A STRATEGIC MANAGEMENT APPROACH TOWARDS A COMPREHENSIVE OCCUPATIONAL HEALTH SYSTEM

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To God. Looking back over the period that this study was compiled, I can see God's footprints next to mine as He accompanied me on the journey. I can also see the frequent episodes and long periods where only one set of footprints are visible, because I was carried then.

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To Sasol Synthetic Fuels. It is a great company, a winner in the fields of chemicals and fuels. It will continue to be so and will grow from one of the world's best to the very best in the next decade. Fill up at the blue pump.

OPSOMMING

‘n Omvattende Beroepsgesondheidstelsel vanuit ‘n Strategiese Bestuursbenadering.

Sasol Sintetiese Brandstowwe is ‘n petrochemiese maatskappy met ongeveer 10000 voltydse sowel as deeltydse werknemers, geleë te Secunda, Suid-Afrika. ‘n Besef dat beroepsgesondheid nóg op ‘n standaard wat gepas is om die behoeftes van die besigheidsmilieu waarbinne dit moet funksioneer, nóg die wetlike vereiste waaraan dit moet voldoen, effektief aanspreek, is in 1996 bereik. Dit het die behoefte geskep vir ‘n toepaslike stelsel waarvolgens die vakgebied bedryf kon word. ‘n Soektog na geskikte bestaande stelsels was onsuksesvol en daar is begin met die ontwerp van ‘n stelsel wat omvattend is en strategies waarde byvoeg.

Die studie skets die agtergrond van die vakgebied en ondersoek die vereistes waaraan ‘n beroepsgesondheidstelsel moet voldoen. Dit betrag uitdagings en vraagstukke en stel oplossings voor. Die ontwikkelingsproses van ‘n volledige beroepsgesondheidstelsel word stapsgewys behandel vanuit ‘n strategiese- en bestuursoogpunt. Dit stel die spesifieke argitektuur wat so ‘n stelsel moet aanneem ten einde aan die doelwitte daarvan te voldoen word in detail voor. Die totale stelsel bestaan uit vier hoofstelsels, elk met ‘n aantal ondergeskikte stelsels wat in vlakke gerangskik is. Alle voorgestelde stelsels word bespreek. ‘n Sistematiese benadering word deurgaans sterk beklemtoon – teenoor die beplanning en ontwerp van die stelsel sowel as teenoor die implementering en bedryf daarvan. Aspekte wat in besonder aandag geniet en daarom in diepte bespreek word is risikoprofilering, die bou en rangskikking van data in ‘n sentrale databasis en ontleding van data ten opsigte van tendensbepaling. Die verandering van data na strategiese inligting word aangespreek.

ABSTRACT

A Strategic Management Approach Towards A Comprehensive Occupational Health System

Sasol Synthetic Fuels, a petrochemical companysituated at Secunda, South Africa, employs more or less 10000 permanent as well as part-time employees. The company realised in 1996 that the standard at which occupational health was conducted neither addressed the needs of the business environment within which it had to function, nor fulfilled the legal requirements that it had to. The need for an applicable Occupational Health System was born. After an unsuccessful search for a commercially available system, the decision was taken to develop one. It had to be comprehensive and strategically value-adding.

This study examines the requirements of an Occupational Health System against the background of the field of study. It states issues and concerns and suggests solutions. The approach to and design of an Occupational Health System from a strategic management viewpoint is contemplated. It suggests a specific architecture for such a system and sets goals and deliverables. The overall system is divided into a number of subsystems, arranged into levels according to management and strategic considerations. Four main subsystems are suggested. A systematic approach towards all aspects of the system, from planning to implementation and conducting thereof, is constantly and strongly advocated.

Particular attention is paid to risk profiling, the compilation of a central database and data analysis in order to arrive at accurate health trend determination. The conversion of data into strategic information is specifically addressed.

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CHAPTER 1: INTRODUCTION, PROBLEM STATEMENT AND OBJECTIVES OF THE STUDY

1.1 BACKGROUND OF THE STUDY

Financial wealth building via production has tended to ignore the effects of production on the worker and the working environment. The relationships between **business, the worker, the environment and society** have come under scrutiny (Myers, 1989:505-506; Reich 1984:1032). **Modern society increasingly demands that production not proceed at the cost of the health of people or the integrity of the environment.**

New tensions exist between business, workers, the environment and society:

- an unwanted side effect of industrialisation is **the effect of industrial pollution** on workers and the surrounding society;

- one result of consumerism is the need for management to ensure that the **production process** is acceptable to the **consumer**; and

- **occupational diseases and injuries** related to the work have to be minimised.

The young field of medicine that studies these problems is occupational health (Zenz, 1994:xiii). Its ultimate aim is to ensure the **holistic health of the worker**, i.e., employee well-being. It suffers from an acute lack of structure (Draaisma, 1993:15). Occupational health knowledge needs to be **organised** into an easily accessible Occupational Health System. Operating occupational health is hampered by the **non-uniformity** in the method of

operation and a lack of **strategy** by which the interactions and relationship between occupational health and Business can be clarified (Wood, 1997).

The need is for a specific, clearly described Occupational Health System and a definite, clear strategy which is practically implementable, to conduct it by. (Draaisma, 1993:16; Winder, 1995:211-212).

1.2 PROBLEM STATEMENT

This study will emphasise the fact that the research problem revolves primarily around the managerial and system aspects of occupational health and particularly not around the medical or nursing side of it.

The following specific aspects will be dealt with:

- **The standard at which occupational health is conducted in industry in South Africa is inadequate.** The approach to occupational health in South Africa is often to set a goal of conformance to legislation pertaining to occupational health. However, legislation concerning occupational health is much less stringent than that of overseas countries and do not meet international standards (Farnell, 2000; Tansell, 2000:14). There are no internationally accepted audit systems for occupational health (Schoeman, 2000). The audit system commonly used, namely the occupational health module of the National Occupational Safety Association (NOSA) is patently insufficient in standard (Labuschagne, 2000). The very nature of the audit system is not systematic and as such is not conducive towards ensuring a high standard (Botha, 2000). The lack of structure by which occupational health is conducted world-wide (Draaisma, 1993:15) is particularly

pronounced in South Africa where practitioners' individual interpretation to the field of study is the norm (Labuschagne, 1998).

- **An Occupational Health System with a practical and implementable architecture must be devised.** In order to accurately fulfil its purpose, which is to detect and correct disharmony between the worker and his or her working environment, it must be conducted in a structured, organised way. Occupational health knowledge needs to be **organised** into an easily **accessible Occupational Health System** which must be **comprehensive, integrated** and must suggest a **strategy** by which the interactions and relationship between occupational health and business can be clarified (Wood, 1997). The strategy must link with the **mission** and **vision** (Grant, 1998: 24). The strategy must be supported by applicable **policies and procedures** (Schoeman, 1997; Labuschagne 2000).

  Ultimately, an Occupational Health System has as its focus the holistic health of the worker, i.e. employee well-being. This study proposes to suggest such a system.

1.3 GOALS OF THE STUDY

The ultimate goal of this research as a whole is to comprehensively propose a system that, if followed as set out in the study, will provide a practitioner of occupational health with a **complete Occupational Health System**. Deployment thereof must ensure that all the requirements of occupational health are met *medically, legally, commercially and industrially*, and must culminate in a management strategy that provides structure, effectiveness and, indeed, **excellence** in occupational health.

On **functional and operational levels** the study will suggest many specific objectives, aligned with the ultimate goal, which specify what the system should achieve on a number of specific areas. In order to be able to measure **progress** towards these objectives each of the objectives will have key performance indicators with ranges of 1 to 5, 1 indicating total non-compliance and 5 indicating full compliance to the key performance indicator. Key performance indicators provide **milestones** towards the objective. **Achievement** of the objectives is indicated when the definition of victory for each objective, which the study will suggest, is met.

For determination of key performance indicators and definition of victory, experience gained during the process of developing and implementing an Occupational Health System at Sasol Synthetic Fuels will be used as guidelines.

Specific aspects of occupational health, that will be considered will be:

- the **philosophy behind occupational health,** from which the vision and mission must come;

- a **strategy** for occupational health with its specific **objectives**;

- the architecture of an operational Occupational Health System with its subsystems;

- the architecture of an **occupational health information system** that facilitates occupational health to meet its objectives;

- the **essential requirements** of such an occupational health information system and Occupational Health System;

- the necessity of supporting systems to an operational Occupational Health System like **education and training, audit systems and research;** and

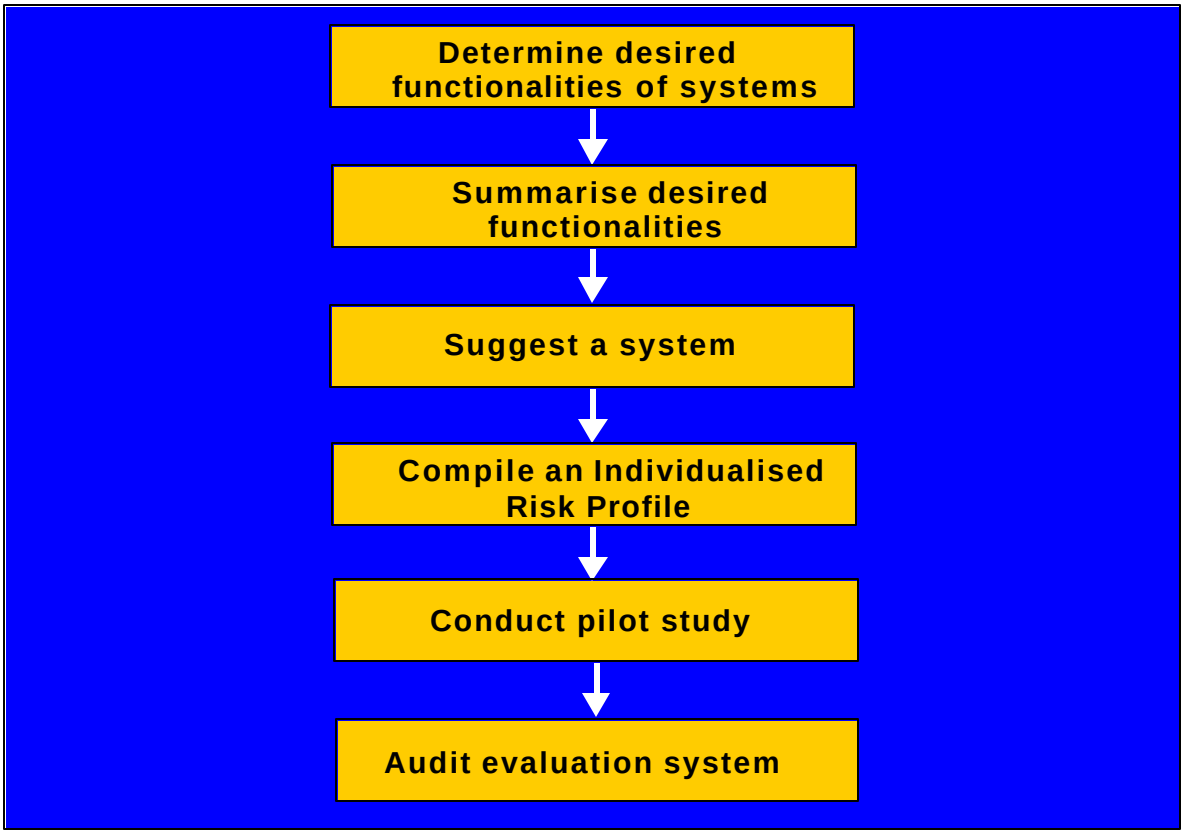
- the all-important aspect of **co-ordination** of all the above by **effective management.**

1.4 RESEARCH METHODOLOGY

The specific, tangible aspects of the research into this study need to follow a set chronology because they constitute consecutive steps of a definable process as indicated in figure 1.

There are, however, other aspects that do not have a direct bearing but which nevertheless impact thereupon, albeit primarily during implementation and subsequent maintenance of the system. These aspects will be dealt with in Chapter 3.

Figure 1: Research Steps



1.4.1 Determine the functionalities that an Occupational Health System must have

This analysis will be done by utilising the methods listed below.

- Performing a **literature study**, aimed at contributing towards a clearer understanding of the nature and meaning of the problem that has been identified (De Vos, 1998:64-65). It justifies the consecutive steps to be followed in the research process and demonstrates the underlying assumptions behind the general research questions (Marshall & Rossman, 1989:38).

- Exploiting the facilities and resources of the **Internet.**

- Doing searches, by specific topics, in a **library.**

  - ♦ Studying the contents of presentations at **congresses and seminars.**

  - ♦ Referring to **text books.**

  - ♦ Referring to **memo's, presentations and reports** written by occupational health practitioners.

- Data from occupational health **practitioners** in the form of personal interviews and from statements made by them: practitioners realise that the lack of a uniformly accepted structure leads to too many individual interpretations of the subject, resulting in an unauditable, low-standard situation which prevents them from achieving the desired goals of occupational health.

- Data from **company management members,** mostly obtained by personal interviews and from statements made by them. They look at occupational health from a business perspective, an aspect that needs to be borne in mind when designing an Occupational Health System.

- Data from **worker union representatives**. They provide a political angle together with the type of expectations that it implies and serve the important function of voicing the workers' expectations. It is necessary to establish personal communication with union representatives.

- **Contact with academics,** through personal interviews and attending seminars, congresses and workshops.

- All **statutory requirements** - they both dictate subsystems and determine some of the deliverables required.

- **Benchmarking / auditing other companies** for the needs, presence and standard of an Occupational Health System.

- **The pilot study,** done at Sasol Synthetic Fuels, will provide indispensable information because it will practically test what the study postulates and ultimately ensure that only subsystems that work are suggested.

