☐ Graduate degree & above ☒

Job Title

SAFETY MATTERS

- (1) What is the average vehicle visit to your petrol station per day?
- (2) Which government organization is responsible for regulating & licensing of petroleum product and petrol station?
- (3) What is the present strength of your staff?
- (4) What are the objectives of your safety policy?

(5) Do you have safety representative for your employees?

(6) What are the present safety challenges confronting your station?

(7) Do you take insurance policy for your employees against possible case of fatality?

(8) Do you seek the views of your employees when taking safety related decision?

(9) How has your safety performance record fared?

(10) What are the measures your are taking to improve your safety record

FIRE PREVENTION & CONTROL

(1) What safety equipment and gadgets do you have for preventing cases of fire and other incidents?

(2) Do you think the safety equipment & gadgets available are adequate to meet emergencies? What other consideration are you making?

(3) How often do you service fire extinguishers and other, safety facilities?
(4) Have fire prevention and control and procedures been formulated and issued to all personnel involved?

(5) Is there a regular, detailed inspection of facilities and fire control equipment?

(6) How often do you do mock emergency as a way of preparedness for any eventuality?

(7) Do you think there are sufficient fire extinguishments installed?

(8) If no, what other areas in the station do you think need such facility?

(9) Are fire prevention regulation posted, emphasized and enforced

(10) In the event of fire outbreak, do you think employees know what to do?

(11) To what extent do you allow the use of cell phones in your station?

(12) Have you ever experienced filling a diesel car tank with petrol or filling a petrol tank with diesel? How are you able to prevent the occurrence of such?

PERSONAL PROTECTIVE EQUIPMENT

(1) Are specification issued on correct personal protective equipment used by employees?

(2) Do you issue instruction on the use of personal protective equipment?

(3) Is necessary personal protective equipment issued to all employees?

(4) Is the wearing of personal protective equipment enforced?

(5) Are there times when you allow employees to work in mufti?

TRAINING

(1) How often do you train your staff?

(2) Are formal training program done on regular basis?

(3) Do you set fund aside for the purpose of health and safety training?

(4) Do you have external safety facilitators or trainers?

RECORD & ANALYSIS

(1) What is your current recordable case rate (RCR)?

(2) What are the factors you consider in computing RCR?

(3) In your views how will you rate your safety performance?

INVESTIGATION

(1) Do you undertake inspection tour for safety purposes?

(2) Is there a procedure for reporting results of inspection and how effective are controls to ensure correction of fault?

(3) Are all injuries and incidents investigated?

(4) If yes, who are those involved in the investigation process?

(5) Is there a procedure followed in reporting injuries and property damage accident?

(6) Also, do you investigate all reported property damage accidents?

(7) How effective is the reporting?

COMPETITION & CONTESTS

(1) What are the incentives used to motivate safety consciousness?

(2) Do you make use of merchandise prizes, certificates, and letters of commendation as a means to motivate safety performance of staff?

OCCUPATIONAL HEALTH & HYGIENE

(1) How are you able to ensure that employees do not inhale the fumes from petroleum products?

(2) What are the plans in place to ensure that skin and eyes of employees are protected?

(3) Do you practice good house keeping?

MEDICAL EXAMINATION

(1) Are periodic examinations made for workers on how the job is affecting health?

(2) Is there a pre-employment examination for all employees?

SAFETY CONTROL MEASURES

- (1) How do you execute and manage your safety program?
- (2) Is your present safety procedure meeting present safety standards?
- (3) Considering the nature of this job, do you have safety meetings?
- (4) How regular is the meeting?
- (5) How has the safety meeting help to improve your safety record?
- (6) What changes do you think are necessary in promoting safe practices among staff?
- (7) How do you manage pollution if any?
- (8) Do you have a permissible discharge limit allowable either by law or company policy?

APPENDIX F
INTERVIEW SESSION HELD WITH MARITZA J.V RENSBURG OF
EXEL-1

QUESTIONNAIRE ON CRITICAL EVALUATION OF
OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT OF
SASOL RETAIL CONVENIENCE CENTRES
DESIGNED TO INTERVIEW MANAGERS

The interview questions are designed for Sasol Retail Convenience Centres to evaluate the occupational safety and health practices with the objective of making recommendation for improvement.