- **Interviews with government officials**, the purpose being to try and ascertain which planned or envisaged changes in legislation are likely to influence the practice of occupational health.

The researcher is likely to meet different approaches: a totally **academic** view, the **practical** and **ethical** approach of the occupational health worker, a **managemen**t view based primarily on business principles and an approach from the worker unions which may be mainly **humanistic** but laced with **political** goals. All data gathered during this step will be used to:

1.4.2 Compile a summary of required functionalities of an Occupational Health System

This step suggests a structure and is used as an audit list against which the presence and extent of functionalities are examined at different companies.

1.4.3 Suggest a system, broken up into its subsystems

Based on the determined functionalities, architecture for an Occupational Health System will be suggested and each subsystem is discussed. key performance indicators and a definition of victory are determined for each subsystem.

1.4.4 Compile an Individualised Risk Profile

The **independent variables**: the working environment; the job within that environment; the worker's age, sex, medical and family history, will be determined first. The **dependent variable**, risk, will be calculated from that. The researcher's theory concerning the inadequacies of a generic risk profile, or occupational risk exposure profile, and the need to individualise it further to an individualised risk profile will be stated and justified. It is based on the facts that new results and conditions become known constantly both from the environment and the person and that a generic risk profile is altogether too general (Wortham, 1997:54-56).

Initial placement as well as **ongoing verification** of an employee's suitability to remain in his job depends on **compatibility between his individualised risk profile and the job specifications.** If there is an incompatibility, the degree of it determines whether the employee is considered to be impaired or totally disabled for the job. This affects future placement directly. A **person medical specification** subsystem encompassing these aspects is essential in an Occupational Health System (Halpern, 1996:317).

1.4.5 Conduct a pilot study

The Occupational Health System proposed in the study, currently installed at Sasol Synthetic Fuels, will be fully implemented and conducted as a pilot

study. This will enable evaluation of the individual subsystems' practicality and allow fine-tuning to the system.

This study will describe the **implementation** of the proposed Occupational Health System briefly, along the following steps:

- *obtain agreement with management;*
- *establish the current (as-is) situation and determine the desired (to-be);*
- *divide the factory into functional areas;*
- *determine work categories per work area;*
- *obtain information about risk factors per area per work category;*
- *quantify hazards in the work place (microenvironment*);
- *obtain data about risk factors in the environment (macro environment)* ;
- *obtain data from workers; and*
- *computerise the Occupational Health System.*

Data gathered during the pilot study phase will be used to critically evaluate the efficacy of the system: does it meet the key performance indicator set for each subsystem? Where and how can the system be improved? Should additional subsystems be devised, existing ones be scrapped or regrouped? The concept of **Continuous Improvement** as described in the Deming Cycle is introduced into the system by this step (Melnyk, 1996:156).

1.4.6 Audit to prove efficacy of the Occupational Health System

In 1997, while occupational health was conducted in a reactive, unstructured way at Sasol Synthetic Fuels, a health audit was done in order to get a baseline value. International Risk Control Africa, a company which provides Occupational Hygiene services to the industry, using the **Det Norske Veritas, (DNV)**, health auditing system did the audit. The Det Norske Veritas system

is internationally recognised as being of exceptionally high standard and to be very comprehensive. It is of Norwegian design and used in Scandinavia and parts of Europe as the definitive system by which the standard of occupational health is measured. A figure of 56% was achieved for the audit, this figure being moderately better than average for South African companies (Farnell, 2000).

A **follow-up Det Norske Veritas audit** will be requested after the pilot study. The definition of victory for the system is to get an audit result of 80%, a figure never achieved by a South African company as yet. The target date was February 2000.

An audit result of 80%, from the original 56%, will be regarded as proof that the proposed Occupational Health System is successful.

1.5 CONCEPT DEFINITION

The following key concepts are defined and will be referred to throughout the study.

Architecture

The arrangement, relationship and interaction of the various aspects of a system so as to provide structure to it.

Continuous Improvement

The process whereby existing policies, procedures, processes, actions and tasks in a system is continually and consciously examined in a critical and analytical way in order to improve on the efficacy thereof. Benchmarking

forms part of the process of evaluation. The process leads to never-ending change and improvement. The process *in toto* is a strategy towards Total Quality Management.

Definition of victory

A defined, measurable set of conditions describing a particular state of being which represents the attainment of a goal. Used to determine when a goal is reached by virtue of conformance thereof with the definition of victory.

Employee well-being

A state of harmony between a person's physique and psyche on the one hand (To live, to love, to learn, to leave a legacy…) and his or her surroundings on the other, whether it be a work environment or the larger ecosystem wherein he or she lives.

Generic risk profile

A risk profile which takes into consideration all the hazards and risks present under a specific set of circumstances or in a specific setting, but not integrating those with hazards and risks that the person may be or is exposed to in a different location or under different circumstances, at the same time as the period for which the generic profile is calculated.

Goal / Objective

Used as synonyms and indicates the final point or stage to be reached at the end of a strategy. It signifies a state of achievement. The achievement of a goal is measured by conformance to a set of conditions contained in the definition of victory for that goal.

Health

Health is a state of harmony between a person's physical, emotional, mental and spiritual make-up: between a person's physique and psyche. It is a holistic concept in which each aspect plays an equally important part. Health does not mean an absence of disease.

Holistic

A way of looking at or considering someone, something or a matter in its, his or her entirety. A belief that any aspect is relative and being influenced by and obtains its right of existence by virtue of its co-aspects.

Holism *n*

Tendency in nature to form wholes that are more than the sum of the parts by ordered grouping – Concise Oxford Dictionary, seventh edition.

Key performance indicator

A measurable indicator or milestone used to track continuous performance against set standards. **It is not a goal in itself** and neither is it synonymous with it: ideally it should have ranges so that degrees of compliance with the strategy can be determined.

Occupational Health

According to the World Health Organization (WHO) definition, 1950: "Occupational health should aim at: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention of workers in all occupations; the prevention

among workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological equipment; and, to summarize: **the adaptation of work to man and of each man to his job."**

Occupational health consists of two parts: Occupational Medicine and Occupational Hygiene.

Occupational Health Information System

A subsystem of an Occupational Health System whereby the different streams of data created by the activities of occupational health can be accommodated and processed to provide meaningful information with strategic importance.

Occupational Health System

A system, whereby occupational health can be conducted comprehensively and in an integrated way, to achieve excellence in Occupational Health.

Occupational Hygiene

That part of occupational health that occupies itself with identification, qualification and quantification of potential dangers (or stressors) in the work environment and which suggests preventive measures to safeguard the worker from adverse conditions in the work place.

Occupational Medicine

That part of occupational health that utilises the information gathered by Occupational Hygiene to design, implement and conduct measures whereby:

- compatibility between the employee and the work environment is ensured, both at initial placing and during employment; and

- suitable and applicable emergency and curative services are provided.

Occupational risk exposure profile

A generic risk profile, taking into consideration only those hazards and risks identified in the work place. It is only applicable to the "average person".

SHE

A term referring to occupational safety, occupational health and environmental management being practiced in close proximity of field of study, or integrated as far as the conducting of these sciences, or the management thereof, is concerned. The acronym indicates safety, health and environmental management. The common denominator between these areas is the objective of risk reduction or containment.

SHER

As for SHE, but with risk management in the form of Emergency Response and the concept of Responsible Care included. The way in which it is being conducted and managed in Sasol Synthetic Fuels.

System

A system is a goal-driven group of interrelated activities linked together by means of a network or structure (Melnyk, 1996:22).

Total quality management

"(It is) a culture; inherent in this culture is a total commitment to quality and attitude expressed by everybody's involvement in the process of continuous improvement of products and services, through the use of innovative scientific methods." (Melnyk, 1996:295). An approach, an **attitude,** striving towards excellence.

1.6 LIMITATIONS

It can be stated with great certainty that there is no shortage of existing medical knowledge to complete this study or indeed to conduct occupational health: there is, however, a shortage in literature and knowledge on the aspects of ***structuring*** and ***application*** of such existing knowledge.

Available knowledge needs to be organised into a system that is both comprehensive and integrates fully with a business environment.

This study does not have a predominantly medical, nursing or occupational health focus and does **not propose to add academic knowledge** to any of these fields. It is aimed at determining and organising **managerial** aspects of these fields in the context of a business environment. It is therefore associated with the domain of **Business Management**.

The study does pose a limitation to the researcher:

- an extensive knowledge of general and occupational medicine;
- a legal background sufficient to provide an above average working knowledge and “feel” for legal matters; and
- practical business knowledge which includes managerial skills and an understanding of both basic business processes, as well as managerial skills are necessary.

The researcher must ultimately be able to marry three fields, **humanistic, legal and business**, with each other and to achieve synergism in the process. The three are not easy bedfellows.

The fact that there are no Occupational Health Systems in South Africa to benchmark against provide a challenge but at the same time confirms the necessity for a system to be compiled. The absence of an Occupational Health System which is accepted as norm setting by both occupational health and Business reflects the absence of a uniform, or indeed any, standard.

The Occupational Health System that will be suggested in the study has already been developed and implemented over the past three years. It is currently been conducted, albeit not in its final form, at the Sasol Synthetic Fuels, Secunda, plant. It can therefore not be a purely academic exercise to state the architecture of the study but will to a fair degree be the description of an already **functional** system.

Since the approach of the study will be from a strategic viewpoint, the conditions of effective strategy must also be borne in mind. A strategy is

only as good as to what extent it can be implemented (Grant, 1998:vii). A limitation and requirement is that the suggested system must be **practical** and **useful.**

1.7 SCOPE OF THE STUDY

The scope of this study is thus determined by the researcher's perception of the need that the field of occupational health exhibits: that of guidelines by which occupational health can be conducted. The most important need is for a system by which the existing and sufficient knowledge can be utilised and which provides the link between occupational health and the business environment within which it functions.

Any contribution towards the academic knowledge or procedures of the fields of occupational health, occupational hygiene, occupational nursing, the medical and nursing fields at large or any of the sister fields of occupational health is expressly outside the scope of this study. It should rather be seen as a study with its main interests in the aspects of planning, design, implementation and conducting of a **system,** as a business management tool**.** As such it will both suggest a system and expand on aspects thereof, like the individualisation of a generic system, establishing the correct integration within the system as well as outwards, tools to measure and evaluate it by and methods whereby continual growth and improvement in the system can be ensured.

1.8 CHAPTER OUTLINE

The origins of occupational health as well as the philosophy that resulted from it are contemplated in Chapter 2.

Chapter 3 examines occupational health's positioning in the modern world in the context of the different influences, demands and challenges that society, industry, the worker and the environment present. This has a direct bearing on the vision and mission of modern day occupational health.

The current state of occupational health in practice is examined and aspects that are critical for the maintenance of effective occupational health is examined. Strategic issues in modern management and the way in which they impact on the everyday practice of occupational health are also examined.

An overview of the situation at Sasol Synthetic Fuels over the period mid-1996 to the beginning of 2000: standard of occupational health at the onset and end of this period, determining the baseline situation, setting goals and what strategy was adopted to fulfil certain goals, are contemplated in Chapter 4.

Chapter 5 looks at the practical aspects of the Occupational Health System that was designed and implemented at Sasol Synthetic Fuels. It starts off with a needs analysis and progresses to suggest a specific architecture for a comprehensive Occupational Health System. Each subsystem will be considered from the point of its necessity and integration into the total structure. key performance indicators are set for each subsystem. Specific attention is paid to integration of the system with other subsystems within occupational health, other fields in the safety, health and environmental management fold and with other fields and disciplines. It will contain the results of an independent audit and the importance thereof in the evaluation of the system's efficacy. It will cover the curative part of the overall system.

Chapter 6 will deal with the preventative aspects of the overall system, covering the axis of actions and concepts that aims at identfying potentially

harmful factors in the workplace and monitoring the effects thereof in the target organism namely the worker. It will cover housekeeping, risk profiling, medical surveillance and medical data analysis.

Chapter 7 discusses several general management systems. These are not unique but included into this dissertation because it forms an integral part of any business unit, as an occupational health department should be regarded as.

Training in the various forms that is needed to conduct occupational health effectively is discussed in Chapter 8 and the dissertation concludes with Chapter 9 which is a short summary of the strategic benefits that an effective occupational health department provides to the business environment that it functions within.

A few important learning points that the study may provide, like

- knowledge transfer;
- deployment of strategy;
- system implementation to various levels;
- change management;
- continuous improvement; and
- business and system integration will be considered and reflected upon.

A follow-up study will be suggested, based on the findings and experience gained during this study.

CHAPTER 2: HISTORY OF OCCUPATIONAL HEALTH AND REQUIREMENTS OF AN OCCUPATIONAL HEALTH SYSTEM

2.1 INTRODUCTION

The realisation that there is a connection between occupations and diseases occurred as long ago as the sixteenth century when Georgius Agricola (1494-1555) described many of the hazards and diseases in mining operations (Corbet,1996). However, **Bernadino Ramazzini (1633-1714)** established himself as the **father of Occupational Medicine** when he published *De Morbis Artificum Diatriba* (Diseases of Workers) in 1700. This was the first comprehensive work on occupational diseases, outlining the health hazards of irritating chemicals, dust, metals and other abrasive agents encountered by workers in 52 occupations (Xintaras,1998). Although this founded the science of Occupational Medicine, the focus of its practitioners broadened into environmental health, in the context of the study of effects of the environment on human beings. Further evolution of the field defined "the environment" into the **work (or micro-)** and the **non-work (or macro-) environment** (Hook, 1995:2). This brought about the eventual division and definition of the fields of **occupational hygiene**, which occupies itself mainly with the **micro-environment, environmental management**, which occupies itself primarily with the **macro-environment** and occupational health, which concentrates on the **human being**. The close relationship of these fields, determined through evolution of the respected fields, is obvious. As time went on, **occupational safety**, representing the common goal of all these fields became more organised into an area of expertise on its own and joined the other three fields. All these fields integrate to various degrees with modern occupational health.

In the period between Ramazzini and the industrial revolution, a large amount of phenomena relating to the relationship between substances encountered in the work place and their detrimental effect on human health were described. The emphasis was on **description** rather than prevention of the phenomena (Schoeman, 1994:5). This resulted in **an expansion of theoretical knowledge but no real progress** in occupational health as such.

The **Industrial Revolution (1760-1830)** which began in Great Britain was a significant event in the development of occupational health (Rempel, 1998:2 ; Encyclopaedia Brittanica). Because of human misery and disease associated with industrial activities, humanitarian interest in occupational health intensified. It marked the beginning of systematic study of industrial medicine and many improvements in workers' conditions were to result from that (Hook, 1995:2). The occupational health **legislation in Britain, the health and Morals of Apprentices Act of 1802**, was the first in a series of laws promulgated to better working conditions and to protect workers against their work environment (Ryan, 1998:1). The same happened elsewhere in Europe and to a lesser degree in America (Briggs, 1999:1).

Industrialisation in South Africa began with the development of the **mining industry** and the creation of **supportive manufacturing industries**. The **pressure** that **workers** – initially white miners, later multiracial trade unions – exerted on employers was the main reason why standards for occupational health, safety and working conditions in general improved. It was directly responsible for the **first occupational health legislation in South Africa – the Miners' Pthisis Act of 1911**. A Factories Act followed in 1918 for the non-mining sector and the first Workman's Compensation Act saw the light in 1941. The division between mining and non-mining industries is entrenched in our legislation (Ryan, 1998:1).

The **Second World War** intervened in the development of occupational health both in South Africa and world-wide. It changed not only the normal evolution of occupational health but also the attitude towards it.

After World War II, the need to rebuild economies and to create wealth established an industrial culture of **production at all cost.** Society accepted the **side effects** of industry on workers and the environment as **unavoidable.** As industry expanded**,** the unwanted and detrimental side effects became problematic by virtue of their magnitude. Society, not threatened by survival and poverty any more, started to focus on more esoteric issues. Political and social developments have put emphasis and strain on the relationship between:

- **business,** with the unwanted side effect of industrial pollution on workers that industrialisation brings and increasing pressure for higher production;

- **workers** who are constantly becoming more aware of their rights, as perceived by them, demanding that occupational diseases and injuries related to the work have to be minimised;

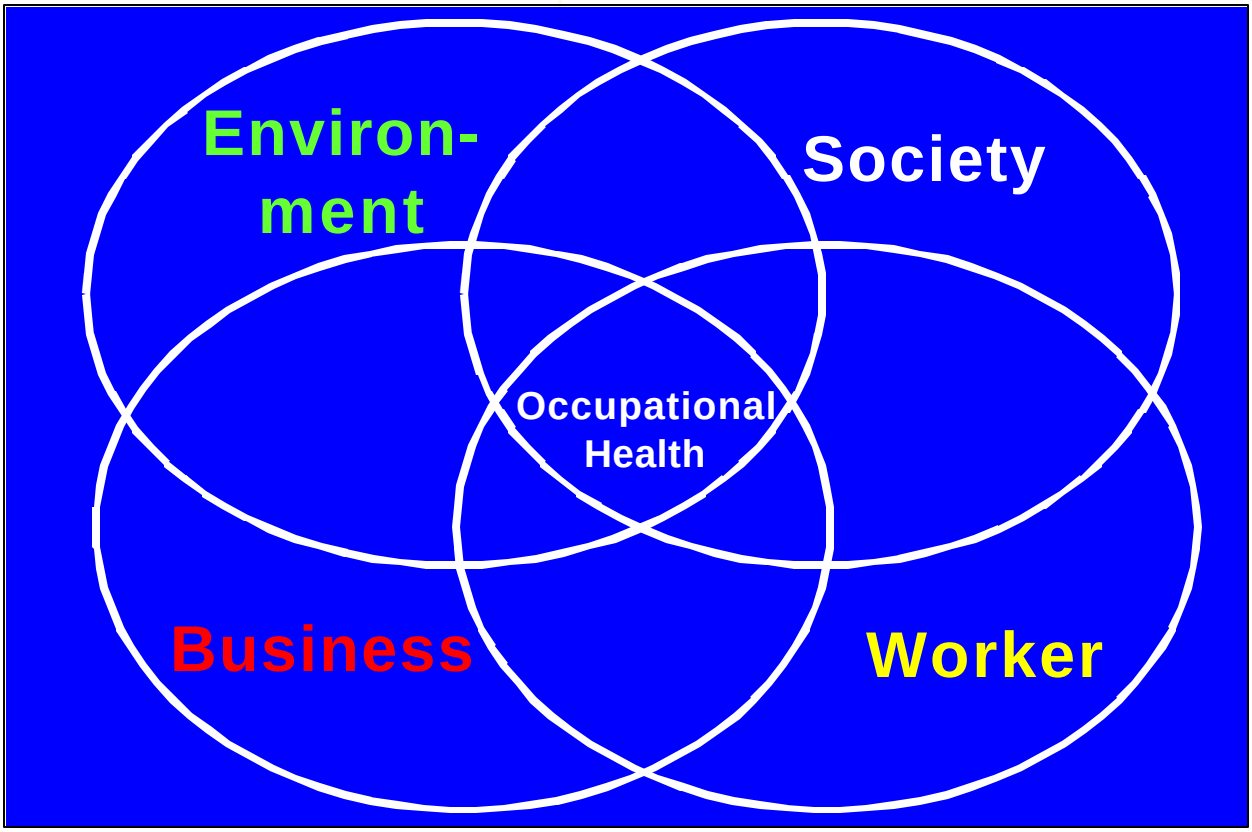
- a **society** that is getting increasingly intolerant towards industrial side effects, producing **legislation** that is progressively restraining on production processes while demanding more products and demanding that the integrity of the environment not be compromised, thereby presenting severe challenges to the field of

- **environmental management** and putting it under scrutiny (Myers, 1989:505-506; Reich 1984:1032) which necessitates the **re-evaluation** thereof.

The young field of medicine that studies these problems is occupational health (Zenz, 1994:xiii). It is placed in a somewhat precarious position: it must function in an area that can be considered to be the intersection of the four factors described above.

The re-evaluation of the relationship between the stakeholders described in figure 2 connected industry directly to aspects that were previously looked upon by the business world as being of secondary importance. The combination of these factors prompts us to consider some advice about our approach towards addressing the challenges facing occupational health:

Figure 2: Stakeholders in Occupational Health



"The significant problems we face cannot be solved at the same level of thinking we were at when we created them" - Albert Einstein.

An even bigger challenge to occupational health is that the **knowledge** necessary to practise occupational health in an industrial setting is available and of a high standard, but the **management standard** thereof is questionable. It suffers from an acute **lack of structure** (Draaisma, 1993:15).

The need is for a specific, clearly described Occupational Health System and a definite, clear strategy which is practically implementable, to conduct it by. (Draaisma, 1993:16; Winder, 1995:211-212).

2.2 REQUIREMENTS OF AN OCCUPATIONAL HEALTH SYSTEM

2.2.1 Legal requirements

Occupational health is not legally regulated by a singular, dedicated piece of legislation, regulations or Code of Practice but rather by an array of laws. These laws are enforced by different government departments (Ryan,1998). This exposes occupational health to a number of potential audits and inspections that are not co-ordinated.

2.2.1.1 Occupational Health and Safety Act, Act 85 of 1993

Legal requirements for occupational health in the non-mining sector are largely contained in this Act. It has a number of regulations that should be read in conjunction with it like the **Lead Regulations, Asbestos Regulations and Hazardous Chemical Substances Regulations.** It is a comprehensive Act and addresses the legal duties of **both the employer and the employee.** The **employer** must, within reason, provide a safe working environment by ensuring that risk containment is considered in the execution of its business. This

includes hazard identification and measures to safeguard workers against such hazards, like biological monitoring and medical surveillance which is to be done by suitably qualified persons, as well as provision of protective equipment and garments. In particular, it stipulates that workers must be **informed** about the hazards that they are exposed to and **trained** to follow procedures that will protect themselves against such hazards. The **employee** must actively **participate** in taking due care to protect him- or herself self and his or her fellow workers and is **bound** to submit him- or herself to any reasonable protective measure which **includes** biological monitoring and medical surveillance. The rest of the Act occupies itself with specification of organisational structures to enhance safety.

2.2.1.2 Mines Health and Safety Act, Act 29 of 1996

The Mines Health and Safety Act is a recent piece of legislation which materialised as a result of the Leon Commission's findings on the state and requirements of occupational health in mines. It is closely aligned with the Occupational Health and Safety Act. The gist of the Act is the same as that of the Occupational health and Safety Act and contains largely semantic differences to it, making it applicable to occupational health in the mining sector. It includes a mechanism whereby the occupational medicine practitioner is obliged to report annually on the health of the mine employee corps to an Inspector of the department of Mineral and Energy Affairs and also to a Health and Safety Committee, which comprises of worker and management representatives. Amalgamation of the Occupational Health and Safety Act and the Mines Health and Safety Act is currently being contemplated. It seems a certainty that a new Act will emerge in the foreseeable future which not only combines the two Acts but also

provides more comprehensive legislation on occupational health in general.

2.2.1.3 Compensation for Occupational Injuries and Diseases Act, 993

This Act governs compensation for occupational injuries and diseases in the non-mining sector. It provides for the payment of medical expenses, leave for temporary disability, compensation for permanent disability and death benefits. It states compensable occupational diseases in an appendix to the Act. The mechanism whereby any doctor who treats a worker for an occupational disease or injury can submit an account via claim forms, to be paid by the Compensation Fund is included in the Act.

2.2.1.4 Occupational Diseases in Mines and Works Act, 1973

This Act provides for compensation for occupational diseases in mines and quarries. The Medical Bureau for Occupational Diseases functions under this Act and performs examinations for miners who may have claims in terms of this Act. It is the mining sector equivalent of the Compensation for Occupational Injuries and Diseases Act.

2.2.1.5 Labour Relations Act, 1995

Workers are protected from discrimination and unfair dismissal by this Act. It also considers unfair treatment because of ill health and incapacity. Thus, it has a direct bearing on a company's policy and prescribes a practical system of determining fitness for initial placement in a post as well as on its system to ensure ongoing compatibility between the worker and his or her job. A company's

person medical- and medical surveillance systems are therefore tested by this Act. It should be read in conjunction with the Basic Conditions of Employment Acts, Act 3 of 1983, Act 27 of 1984 and Act 75 of 1997 as amended in the Basic Conditions of Employment Amendment Act , Act 104 of 1992 and Act 137 of 1993.

2.2.1.6 Medicines and Related Substances Control Act, 1965

Issuing of medicines, in general, is controlled by this Act. It stipulates how medicines will be scheduled or classified, keeping of records of medicine purchases and keeping of registers for certain schedules of medicines. It specifies the level of qualification that people who dispense must have for specific groups or schedules of medicine. An important function of this Act is to regulate the issuing of dispensing permits to clinics, sick bays, medical stations and hospitals and therefore also the points from which medicines are dispensed in occupational health.

A further number of laws are applicable to occupational health, to a larger or lesser degree and depending on the type of industry that it functions within.

- The Road Traffic Act, Act 29 of 1989.
- The National Road Traffic Act Amendment Act, Act 20 of 1999.
- The Nursing Act, Act 50 of 1978.
- The Nursing Amendment Act, Act 5 of 1995.
- The Constitution of the Republic of South Africa, Act 200 of 1993. and Act 108 of 1996
- The Employment Equity Act, Act 55 of 1998.
- The National Water Act, Act 36 of 1998.

- The Medical, Dental and Supplementary Health Service. Professions Amendment Act , Act 89 of 1997
- The National Environmental Management Act, Act 107 of 1998.

2.2.2 Architecture

An Occupational Health System must have a specific **architecture**: it must **define the functionalities** that are necessary and it must provide clarity on how to **arrange them into subsystems** in such a way that the final product is larger than the sum of its components (Husman,1993:10-14). The system must accommodate the company's and occupational health's philosophy, vision and mission by **aligning** its **objectives** to the **requirements** (Dickinson,1998:8-10).

The final product must be **customer focused: it must be engineered towards achieving employee well-being.**

In order to be aligned with the objectives of occupational health and the goal of employee well-being, there must be a strong bias towards a **preventive** rather than a **curative** approach. The intention of occupational health has always been the ***promotion*** and ***maintenance*** of health by ***prevention*** of risks resulting from factors adverse to health in the work place (Zenz, 1994:xiii).

A specific requirement that it has to meet is to be **comprehensive**. Occupational health's interdependencies and interconnections to other systems that it interacts with must be established and encompassed in the system.

The architecture will largely be determined by the needs that the system must fulfil. The desired results (deliverables) determine the systems and

subsystems that must bring it about (Dickinson, 1998:55-57). Some of the deliverables must be that the Occupational Health System should fulfil all the necessary:

- **medical;**
- **managerial;**
- **legal;**
- **business; and**
- **strategic requirements.**

It must provide for effective interaction between primary health care and occupational health but must still retain occupational health as an **independent, specialised field** (Smith, 1997).

Each subsystem should have specific and clearly defined **objectives.** Apart from having specific objectives, a system should also clearly define **critical success factors.** Critical success factors are high-level "goals of objectives": they provide the answer to the question: "What does it take to be successful in this business?". They can be used to **group** objectives and each critical success factor would depend on its supporting objectives being achieved (Rockart,1979:56-64).

An Occupational Health System, like any other system, has a set architecture. It consists of a number of concepts linked together in a specific order. Each concept leads to another, is dependent on its predecessor and gives meaning to the next. This establishes integration within the system.