- The interview is designed for the presentation of a research thesis on critical evaluation of Occupational Health and safety Management in Sasol Retail Convenience Centres
- Every information given herein shall be treated as anonymous.
- This questionnaire has nothing to do with enforcement or spy of any kind neither is it government related. It is for pure academic purpose.

RESPONDENT'S INFORMATION.

Name (optional):

Phone Number:

Gender: ☐ Male ☒ Female

Age: under 18 ☐ 18-29 ☒ 30-39 ☐ 40-50 ☐ over 50 ☐

Educational level:

Less than high school ☐ high school ☐ Diploma ☐ Graduate degree & above ☐

Job Title

SAFETY MATTERS

- (1) What is the average vehicle visit to your petrol station per day?
- (2) Which government organization is responsible for regulating & licensing of petroleum product and petrol station?
- (3) What is the present strength of your staff?
- (4) What are the objectives of your safety policy?

(5) Do you have safety representative for your employees?

(6) What are the present safety challenges confronting your station?

(7) Do you take insurance policy for your employees against possible case of fatality?

(8) Do you seek the views of your employees when taking safety related decision?

(9) How has your safety performance record fared?

(10) What are the measures your are taking to improve your safety record

FIRE PREVENTION & CONTROL

(1) What safety equipment and gadgets do you have for preventing cases of fire and other incidents?

(2) Do you think the safety equipment & gadgets available are adequate to meet emergencies? What other consideration are you making?

- (3) How often do you service fire extinguishers and other safety facilities?
- (4) Have fire prevention and control and procedures been formulated and issued to all personnel involved?
- (5) Is there a regular, detailed inspection of facilities and fire control equipment?
- (6) How often do you do mock emergency as a way of preparedness for any eventuality?
- (7) Do you think there are sufficient fire extinguishments installed?
- (8) If no, what other areas in the station do you think need such facility?
- (9) Are fire prevention regulation posted, emphasized and enforced
- (10) In the event of fire outbreak, do you think employees know what to do?
- (11) To what extent do you allow the use of cell phones in your station?
- (12) Have you ever experienced filling a diesel car tank with petrol or filling a petrol tank with diesel? How are you able to prevent the occurrence of such?

PERSONAL PROTECTIVE EQUIPMENT

(1) Are specification issued on correct personal protective equipment used by employees?

(2) Do you issue instruction on the use of personal protective equipment?

(3) Is necessary personal protective equipment issued to all employees?

(4) Is the wearing of personal protective equipment enforced?

(5) Are there times when you allow employees to work in mufti?

TRAINING

(1) How often do you train your staff?

(2) Are formal training program done on regular basis?

(3) Do you set fund aside for the purpose of health and safety training?

(4) Do you have external safety facilitators or trainers?

RECORD & ANALYSIS

(1) What is your current recordable case rate (RCR)?

(2) What are the factors you consider in computing RCR?

(3) In your views how will you rate your safety performance?

INVESTIGATION

(1) Do you undertake inspection tour for safety purposes?

(2) Is there a procedure for reporting results of inspection and how effective are controls to ensure correction of fault?

(3) Are all injuries and incidents investigated?

(4) If yes, who are those involved in the investigation process?

(5) Is there a procedure followed in reporting injuries and property damage accident?

(6) Also, do you investigate all reported property damage accidents?

(7) How effective is the reporting?

COMPETITION & CONTESTS

(1) What are the incentives used to motivate safety consciousness?

(2) Do you make use of merchandise prizes, certificates, and letters of commendation as a means to motivate safety performance of staff?

OCCUPATIONAL HEALTH & HYGIENE

(1) How are you able to ensure that employees do not inhale the fumes from petroleum products?

(2) What are the plans in place to ensure that skin and eyes of employees are protected?

(3) Do you practice good house keeping?

MEDICAL EXAMINATION

(1) Are periodic examinations made for workers on how the job is affecting health?