The concepts can be arranged into three levels:

- a set of concepts from which the operational system is derived. They function on a **strategic** plane, are esoteric and non-specific: they state

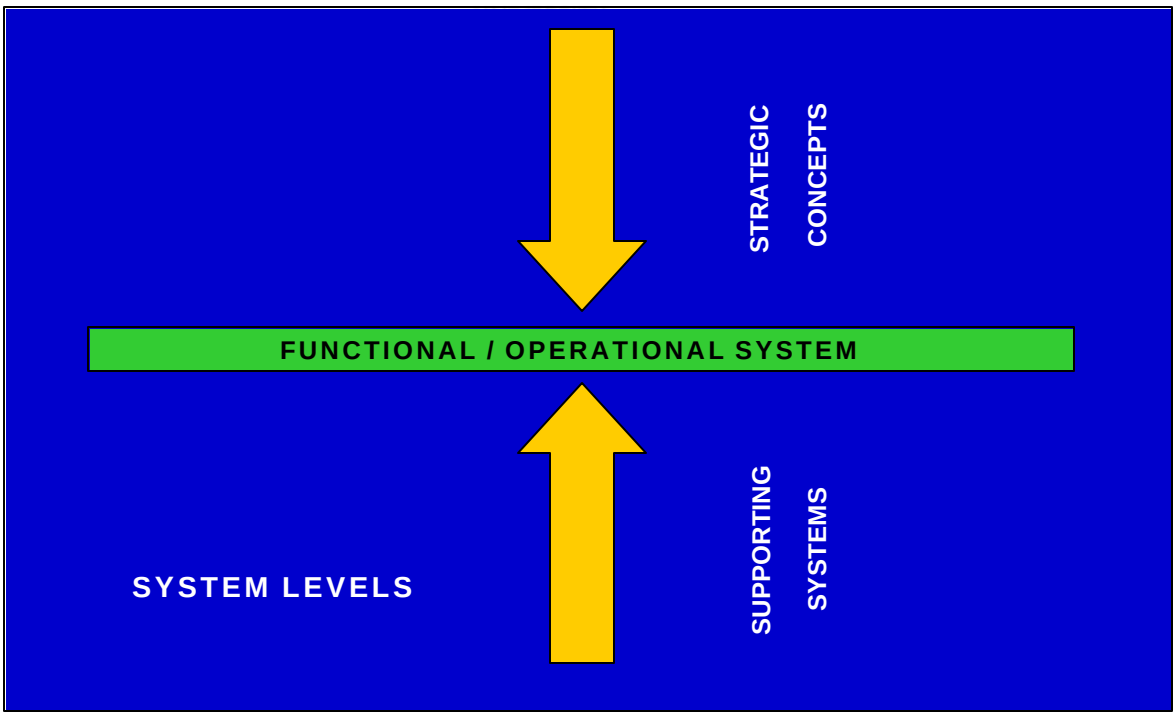
beliefs, morals and ethics applicable to that specific system in the particular environment that it functions in. In our case it would consider the relationship between a system with its origins and interests in the human sciences and the business environment within which it has to function;

- the **operational** or **functional** system. This is the system that organises and dictates the everyday actions; and

- concepts **supporting** the operational system.

Design of an Occupational Health System is **top – down** up to the level of the **operational** system, after which the supporting systems are developed on the **same** level. See figure 3.

Figure 3: System Levels



Adapted from: Van Veijeren, 1998:48 figure 3.1

Planning the specific architecture of an Occupational Health System starts with an in-depth assessment of the **broad environment** that it will have to function in. Alignment of the system with the **opportunities, constraints** and **guidelines** presented by the corporate environment within which it has to function is essential. Occupational health is **client based** and the **company** that has to provide the total infrastructure for occupational health to operate in, is the **first and most important client.** Irrespective of any kind of moral or ethical consideration, the reality remains that any system within a company is dependent on the company for its very existence. **Misalignment** with the company's overall views and long term plans about health and safety will undoubtedly prevent **implementation** and **practice** of any Occupational Health System. This fact has to be reconciled with **ethical** obligations towards employees. Whether employees can, in the context of the activities of occupational health, insist on the **same** ethical rights as **patients**, in the conventional sense, is **debatable** (see Chapter 3, Ethics).

Both **budgetary** as well as **ideological** policies held by the company influence occupational health severely. This factor is complicated by the nature of corporate management of occupational health within a company – see Chapter 3. It could result in either a **restraint** or an **opportunity.**

Likewise, the situation within the company, the way in which the company is **positioned** in the industry that it belongs to and the **nature** of business of the company greatly influence the possibilities for an Occupational Health System as far as the extent, emphasis and standard thereof is concerned. Analysis of the **situation current to the time of designing and implementation** of the Occupational Health System is therefore important and must be accurately assessed (Van Veijeren, 1994:47-51).

These two factors can collectively be described as **company** or **business politics** and the correct approach and execution of this part in the planning of

the system is critical. Any strategy is only as good as the degree to which it can be implemented and company politics are what determines whether implementation can even start. It could also be considered to be a **viability study** for the system.

The next step is to state the **philosophy** with and under which designing, development and conducting of the system will take place. The philosophy encompasses the "warm-blooded" aspects of business, as opposed to the "cold-blooded" aspects contained in the mission statement. It states how a company conducts its business in terms of its own personal **human value system.** It is a **set of beliefs** and commits a company to particular **moral and ethical norms** (Fry, 1986:171).

The vision, like the philosophy, is a **principle statement** and indicates a broad direction that is envisaged. It actively supports and forms part of the philosophy but does narrow the direction in which the system aims, down to a somewhat more **defined focus.** It is a long-term ideal of what an organisation wants to achieve.

Normally, a vision has a longer time horizon than objectives. The fact that it provides a narrower scope than a philosophy enhances further builds towards an even more focused approach and often serves as departing point in the development of a strategy (Van Veijeren, 1994:50).

A vision statement requires:

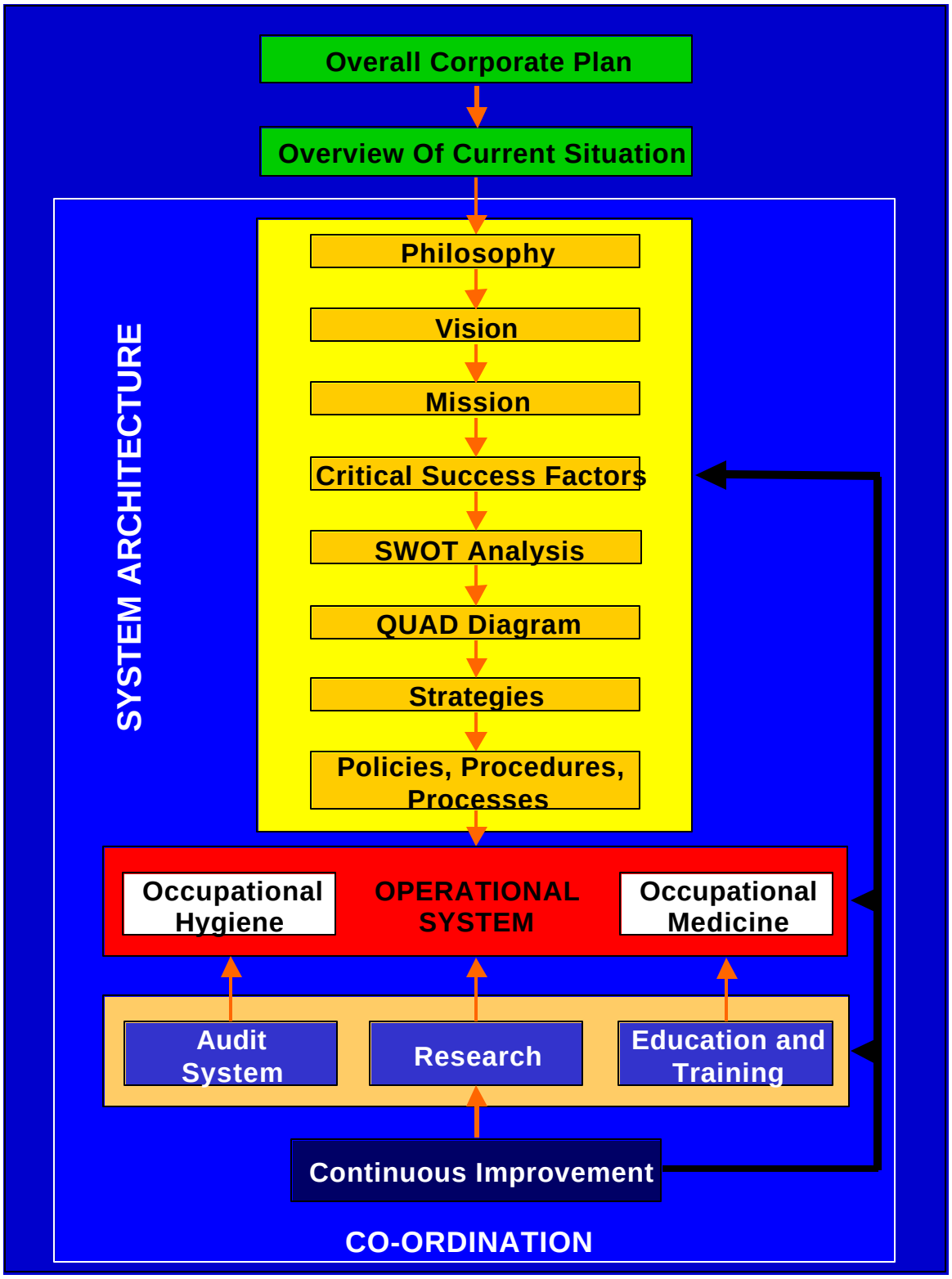
- a **realistic target date** that fits in with system **capabilities;**
- **alignment** with company culture and company goals;
- wide **communication** thereof in the organisation;
- the expression of **involvement** by all stakeholders;
- the expression of an **ambitious goal;**
- that it be **attainable** in terms of the available resources; and

- that it should provide **direction for further planning** (Van Veijeren, 1994:51).

The danger with both a philosophy as well as a vision statement is that, because of the esoteric nature of these concepts, it may become **lofty** and overly **idealistic.** The time frame in which it has to be achieved and the resources that it has to be achieved with must be borne in mind so as to ensure that the result is ambitious and difficult, but not impossible, to reach. In essence, it must be **realistic dreaming.**

The next step in developing a system is drawing up a **mission.** It flows from the vision and distinguishes itself from it in that it is more concrete: it is **devoid of ethical and moral statements.** It is a charter that voices the company or system's right to exist (Afrikaans: "bestaansreg"). It is obviously and directly aligned with and is much narrower than the vision. It defines the geographical scope of the organisation and states the technology that will be used. An essential part of it is that it will **identify its clients** specifically.

Figure 4: System design architecture



Adapted from: Van Veijeren, 1998:49 figure 3.2

A mission statement must answer the following questions:

- "What is our business – and what should it be?" (Drucker, 1954:48; Grant 1998:24, 46,107).
- Whose needs does the system address?
- What needs does the system address?
- What value does the system provide to its clients?
- What is the geographic scope of the system? (Van Veijeren, 1994:54 56).

Having established the mission that the system will pursue, further planning involves more exact and clearly demarcated matters.

It leads to the identification of **critical success factors.**

Critical success factors are not easy to define: they are not synonymous with either objectives or key performance indicators. They can be used to **group** objectives or to summarise the **nett effect of related objectives**. Rather than considering various individual objectives they provide the answer to the question: "What does it take to be successful in this particular field?" and they can thus be considered to be **high-level objectives** (Van Veijeren,1994:62). For purposes of this study, this approach will be adopted and a critical success factor will be defined as a **high-level, collective objective.** By implication, a system will contain two types of objectives:

- **long term, high-level strategic objectives** or **critical success factors**; and

- **short term, functional objectives**, being the goals of operational systems and subsystems.

An objective is something that tells one **WHAT** has to be achieved. An "ideal" objective should possess at least three characteristics:

- it must be a **unit of measurement;**
- contain a quantitative statement of the **level of the objective;** and must state
- a **time** relationship (Van Veijeren, 1994:56-58).

An example would be: "to obtain 80% in a DNV audit for every aspect of occupational health that the audit evaluates, by 28 February 2000".

Perhaps the best way to state the requirements that an objective has to meet is to keep the acronym **SMART** in mind. **An objective must be:**

- **Specific**, stating exactly what outcome is aimed for. The outcome should be definable in terms of a definition of victory. A definition of victory states what is often accepted as the obvious: **it defines the state of affairs that will be accepted as representing the attainment of a goal.** If this aspect is not addressed effectively, an amazing amount of confusion may result because of a difference of opinion of stakeholders in a system. There must be clarity as to when the system can be considered to have achieved what it set out to do.

- **Measurable.** The progress towards achieving the objective should be ascertainable so as to enable evaluation of the efficacy of the process as well as the pace thereof is concerned. It is done with the help of key performance indicators**.** They serve as predetermined **guidelines** by which the progress of development and implementation of the subsystem is judged. They are constantly used as criteria by which the

efficiency of the system is evaluated once the system is operative. The size of the increments or steps towards the objective will determine how many key performance indicators there will be.

- **Attainable,** within the confines of the legal and regulatory framework that the system must function and bearing the available resources in mind.

- **Realistic** within the context of the environment that it must function in and relevant to company mission and policy, and

- it must have a specific **Time** horizon.

Objectives should eventually lead to action. To ensure this result, responsibility for the achievement thereof should be allocated (Van Veijeren, 1994:59). For every objective, there should be someone who is ultimately **accountable** for both the execution of the strategy to achieve it and the final achievement of the goal. This person fulfils the role of a project leader (or champion) for that particular objective and will provide appropriate leadership to the process so that it reaches maturity within the set time limit. Each objective has only one person who is **accountable** for its execution.