(2) Is there a pre-employment examination for all employees?

SAFETY CONTROL MEASURES

- (1) How do you execute and manage your safety program?
- (2) Is your present safety procedure meeting present safety standards?
- (3) Considering the nature of this job, do you have safety meetings?
- (4) How regular is the meeting?
- (5) How has the safety meeting help to improve your safety record?
- (6) What changes do you think are necessary in promoting safe practices among staff?
- (7) How do you manage pollution if any?
- (8) Do you have a permissible discharge limit allowable either by law or company policy?

APPENDIX G
INTERVIEW SESSION HELD WITH SANET KRUGER OF
EXEL-2

QUESTIONNAIRE ON CRITICAL EVALUATION OF
OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT OF
SASOL RETAIL CONVENIENCE CENTRES
DESIGNED TO INTERVIEW MANAGERS

EXEL-2

The interview questions are designed for Sasol Retail Convenience Centres to evaluate the occupational safety and health practices with the objective of making recommendation for improvement.

- The interview is designed for the presentation of a research thesis on critical evaluation of Occupational Health and safety Management in Sasol Retail Convenience Centres
- Every information given herein shall be treated as anonymous.
- This questionnaire has nothing to do with enforcement or spy of any kind neither is it government related. It is for pure academic purpose.

RESPONDENT'S INFORMATION.

Name (optional):

Phone Number:

Gender: ☐ Male ☒ Female

Age: under 18 ☐ 18-29 ☐ 30-39 ☒ 40-50 ☐ over 50 ☐

Educational level:

Less than high school ☐ high school ☐ Diploma ☐ Graduate degree & above ☒

Job Title

SAFETY MATTERS

(1) What is the average vehicle visit to your petrol station per day?

(2) Which government organization is responsible for regulating & licensing of petroleum product and petrol station?

(3) What is the present strength of your staff?

(4) What are the objectives of your safety policy?

(5) Do you have safety representative for your employees?

(6) What are the present safety challenges confronting your station?

(7) Do you take insurance policy for your employees against possible case of fatality?

(8) Do you seek the views of your employees when taking safety related decision?

(9) How has your safety performance record fared?

(10) What are the measures you are taking to improve your safety record

FIRE PREVENTION & CONTROL

(1) What safety equipment and gadgets do you have for preventing cases of fire and other incidents?

(2) Do you think the safety equipment & gadgets available are adequate to meet emergencies? What other consideration are you making?

(3) How often do you service fire extinguishers and other safety facilities?

(4) Have fire prevention and control procedures been formulated and issued to all personnel involved?

(5) Is there a regular, detailed inspection of facilities and fire control equipment?

(6) How often do you do mock emergency as a way of preparedness for any eventuality?

(7) Do you think there are sufficient fire extinguishments installed?

(8) If no, what other areas in the station do you think need such facility?

(9) Are fire prevention regulation posted, emphasized and enforced

(10) In the event of fire outbreak, do you think employees know what to do?

(11) To what extent do you allow the use of cell phones in your station?

(12) Have you ever experienced filling a diesel car tank with petrol or filling a petrol tank with diesel? How are you able to prevent the occurrence of such?

PERSONAL PROTECTIVE EQUIPMENT

(1) Are specification issued on correct personal protective equipment used by employees?

(2) Do you issue instruction on the use of personal protective equipment?

(3) Is necessary personal protective equipment issued to all employees?

(4) Is the wearing of personal protective equipment enforced?

(5) Are there times when you allow employees to work in mufti?

TRAINING

(1) How often do you train your staff?

(2) Are formal training program done on regular basis?

(3) Do you set fund aside for the purpose of health and safety training?

(4) Do you have external safety facilitators or trainers?

RECORD & ANALYSIS

(1) What is your current recordable case rate (RCR)?

(2) What are the factors you consider in computing RCR?

(3) In your views how will you rate your safety performance?

INVESTIGATION

(1) Do you undertake inspection tour for safety purposes?

(2) Is there a procedure for reporting results of inspection and how effective are controls to ensure correction of fault?

(3) Are all injuries and incidents investigated?

(4) If yes, who are those involved in the investigation process?

(5) Is there a procedure followed in reporting injuries and property damage accident?

(6) Also, do you investigate all reported property damage accidents?

(7) How effective is the reporting?

COMPETITION & CONTESTS

(1) What are the incentives used to motivate safety consciousness?

(2) Do you make use of merchandise prizes, certificates, and letters of commendation as a means to motivate safety performance of staff?

OCCUPATIONAL HEALTH & HYGIENE

(1) How are you able to ensure that employees do not inhale the fumes from petroleum products?

(2) What are the plans in place to ensure that skin and eyes of employees are protected?

(3) Do you practice good house keeping?

MEDICAL EXAMINATION

(1) Are periodic examinations made for workers on how the job is affecting health?

(2) Is there a pre-employment examination for all employees?

SAFETY CONTROL MEASURES

- (1) How do you execute and manage your safety program?
- (2) Is your present safety procedure meeting present safety standards?
- (3) Considering the nature of this job, do you have safety meetings?
- (4) How regular is the meeting?
- (5) How has the safety meeting help to improve your safety record?
- (6) What changes do you think are necessary in promoting safe practices among staff?
- (7) How do you manage pollution if any?
- (8) Do you have a permissible discharge limit allowable either by law or company policy?

APPENDIX H

Sasol RCCs in Sasolburg and the Management representatives Interviewed

Sasol RCCs	Management Representative Interviewed	Position Held	Phone Numbers	Longitude	Latitude
Sasol Delight 1	Werner Du Toit	Safety Officer / Wash Bay Manager	016- 970 4749 084 411 9976	26°48'39.40" S	27°50'30.58" E
Sasol Delight 2	Sanet Kruger	Director	016- 976 6792 082 925 9115	26°49'01.72" S	27°49'50.03" E
Exel 1	Maritza J.V. Rensburg	Manager	016- 976 5971	26°49'07.16" S	27°49'40.63" E
Exel 2	Sanet Kruger	Director	016- 976 6792 082 925 9115	26°48'10.54" S	27°49'00.85" E

Information about the geographic locations of Sasol RCCs in Sasolburg on world map was sourced from www.Google Earth.com

APPENDIX H

Sasol RCCs in Sasolburg and the Management representatives Interviewed

Sasol RCCs	Management Representative Interviewed	Position Held	Phone Numbers	Longitude	Latitude
Sasol Delight 1	Werner Du Toit	Safety Officer / Wash Bay Manager	016- 970 4749 084 411 9976	26°48'39.40" S	27°50'30.58" E
Sasol Delight 2	Sanet Kruger	Director	016- 976 6792 082 925 9115	26°49'01.72" S	27°49'50.03" E
Exel 1	Maritza J.V. Rensburg	Manager	016- 976 5971	26°49'07.16" S	27°49'40.63" E
Exel 2	Sanet Kruger	Director	016- 976 6792 082 925 9115	26°48'10.54" S	27°49'00.85" E

Information about the geographic locations of Sasol RCCs in Sasolburg on world map was sourced from www.Google Earth.com

APPENDIX I

Ratios of Sasol RCCs Employees Involved in the Opinion Poll of Sasol RCCs Health and Safety Management

SASOL RCCs	No of Respondents	No of Actual Employees	RATIO
EXEL 1	7	20	0.35
EXEL 2	15	15	1
SASOL DELIGHT 1	17	23	0.74
SASOL DELIGHT 2	16	42	0.38
Total	55	100	0.55

Average number of employees per petrol station: $100/4 = 25$

Percentage respondents to the total number of employees = 55%

The table above shows that 55% of Sasol RCCs employees responded to the questionnaire which was prepared to evaluate Sasol RCCs health and safety management.

Having considered the average number of employees in Sasol RCCs, It would be fair to consider the 55% as a fair representation of the number of employees in the opinion poll.

APPENDIX J

QUESTIONNAIRE ON CRITICAL EVALUATION OF OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT OF SASOL RETAIL CONVENIENCE CENTRES DESIGNED TO INTERVIEW EMPLOYEES

This questionnaire is prepared for Sasol Retail Convenience Centres to evaluate the occupational safety and health practices with the objective of making recommendation for improvement.