It is equally important to allocate **responsibilities** for aspects of the strategy and achievement of the goal to one or more persons. Generally, the person who carries the accountability for the objective serves as co-ordinator and leader of the person(s) responsible for aspects of it. During the planning process sources who may or will be **consulted** must be clearly identified, as well as people or instances who need to be **informed** of the progress towards the objective or who need to be informed for practical or other reasons.

The process whereby **accountability, responsibility, consultants** and people and places that need to be **informed** is identified, these aspects specifically allocated and a matrix depicting the above is known as the **RACI** process. Drawing up a formal RACI per objective provides a tangible structure to the planning process and facilitates the acceptance of ownership of each objective by everyone involved.

All the processes in the design of a system described so far, namely considering the corporate environment within which it has to function, drawing up a philosophy, vision and mission and identifying critical success factors (see figure 3) are aimed towards **establishing where one wants to end up** with the system: what it hopes to achieve in the end. Having done all that, there should be clarity on what and how we envisage the end of the planning process to be.

Ultimately, the three most basic components of the planning process will be

- **where do we want to be** (objectives);
- **where are we now** (assessment of the current); and
- **how are we going to get there** (strategy).

We have already addressed the first component in the above triad (where we ultimately want to be) and the next step would be to establish what the current situation is. There is a specific process that facilitates that: it is performing a **SWOT analysis** and developing a **QUAD chart**. **SWOT** is an acronym for **Strengths, Weaknesses, Opportunities and Threats**. In designing a system, the external (company) environment – **opportunities and threats** - should be **matched** or **aligned** with the internal, immediate characteristics and resources available – **strengths and weaknesses** (Van Veijeren, 1994:60).

SWOT analysis is a well-known process and if used correctly, a powerful and essential part of correct system building. Its weak point arises from the way in which it is sometimes applied. It is not a means by itself, nor an objective: it is an information gathering and assessment tool with which facts can be grouped in such a way as to serve as the basis from which strategies can be initiated. It can only exhibit its worth if it is used to populate a QUAD chart, from which, in turn, strategies are planned. It serves to accurately establish **the nature, quality and quantity** of the **resources** available to execute the strategies and achieve the objectives with. At the same time it records **lack of resources** and the magnitude of hindrance that will result from it. **Strengths and weaknesses are realities:** these things have already happened and have to be dealt with on an everyday, operational level. **Opportunities and threats are possibilities:** they have not happened but because of the possibility or probability that they might and the extent to which they might influence the system if they do happen, they need to be considered and catered for in the planning process.

There is a particular four-step way in which determination of opportunities and threats are dealt with:

- **Identification** of factors which may be either. The factors are listed as the result of brainstorming.

- **Evaluation** of the listed factors by means of research to ensure the factuality of each. Determining factuality implies the elimination of perceptions and only retaining the factual. Only "unshakeable" facts should remain (Geneen, 1984:78).

- **Distillation** during which the "bottom line" of the research is established and recorded in short summary form (the research is reduced to a factor), and;

- **Ranking** the factors determined as opportunities and threats in order of importance (Argenti,1989:99).

When strengths and weaknesses are contemplated, the same four-step process is followed but a few other aspects should also be borne in mind. A factor is only a strength for a system or a company if it is **relevant** to the particular situation. For instance, marketability of a company's Occupational Health System is not a strength if that company never intends to sell it. **Realism** is another factor to be considered: something may be perceived as a strength by people from inside a business or those intimately involved in developing a system, but unless it has been confirmed by an objective outside evaluation via a recognised process, it remains a perception in the eyes of the people involved. Both strengths and weaknesses should meet the **"3R"** test: to be **relevant**, to be expressed in **relative** terms and to be a **realistic** statement.

Once the above described considerations have been taken into account and the strengths, weaknesses, opportunities and threats to the system that is to be designed have been listed in their final form, a QUAD chart is drawn up using the four elements of the SWOT analysis. This study proposes a slightly modified (and simpler) version of the classic QUAD chart method.

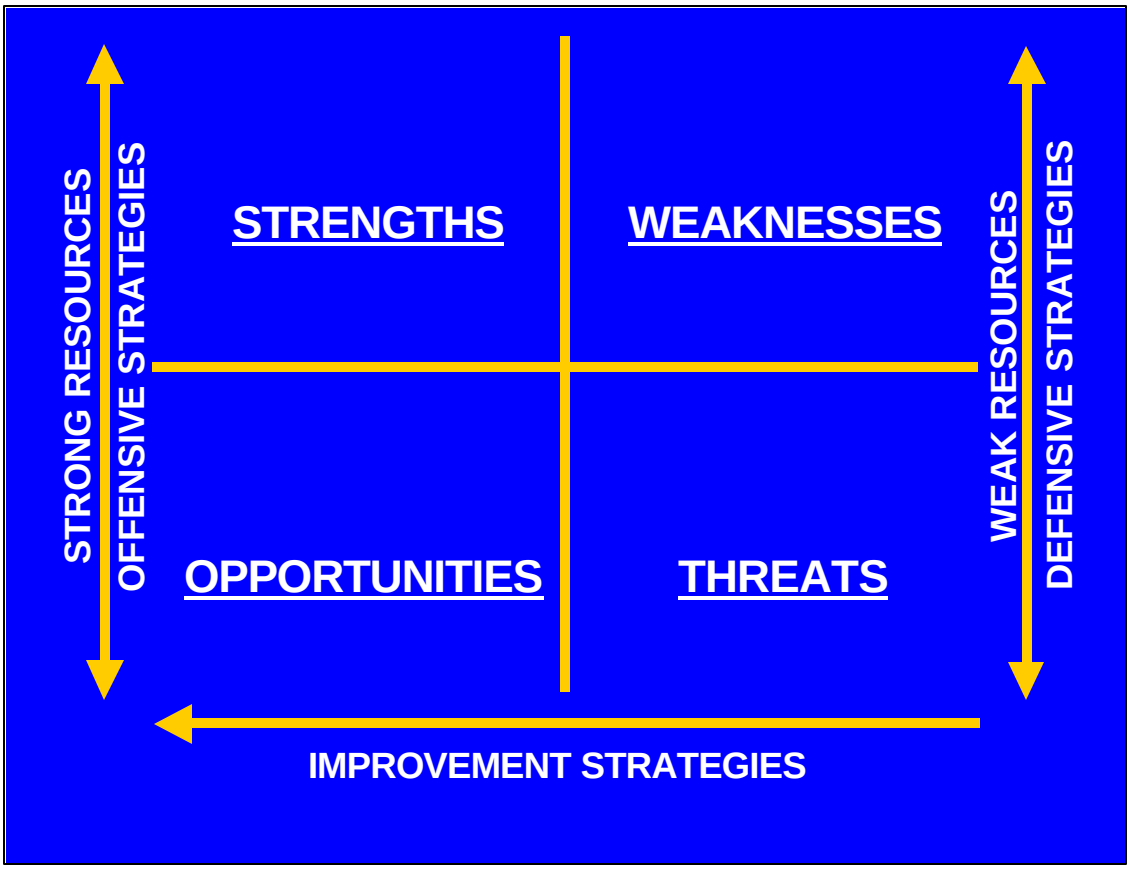
The four elements of the SWOT analysis are entered into the diagram as indicated in the diagram. The factors listed represent the resources, or the lack thereof, that are available to design, build and implement a system with. This stage marks another extremely important point in the planning of the system: **it establishes where we are** and completes the second stage in the triad of factors in the planning process.

Thus, having reached the stage where we have decided where we want to end and where we are now, what remains is to bridge the gap by determining the methods, the **how**, of doing it, in other words, the **strategies**.

The **left** side of the QUAD chart, in a vertical plane, represents the **strong** or **positive** resources, the **right** side the **weak** or **negative** factors. A movement of any of the factors that are listed on the right, to the left, would represent **improvement** to the system**,** a movement of a factor from left to right, **deterioration.**

The QUAD chart positions the development process for determining strategies. Three types of strategies are apparent. The strong resources reflected on the left side of the QUAD chart are factors which must be protected and enhanced. These factors provide a **core competency** to the business, anchor it and provide a future to it by virtue of the opportunities that can be exploited. They can and should be used for **marketing** to the business environment that the system functions within: in the case of an Occupational Health System, to its clients, the company at large and also to the world outside the company's occupational health department and outside the company. Clearly the most significant **attack** strategies must originate in this area, where the strongest competencies can be combined with the best opportunities. Therefore, factors, listed on the left side of the QUAD diagram call for **offensive strategies**.

Figure 5: The Quad Chart



Van Veijeren, 1998:72 figure 3.11

The right half of the QUAD chart represents the vulnerable side of the environment that the system has to function in. The business needs protection from those factors and needs to adopt a pro-active, guarded attitude towards them. They cannot be used for marketing purposes and are not flaunted outside the business unit or outside the company. They prompt the design of **defensive strategies.**

In order to change weaknesses into strengths and threats into opportunities, factors listed at the right side of the QUAD chart, should be addressed on the

longer term by strategies to move them to the left on the chart, or by **improvement strategies.**

It is important to understand the true nature of a strategy. **It is a plan.** It proposes a method of getting from A to B, or from where one is to where one wants to go to. Whereas an objective states **WHAT** to achieve, a strategy specifies **HOW** it is to be achieved (Morobe, 2000:38-40).

A strategy is a plan that provides a method for getting from where you are to where you want to be. Grouping the **outcome** of relevant objectives together presents us with a **critical success factor.** Grouping the **workings** of relevant objectives together presents us with a **strategy.** Thus, a single strategy can have multiple objectives As in the case of objectives, strategies exist on multiple levels in an organisation but the **difference** and **relation** between the two concepts should not be confused, the primary point of distinction being in the specificity of each. Since a strategy is a higher-level concept than an objective, it is not as specific as to have a champion, key performance indicators or accountabilities and responsibilities allocated to individuals. Those are characteristics of an objective. A strategy indicates **direction** and **method** along which an objective can be achieved.

After objectives have been set and strategies adopted, it remains to determine **policies** and **procedures** according to which **actions** will be performed. Policies and procedures function on the same system level and are regulatory measures prescribing the approach to and the specific way in which to perform tasks.

Once this level of system building has been reached, all the organisational structures necessary to accommodate the operational system are present. It indicates the completion of the planning stage for the strategic concepts

from which the **operational system** stems. It also marks the end of the top-down design approach: both the following operational and support systems are designed horizontally.

The specific architecture of the operational Occupational Health System that this study suggests is the subject of Chapter 5 where it will be discussed in detail.

Like the operational system, supporting systems to it are designed on the same level. The operational system is supported by three systems.

The three systems are:

- an **auditing** system;
- a system whereby **research** is done; and
- an **education and training** system.

Both the supporting systems as well as the whole Occupational Health System should constantly be subject to continual improvement, which should also be contained in a structured and conscious process as described in Deming's **Continuous Improvement** system.

The whole system design process, as described in paragraph 2.2.2, depends firmly on the **co-ordination** thereof and will only be as effective as the standard of co-ordination.

The **efficiency** and **standard** of the system design process depends on the **co-ordination** thereof. Correct co-ordination of the whole process of system design can only be achieved by the right leadership and management. System building must be approached **holistically.** A system must intrinsically know "where it comes from". If the strategic

concepts of system design (see figure 4) are not borne in mind at all times it results in a number of operational systems with poor **strategic fit** to the total Occupational Health System and to the larger environment wherein it has to function. Without the correct sequence of events, as described, neglect of the strategic concepts and with the emphasis limited to the operational system, the resulting situation is rather like the story of the team of engineers who were building a highway through a forest. Everybody performed his or her job and there was some progress, although nobody knew or understood exactly why the highway had to be built and nobody gave the circumstances surrounding the situation any thought. Everybody was concerned with the concrete **"how"** and nobody with the more philosophical **"why".** Since it was easy and effective, everybody went through the motions of performing their tasks in a clinical, business-like way. It required no difficult thought, only easy physical actions. Everybody was happily ploughing forth in a vacuum, building a highway for the sake of building, until one day when one of them, considered to be an inconsiderate troublemaker, climbed into a tall tree from where he could see for miles ahead. This vision enabled him to yell down, in alarm: **"Stop! This is the wrong forest!"** but the builders replied: **"Shut up, we're making progress"** and continued.

The three supporting systems, the concept of continual improvement and the co-ordination or management aspects are not discussed further at this stage because these issues are addressed in some detail in Chapters 3 and 5.