- The questionnaire is design for the presentation of a research thesis on critical evaluation of Occupational Health and safety Management in Sasol Retail Convenience Centres
- Every information given herein shall be treated as anonymous.
- This questionnaire has nothing to do with enforcement or spy of any kind neither is it government related. It is for pure academic purpose.

RESPONDENT'S INFORMATION.

Gender: ☐ Male ☐ Female

Age: under 18 ☐ 18-29 ☐ 30-39 ☐ 40-50 ☐ over 50 ☐

Educational level:

Less than high school ☐ high school ☐ Diploma ☐ Graduate degree ☐
and above

Job Title -----

Date-----

Tick the appropriate box that best expresses you opinion. Use this sign



	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
My work environment is prone to high risk.					
The safety responsibilities associated with my work are clearly spelt out.					
I am familiar with all possible hazard associated with my job					
I am equally familiar with all possible hazards associated with the job of my colleagues.					
Safety meetings are held regularly.					

I am aware that hazards associated with my work are controllable					
The whole essence of safety management plan is fully understood.					
The safety equipment available are adequate for my job					
Management do issue personal protective equipment (PPE) annually basis					
I understand the safety policy of Sasol Delight/ Exel petrol station					
The reward/motivation associated with safety is encouraging.					
I believe an increase in reward/motivation will further boost my commitment to safety.					
In Sasol Delight/ Exel petrol station, work productivity and quality usually have a higher priority than work safety					
The manager/management does care about safety and try to reduce risk level as much as possible.					
Management places most of the blame for an accident on the injured employee.					
"Near misses" incident cases are consistently reported and investigated.					
I know how to do my job safely.					
Safety trainings are organised on regular basis.					
Further training in safety and health will have a quantum effect on my safety performance.					
Communication is a problem which has impaired safety performance.					
I am conversant with the South African legislation on Occupational Health & safety.					
I am aware we have a copy of the South African Occupational Health and Safety Act with the management.					
I have read the South African Occupational Health and Safety Act.					
My organisation has safety standard written procedures guiding our operation on site.					
My company has taken an insurance policy on behalf of employees against occupational hazards.					
We have a safety incentive program which helps to motivate safety practice at work.					
I do periodic medical examination sponsored by Sasol Delight/ Exel petrol station to determine the status of my health.					

APPENDIX K

Some Chemical components of Petrol and their Physical Properties

Name	Molecular Formula	Molecular Mass	Melting Point (°C)	Boiling Point (°C)	State (25°C, 101.3kPa)	Density (liquid g cm ⁻³ , 20°C)	Flashpoint (°C)	Enthalpy of Combustion (kJ mol ⁻¹)	Uses
pentane	C ₅ H ₁₂	72	-130	36.1	liquid	0.626	-49	-3536	component of petrol (fuel)
hexane	C ₆ H ₁₄	86	-95.3	68.7	liquid	0.659	-22	-4190	component of petrol (fuel)
heptane	C ₇ H ₁₆	100	-90.6	98.4	liquid		-4	-4847	component of petrol (fuel)
octane	C ₈ H ₁₈	114	-56.8	126	liquid		-43	-5506	major component of petrol (fuel)
nonane	C ₉ H ₂₀	128							component of petrol (fuel)
decane	C ₁₀ H ₂₂	142	-30	174	liquid	0.73			component of petrol (fuel)