2.2.3 Work- and information flow

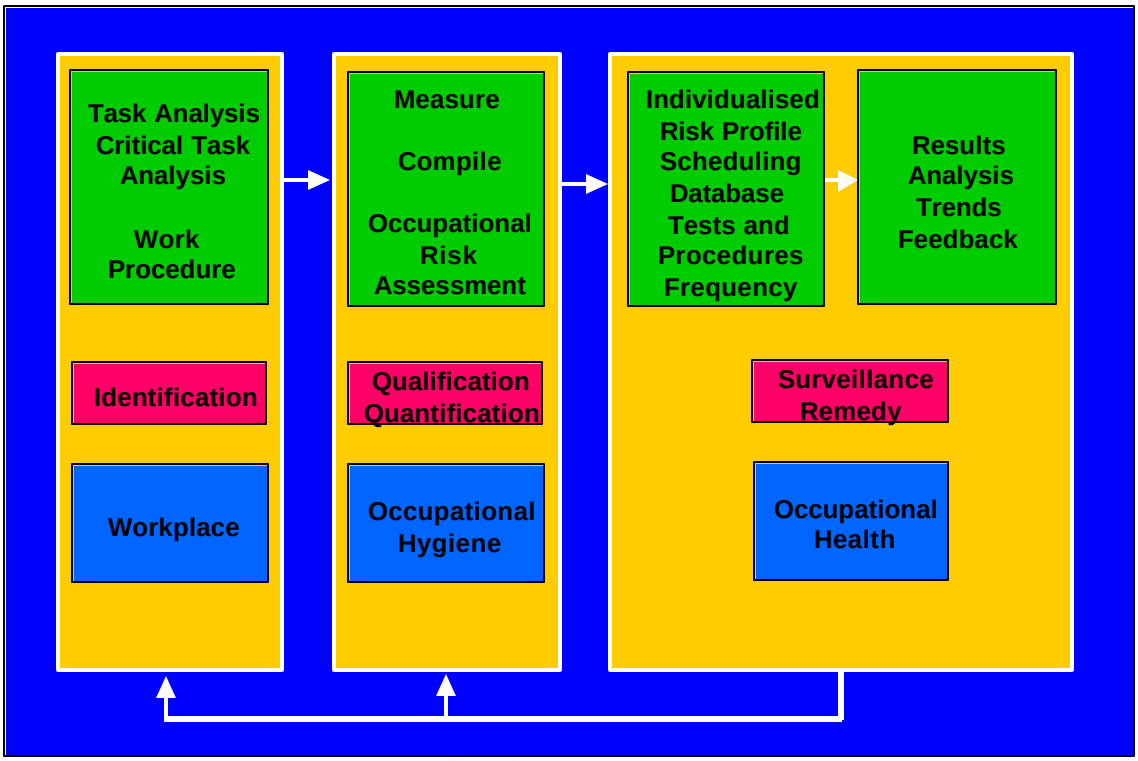
On the most basic approach level to occupational health, it is essential to fully understand the relationship between Occupational Medicine and Occupational Hygiene.

Occupational Medicine + Occupational Hygiene = Occupational Health.

This is how the field of study of occupational health is put together. It must at all times be the basic point of departure when the **management structure** of these areas is determined and when an Occupational Health System is designed. The two areas of occupational medicine and occupational hygiene are so dependent upon each other that they derive their **right of existence from each other** and neither can hope to function remotely effectively if they don't interact correctly. If this most basic principle is not borne in mind at all times, excellence in occupational health cannot be reached (Labuschagne, 1998, De Villiers, 1997, Schoeman 1997-2000, De Beer, 1996-2000).

There is a definite way in which information must flow through an Occupational Health System. This is also valid for tasks that are aimed at gathering information. If the chronology and nature of work- and information flow is not correct, it will affect not only the maximum effect that could be achieved but the basic accuracy of it as well.

Figure 6: Task Analysis Health Pathway



The entire preventative aspect of occupational health, being the core interest of the field, begins at the workplace with the action of **task analysis.** Task analysis is an integral part of good business practice and thus common to all industries. It involves the systematic recording of **all** tasks that are performed within a business unit. All aspects of the tasks are noted, such as tools and equipment involved, duration of the task, the frequency at which it is performed, the immediate environment in which the task is normally performed, all dangers inherent to the task and all exposures to chemical, physical and biological factors. These aspects are analysed and **work procedures** written from them. The work procedures prescribe correct execution of the tasks so as to ensure quality and safety thereof. **Task analysis is primarily the duty of the people in the workplace and NOT of the occupational hygienists** (Farnell, 2000, Labuschagne,1999)**.** The

reason for this is obvious: nobody knows the processes found in the workplace better than the people who design, perform and control them. It is advisable that hygienists be **involved,** in an **advisory** capacity, in the process of task analysis so as to be able to give advice on aspects that should be included in work procedures. Task analysis cannot primarily be done by occupational hygienists.

A distinction is often made between task analysis and **critical task analysis.** The question is: **critical to what or whom?** The process or worker health? When is a task critical? This study proposes that it is just a matter of degree or a **shift in emphasis** and that critical tasks should in any case be identified from a comprehensive list of tasks. The criteria employed in deciding between critical and non-critical tasks are not defined and in cases where arbitrary criteria were used to make the distinction, the workplace and occupational hygiene may, and probably have, different bases for their criteria. Likewise, for occupational hygiene to concentrate on or give so-called critical tasks preference in their work methods (a sentiment often expressed) constitutes a dangerous misperception.

All stressors that a worker may be exposed to in his or her workplace must be considered in order to compile a **risk profile**. If the occupational hygiene department considers only critical tasks at first, later to also consider the other tasks, it seems that the whole exercise would have to be repeated. If only the critical tasks are considered, risk profiling would be inaccurate because it does not take the stressors exposed to during non-critical tasks into consideration. The only right way is to consider **all tasks**, which implies that all tasks must be analysed.

Rather than attempting to classify tasks, it is more important to decide what will be considered as a "task". For the purposes of this study a **task** will de

defined as **an action or set of actions that flow from or has a direct bearing on the work process.**

Once task analysis and the compiling of work procedures have been completed the occupational hygienists obtains all the information gathered in the process. From an occupational hygiene perspective, it is raw data.

The purpose of task analysis is to IDENTIFY stressors.

Stressors are identified and grouped into one of **five main categories:**

- **physical;**
- **chemical;**
- **biological;**
- **ergonomic;** and
- **psycho-social.**

Processing the data into information involves **qualifying** and **quantifying** the stressors identified. This step is performed by considering the inherent **characteristics** of the stressors and by **measuring. QUANTIFYING and QUALIFYING identified stressors is done by Occupational Hygiene.**

The employee's duration and intensity of exposure to the stressors is determined by measuring the **concentration** at or **degree** to which the individual stressor is present. This is multiplied by the **frequency** and **duration** of exposure and the product provides the **dosage,** which represents the **total exposure** that the employee is exposed to. The dosage is in turn multiplied by the harm potential of the stressor, often represented by the letter **K** and the product so obtained provides the likely **effect** that the stressor will have on a person.

From the data mentioned above, a generic, **occupational risk exposure profile** can be determined. Stressors per work area are divided into **hazards** and **risks.** The difference between the two is that

- a hazard is a stressor that is present to such a degree, whether by virtue of its concentration, duration of exposure or inherent toxicity or danger, that there is a **possibility** of it affecting human health adversely, while

- a risk is a stressor that is present to such a degree that it has the **probability** of adversely affecting human health.

Having reached that stage, Occupational Hygiene exercises a control function by communicating back to the workplace any **deviations** from the statutory and acceptable environmental stressor levels. They **suggest remedial steps** of an engineering, task design or protective equipment nature only, to the workplace and remain involved by continually **monitoring** the situation as far as the implementation of remedial actions is concerned. Throughout the process they remain **advisory** only because they have no executive authority or legal standing in the situation. Occupational Hygiene passes all information obtained through the processes described above, to **Occupational Medicine.** It is important to note that occupational medicine is dependent on occupational hygiene to provide it with information before it starts functioning. The ultimate efficiency of occupational medicine and also of occupational health will depend on the quality of information that occupational hygiene passes on to it.

Occupational medicine uses the information to compile a **comprehensive database** – see Chapter 3 - and to develop a **medical surveillance** as well as a **scheduling** system. Occupational medicine also analyses the **surveillance results,** look for health **trends** and give **feedback** on the

results. These aspects of occupational medicine work are covered elsewhere in this study.

2.2.4 Occupational health data base

It is essential to have a database which, in order to distinguish it from other collections of data in occupational health, will be called the central database. It is a comprehensive compilation of hazards and risks present in the workplace, arranged into a number of relevant categories. The best format for it is to list the data in a **columnar structure**. A wide variety of formats would obviously be possible. The specific format of the suggested example is for groupings of data to be arranged horizontally. See figure 7.

The columns are placed in a particular order in order to facilitate looking up related facts.

- The first group of columns is determined by how the business is divided organisationally into separate **business areas.**

- The next grouping is derived at by dividing all posts that are found in that specific business into **post types.**

- After that stressors classified by Occupational Hygiene as **hazards and risks** for specific areas are listed together with a column stating the year in which the last environmental monitoring was done.

- The following column lists medical conditions and diseases that are incompatible with the hazards and risks of the particular area specified in the columns preceding it.

- It is followed by a column which prioritises the incompatibility of the disease or condition and the stressors mentioned in the preceding columns.

- Taking all the information of the preceding columns into consideration, the medical surveillance tests that are to be performed on the particular group of employees that is dealt with, are reflected.

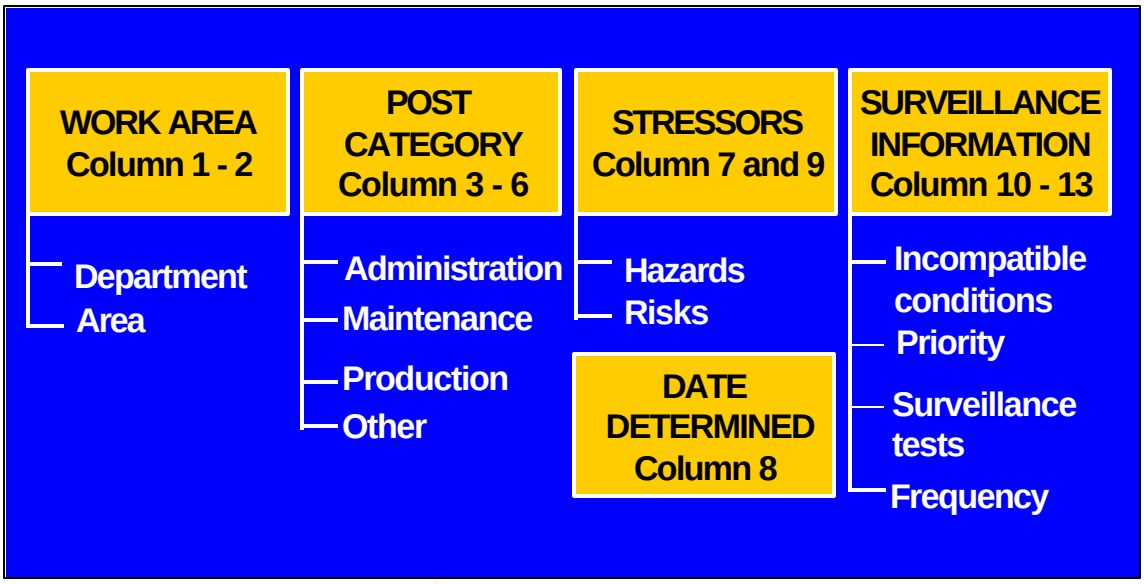
- The last column specifies the frequency at which the tests listed in the previous column have to be done.

Relating to the Sasol Synthetic Fuels plant at Secunda, the database would take the following specific form, numbering the columns from left to right (see figure 6):

- Column 1 contains the department of the business. Sasol Synthetic Fuels is organisationally divided into seventeen main departments into which all activities are grouped. Looking up any specific work area, post category or even any specific post, is most easily achieved if done by referring to the department in which it will occur because a departmental is the largest common denominator in the business.

- Column 2 reflects the Area within the department specified in the preceding column. All departments are divided into a number of Areas. Column 2 therefore narrows down a search.

Figure 7: Central Database



- Columns 3 to 6 contain post categories and list the specific posts in existence, in the area belonging to a particular department, that form the category. Posts are categorised according to the principal similarity of actions and therefore likelihood of exposure to stressors that may be expected from such a group. At Sasol Synthetic Fuels all posts can be divided into four broad groups:

- administrative posts, both in administration departments and areas as well as in production and other areas;

- production posts, denoting all posts connected with the production process and the control thereof;

- maintenance posts, denoting all posts associated with the installation and upkeep of production systems and structures, and

- a group which doesn't fit into the broad classification described above (like drivers), classified under other posts.

- Columns 7 and 9 provide the hazards and risks that the specific post category in a specific area in a department (obtainable from preceding columns) is exposed to. Stressors listed under the heading of hazards and risks are obtained from Occupational Hygiene and are determined from the results of Occupational Hygiene monitoring of the work environment.

- Column 8 gives an indication of when last the environment was monitored, in other words how old the information concerning the determination of hazards and risks, is.

- Column 10 is particularly important and needs thorough consideration and research before it is finalised. The stressors as reflected in the preceding columns are analysed and medical conditions that would constitute an incompatibility with the stressors are listed. Examples would be that claustrophobia is incompatible with a job that requires regular entry into confined spaces or that a person with an arthritic knee would be incompatible with a job that requires a great deal of walking and climbing of ladders.

- Column 11 is equally important. It provides an indication of the degree of incompatibility. In the two cases mentioned above, the claustrophobia may be very mild, so that there is only an incompatibility with entering very small confined spaces or it may be so bad that not even small rooms can be tolerated. Likewise, the arthritis in the employee's knee may be so mild as to only exclude climbing of very high ladders and walking very far, or may be totally debilitating. Incompatibility is always relative. For that reason, a figure of 1 to 5, where 1 constitutes a very

mild and 5 a very severe incompatibility, is quoted for each condition named in column 10. This approach assumes average severity of the condition mentioned and an average degree of stressor level. It can thus be appreciated that the priority figure given in column 11 is not at all absolute and needs the intervention of clinical assessment and decision. The real purpose of column 11 must not be understood as to be the provision of absolute rules. Rather, it is a tool providing guidelines and an indication to nursing staff of conditions and diseases that may, among others, play a role and should particularly be looked for. As soon as an incompatibility, according to the database, is determined, further careful consideration is indicated.

- Column 12 reflects the medical tests that are necessary for an employee to undergo in order for medical staff to accurately determine whether he or she is affected or not, taking into consideration the particular hazards and risks that he or she is exposed to.

- Column 13 states the frequency at which such tests must be done. It complements the information reflected in column 12 and uses the same criteria.

A central database contributes greatly towards structuring the field of occupational health, facilitating the everyday conducting thereof and providing significant legal and practical protection to both the company and the employee.

The central database is used as foundation for designing systems that revolve around the matter of **compatibility** between an employee and his or her work environment. Examples are noted below.

- It is used to compile **post medical specifications.** The central database provides a list of all stressors present for any post in a specific work area and gives an indication of medical conditions and physical characteristics that will not be compatible with the work environment of that post.

- Studying the other workplace conditions mentioned, required physical conditions can likewise be determined. These can be listed as wanted and unwanted medical characteristics for any post in the company. Prospective as well as present incumbents of a post are then evaluated against this information. There is an important legal aspect connected to this approach. If an applicant for a specific post is turned down because incompatibility between his or her physique and the job requirements is established according to an existing, predetermined standard, in other words before the applicant applies for the post, it amounts to legal discrimination on the grounds of the applicant not meeting the requirements for the post (the medical requirements and contra-indications can be included into the advertisement for the post). In the absence of person medical specifications, turning down an applicant for a post may of course still be legal discrimination but if challenged, the burden of proof is much lighter on the company due to the protection that person medical specifications provide.

Apart from determining suitability, based on medical criteria, at **initial placement**, person medical specifications are also used to determine **ongoing** suitability for an employee to his or her post as well as suitability for a new post in the case of **transfers** or **promotions.**

- A medical surveillance program and; a

- scheduling program, taking into consideration the nature and frequency of tests that are to be performed on each employee, is designed from the central database along lines already mentioned.

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2.2.5 Risk profiling

Risk profiling is at the very heart of occupational health. Getting it right represents much of the art of occupational medicine management. Risk profiling will ultimately determine:

- whether an individual can be employed, from a medical point of view;

- what should be done to and for an individual as well as a group in order to enable continual monitoring of and ensuring continual health;

- the company's standpoint on occupational health matters in general is reflected in how it handles the results of risk profiling. This refers to employment policies, in the presence of specific risk profiles in mind, as well as policies on remedial actions and to which extent a company commits itself to respond to risk profiling that identifies unacceptable conditions.

- the company as well as the employee's legal base in the case of conflict.

A risk profile has to be compiled in a specific chronological and systematic way – see figure 8.

Some of the tasks have already been described (see paragraph 2.2.3) and is not repeated in depth.

- Stressors are identified, quantified and qualified per work area and per post category and from that,

- a generic, Occupational Risk Exposure Profile (OREP) is compiled. It is important to understand what exactly an occupational risk exposure profile reflects and to understand its weaknesses. It reflects what the average work risk for a group of persons will be, or what the work risk for the "average person" will be, based on the generic information determined from monitoring work environmental conditions and accepting statutory values like Threshold Limit Values (TLV's) or Occupational Exposure Limits. There are two main problems with this approach:

  - firstly, who is the **"average " person, employee, or worker**? What is its **gender, age, race, habits** and what **diseases** and **conditions** does he or she have? If we use the "average" person as basis for our risk profiling, it implies that we consider the risk profile for the following four employees as to be the same, provided they do the same work in the same area (which is quite possible):

  - a **20 year old white man** who actively participates in sport, is very fit, has no family history of any hereditary conditions, doesn't smoke or drink and has never sustained serious injuries;

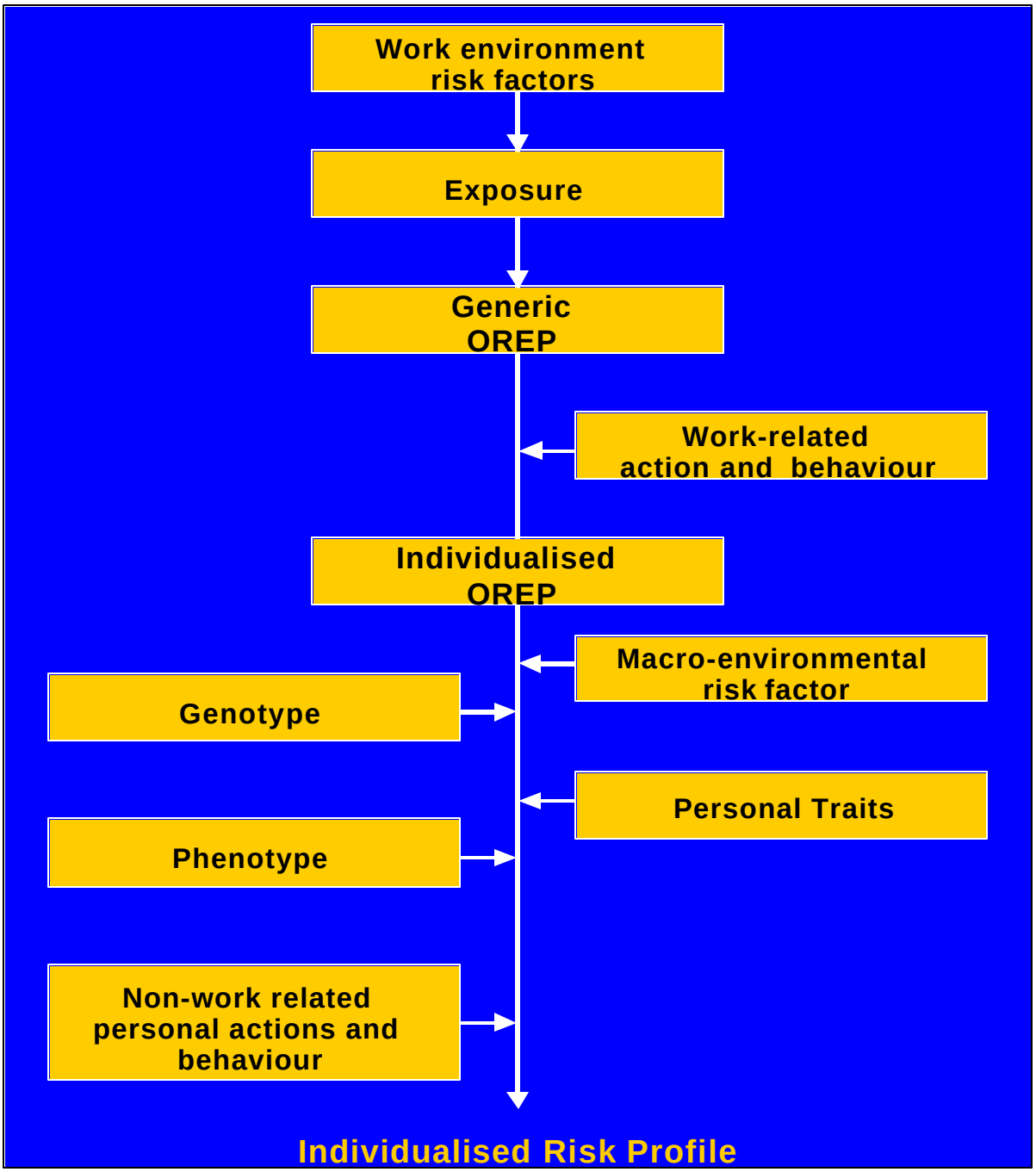
  - a **32 year old pregnant coloured lady** (immediately presenting us with a fifth, very different, patient namely the foetus) with high blood pressure;

  - a **55 year old white man** who has had two heart attacks and open heart surgery, smokes 40 cigarettes per day and drinks half a bottle of liquor per day, and

- a **40 year old Indian man** with severe diabetes who builds model aeroplanes at home, during which activity he inhales glue fumes to a meaningful extent, who lives next to a power station and dislikes wearing the mask prescribed at work as part of protective equipment.

Clearly, these four people cannot even remotely have the same risk profile under the same exposure to stressors.

Figure 8: Risk Profiling



- secondly, the statutory values denoting so called "safe" levels of stressors are increasingly being doubted as being relevant to short-

term exposure only, and giving limited indication of long-term exposure.

It is clear that an Occupational Risk Exposure Profile is at best **broadly indicative** and that substantial **individualisation** has to be effected upon it before any accurate risk profile can be arrived at for an individual. Furthermore, the basic concept of the "average person" will provide no **legal protection** to a company at all. It is the **individual** that will prosecute a company because he or she was exposed to levels of risks that he or she **as an individual** could not tolerate without showing adverse effects. Whether those risk factors were within statutory levels or not, will only (possibly) safeguard a company against charges of criminal negligence but not at all against claims for compensation. The indications are therefore clear: **strive to achieve employee well-being.** Simplistically put, it relates to: **don't let employees get ill.** In order to do that, the risk profile must be individualised.

- Taking **work-related actions and behaviour** into consideration and letting it impact upon the generic occupational risk exposure profile to arrive at an **individualised occupational risk exposure profile** is the first step. This includes habits, likes and dislikes exhibited at work like not wearing the correct protective gear because of discomfort, wearing short sleeves, taking shortcuts through tasks and not following works procedures. The information about these habits must be obtained through two sources: **task observation** must constantly be done and **the employee** must be prompted to supply the information. The actual individualisation, by which is meant **changing** the occupational risk exposure profile, is done by health professionals at occupational medicine.

- Taking a number of other factors into consideration arrives at further individualisation.

- It is not necessary to consider them in any specific chronological order.

- Environmental Management and local authorities monitor the **macro-environmental risk factors**, defined as those that employees are exposed to outside the immediate workplace. The magnitude and nature of these must be obtained and the impact that they might have on the individualised occupational risk exposure profile considered. Changes are effected if necessary.

- The influence of an individual's genotype impacts on his or her risk profile. **Genotype** indicates genetic make-up and would be relevant to risk profiling if an individual has inherited diseases like asthma or eczema. The source of this information is the employee him- or herself.

- The individual's **phenotype** is equally important. It refers to specific conditions present in the individual only, not inherited but unique to the specific individual. The sources of this information are both the employee as well as the result of a physical examination on the employee.

- **Non-work associated personal actions and behaviour** (habits) must also be considered because they can have a significant influence on risk profiling. The most common examples are alcohol consumption and cigarette smoking. The source of this information is the employee him- or herself.

- The individual's **personal traits** are determined and considered. Examples are age, work history (because of its link to total exposure period) and body dimensions (weight, length).

Once the employee's genotypical and phenotypical make-up has been considered together with the non-work related habits, the stressors that he or she is exposed to from the general environment and the personal traits have been included, the total compounding effect that these factors have on the individualised occupational risk exposure profile can be calculated. The objective of the process of risk profiling can be achieved, namely to arrive at a truly **individualised risk profile. The type of medical surveillance and the frequency thereof is ultimately based on the individualised risk profile.**

The compilation of an individualised risk profile for each employee, even if there is a large number of employees, and individualisation of the medical surveillance process, is not only practically possible but also **necessary**. The information to do so is available from the sources mentioned. The process does require **clinical intervention** by knowledgeable professional personnel but the **advantages** of a truly individualised medical surveillance program warrant the supply of such personnel. The individual employee derives vastly more benefits from such an approach, it provides a company with better protection and the work is much more **stimulating to the personnel** who perform the process. There is a stage in the surveillance process of each patient when an actual decision has to be made as to how the generic risk profile with its prescribed tests should be altered to suit the patient better.

It is not a difficult process to execute in practice, provided the homework has been done correctly. Upon arrival of the employee at the medical centre for his or her medical surveillance, that person's **generic risk profile** is already known if the steps described earlier in this study were followed. Tests that should be done are noted in, and read from, the central database. The employee completes a **questionnaire** and undergoes a complete, comprehensive **physical examination.** His or her **results** from previous

surveillance are present in his or her file. **An assessment is made at this point.**

If neither the previous results nor the questionnaire or the results of the physical examination indicate anything out of the ordinary, tests as prescribed in the central database, in other words according to the generic risk profile for the post category that the patient comes, are done. If any deviation to the normal can be illustrated from either of the sources mentioned, changes (of whatever kind) to the tests specified in the central database is suggested by the member of staff who is dealing with the case. These changes are discussed with a doctor who approves, disapproves or changes the tests differently to the suggestion. Suggested changes are **discussed** between the member of the nursing personnel and the doctor, which provides for a valuable and very relevant training opportunity.

2.2.6 Disease – work environment relationship

The purpose of medical surveillance is to ensure ongoing compatibility between the employee and his or her work environment. If incompatibility, in group context, is identified in the form of an adverse health trend that exists in a post category per area, **corrective action** must be instituted. It is done by announcing the health trend to the particular work area's management and by suggesting **measures of improvement.** It then becomes the responsibility of management of the involved area to implement such corrective measures.