Adapted from <http://www.ausetute.com.au/usehydrc.html>

APPENDIX L

Properties of diesel

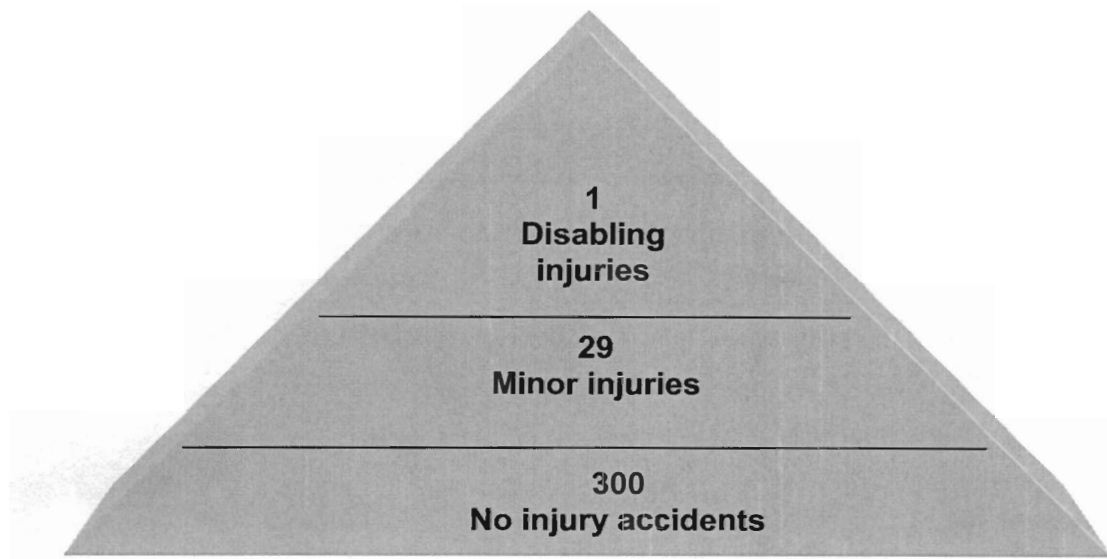
Name	Molecular Formula	Molecular Mass	Melting Point (°C)	Boiling Point (°C)	State (25°C, 101.3kPa)	Density (liquid g cm ⁻³ , 20°C)	Flashpoint (°C)	Enthalpy of Combustion (kJ mol ⁻¹)	Uses
hexadecane	C ₁₆ H ₃₄	226	18.5	288	liquid	0.775	61		component of diesel fuel & heating oil

Adapted from <http://www.usetute.com.au/usehydrc.html>

APPENDIX M

ACCIDENT RATIOS

Heinrich's Accident Ratio Study -1931



Bird's Accident Ratio Study-1966



Extract from: John A. Fletcher & Hugh M. Douglas (1971). *Total Loss Control within the Industrial Environment*.

APPENDIX N

SASOLBURG MAP



The indicative lines on the map above shows the locations of the Eight Fuelling Stations in Sasolburg.
(Sasolburg map was sourced from Sasol InfoNet Library)

APPENDIX O

Calculation of Recordable Case Rate (RCR) for Sasol RCCs

RCR is calculated using the formula below:

$$\text{RCR} = \left[\frac{\text{RC} \times 200000}{\text{E} \times \text{H}} \right]$$

RCR: Recordable Case Rate (number per 200 000 hours)

RC: Number of Recordable Cases (number); i.e. all work related incident, lost workday case (LWDC) and work-related injuries requiring medical treatment beyond first aid, or involving loss of consciousness or restriction of work motion

E: Number of employees at the petrol station

H: Average hours worked per employee per year (hour per year).

200,000: The base for 100 full-time equivalent workers working 40-hours per week 50weeks per year (200 000 hours per year).

$$\begin{aligned} \text{RCR for Sasol Delight-1} &= \left[\frac{2 \times 200000}{42 \times (12 \times 5 \times 50)} \right] \\ &= 3.17 \end{aligned}$$

$$\begin{aligned} \text{RCR for Sasol Delight-2} &= \left[\frac{15 \times 200000}{23 \times (12 \times 5 \times 50)} \right] \\ &= 43.48 \end{aligned}$$

$$\begin{aligned} \text{RCR for Exel-1} &= \left[\frac{3 \times 200000}{20 \times (12 \times 5 \times 50)} \right] \\ &= 10.00 \end{aligned}$$

$$\begin{aligned} \text{RCR for Exel-2} &= \left[\frac{5 \times 200000}{15 \times (12 \times 5 \times 50)} \right] \\ &= 22.22 \end{aligned}$$