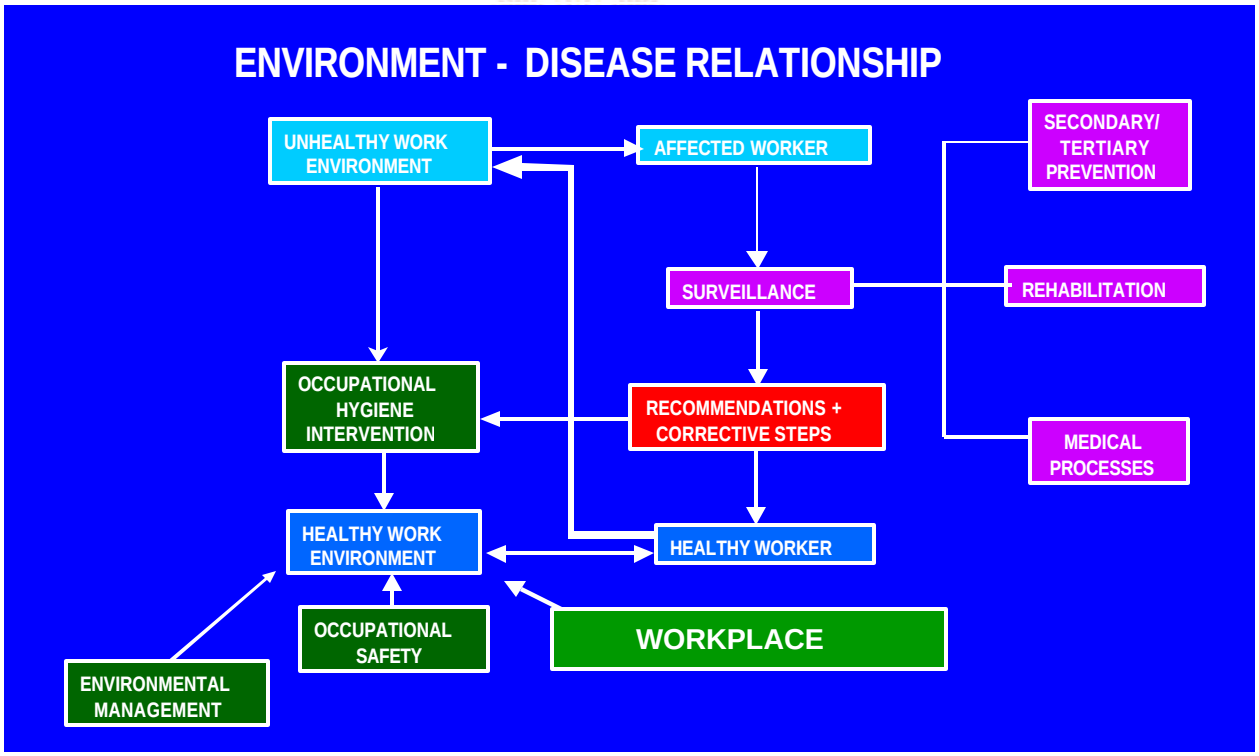
At the same time measures are taken that involve the employees who exhibit the deviations – for instance, they may be provided with additional protective equipment, put on a more frequent surveillance interval or even removed from the work environment.

It is essential that corrective measures be instituted both in the workplace as well as with employees, <u>simultaneously</u>.

If a two-pronged, simultaneous approach is not followed, remedy will not be successful.

If conditions adverse to good health exist in a work area, employees will become **affected** – see figure 9. An effective medical **surveillance** program will identify the trend and the resulting medical intervention will remedy the deviations in the employees, assuming that the changes are still reversible. The result is healthy (healed) employees.

Figure 9: Environment – Disease



If corrective measures have not been taken in the workplace, simultaneous to the steps that were instituted in the employees, the real danger exists that the **healed employees** will return to the **unhealthy work area**, only to be affected again. **Simultaneous remedial actions in both the employees and the work area** remedies both so that employees return to a now safe and healthy area.

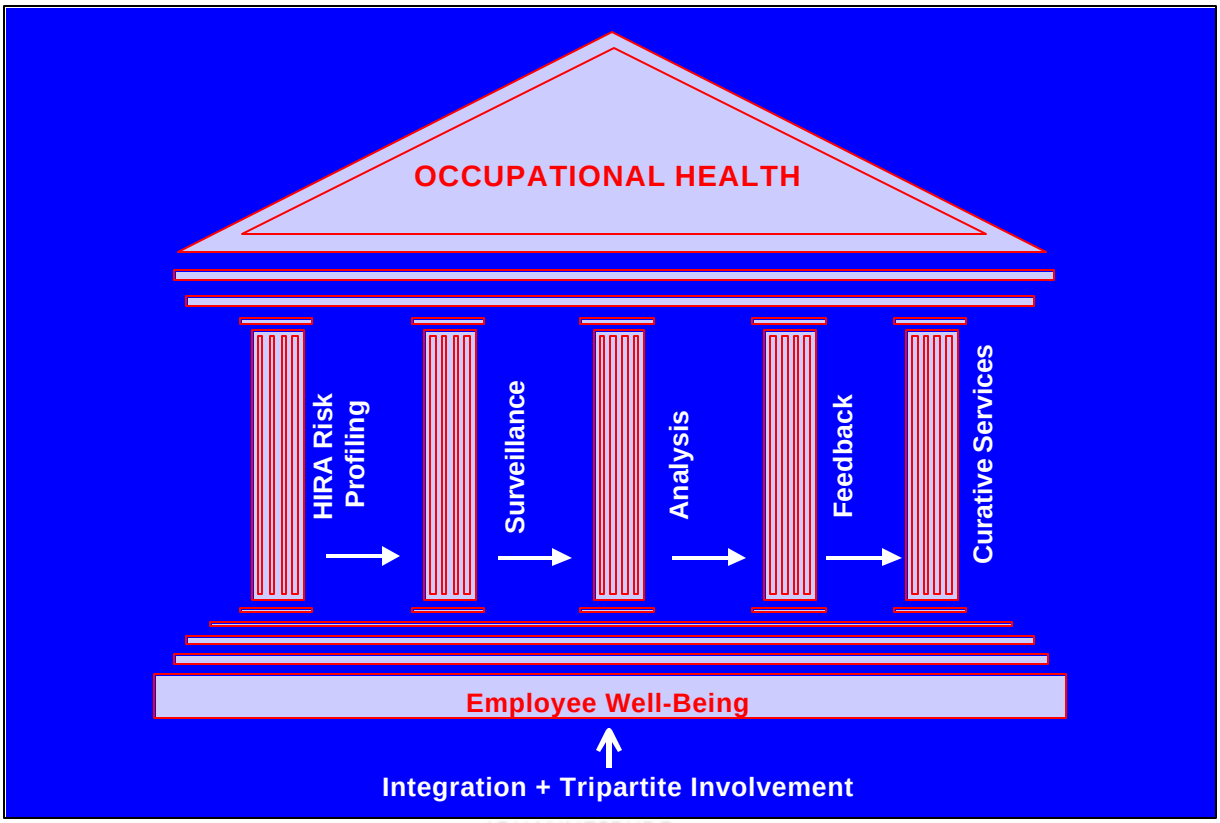
An Occupational Health System should have the capabilities to **identify** the health deviations, **rehabilitate** employees, make **remedial suggestions** to the workplace and to **monitor** the synchronising of repair.

If this process functions effectively, an employee who becomes affected by his or her work area triggers a series of events that prevents an occurrence, both to himself or herself and to other employees. The resultant situation can be depicted by the light blue and green areas in figure 8. A healthy employee works in a healthy work area and continued monitoring of both the employee and the work area by SHE ensures that it stays that way.

2.2.7 The five pillars of everyday occupational health

Everyday, practical occupational health can be looked upon as relying on five central themes for its effective execution.

Figure 10: The Five Pillars Of Occupational Health



Health Identification and Risk Assessment (HIRA) is a term widely used in occupational health. It is referred to as **risk profiling** in this study. As described in paragraph 2.2.5, it is a **twofold** step, done by **workplace personnel** as well as **Occupational Hygiene.** In a substantial number of companies, it is often done by Occupational Hygiene alone. This is wrong, because Occupational Hygiene alone tends not to record all the tasks that are done by the workplace area. If tasks are missed during the **task analysis** (or hazard identification) stage, the stressors inherent to those tasks are obviously not considered in the **medical surveillance** process. This results in employees not being tested for the effects of those stressors. It illustrates yet again that occupational medicine and indeed occupational health**, can only function optimally if the standard of occupational hygiene is at a high level.**

Occupational medicine departments, especially those that have comprehensive and effective medical surveillance programs, often find **adverse health trends** that are **unexpected** in the sense that information from occupational hygiene concerning the stressors that should be present in an area, does not **reflect dangers** that will cause the deviations. In most cases, the reason for this is that **risk profiling** was not done correctly.

In summary, **risk profiling is critical** because the workflow process in occupational health is such that the **quality of the whole preventive process** depends on it.

The other four aspects that constitute the remainder of pillars of the everyday execution of occupational health, namely the **medical surveillance system,** the **analysis** of medical surveillance results, the process where of results of medical surveillance is given and the many aspects that must be considered and practised in the **curative services** part of occupational health, are only mentioned here. These aspects are discussed in detail in Chapter 5.

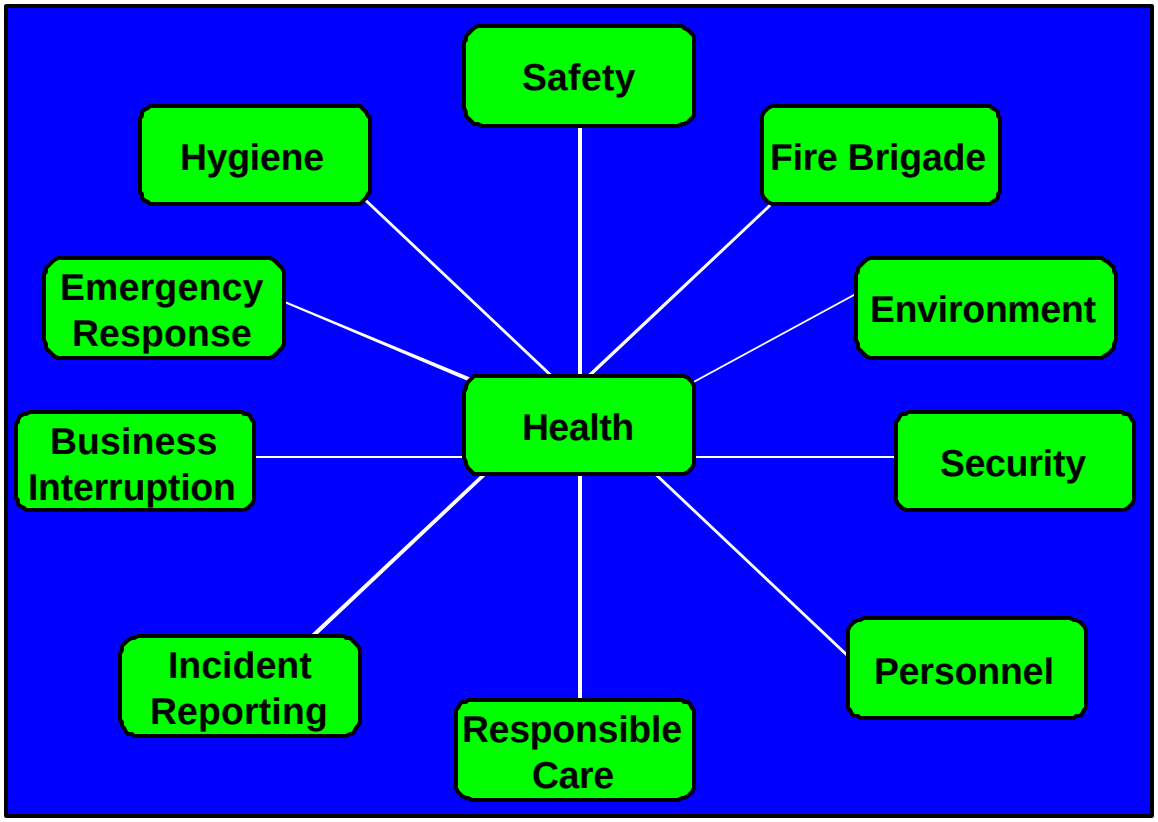
2.2.8 Integration

Occupational health cannot be practised as an isolated discipline. It depends on a number of sister- and related fields to function optimally. It is depicted in figure 11. In the diagram, only the connections between occupational health and the other fields are shown and not the inter-relationship between these fields as well, for purposes of avoiding excessive complexity of the diagram.

It is imperative that any Occupational Health System be designed in such a way that accurate and effective **integration** between occupational health and these fields is **enhanced** and **promoted.** This aspect has to be borne in mind

when operational systems are designed and particularly when the Occupational Health System is **computerised** (see Chapter 5).

Figure 11: Functional integration within safety, health and environment



The most obvious integration is between occupational medicine and occupational hygiene. These two areas are so closely related that, together, they form occupational health. Any Occupational Health System should encompass the needs and demands of both areas and ensure integration between the two.

- All information about workplace monitoring, done by occupational hygiene, must be readily available to occupational medicine, so as to enable them to change the medical surveillance program if necessary;

- the central database must be available to everyone within occupational health. Both occupational hygiene and occupational medicine are responsible for its upkeep;

- information that goes from occupational health to the workplace must be co-ordinated both for content and for chronological order. Content should be cross-checked for accuracy about matters that relate purely to either occupational hygiene or occupational medicine to make sure that neither provides incorrect information that puts the other in a difficult position. Examples are information about the type of environmental monitoring that can be done and about the meaning of biological monitoring results. Chronology is important for correct workflow - see paragraph 2.2.3 - and the education system depends on it - see Chapter 8;

- employees get informed about the stressors that were found in their work area; then

- they get informed about the need for and legal requirement of medical surveillance in general as well as in their work area;

- they get informed in detail about the type and nature of tests that will be done in their case, and how these tests relate to the stressors that they are exposed to;

- scheduling for medical surveillance is done in collaboration with line management; and

- feedback of results of scheduling is done to individuals and groups.

- the rosters of various programs within occupational health must be co-ordinated in order to achieve the chronology described above, like the

occupational hygiene monitoring program with the medical surveillance education program.

There is a lot of commonality between occupational health and the department that does environmental management. An Occupational Health System must make integration between these fields possible and must promote it.

- In the context of occupational health, **occupational hygiene** occupies itself with the employee's **work- or micro-environment.** That, of course, only represents exposure during working hours, more or less a third of a person's life. Environmental management monitors the **non-work-, or macro-environment.** It is obvious that this aspect must be taken into consideration in **risk profiling** - see paragraph 2.2.5 - and that factor alone warrants close collaboration between the two fields.

- The effect, in all its aspects, that a company has on the environment or is likely to have if it expands, is estimated by the process of environmental impact assessments. The effect that the environment, in all its aspects, has on a company or on intended expansion thereof, is estimated by the process of strategic environmental assessment. In both cases the role that health factors play is significant and need to be considered by people who understand the interaction between man and industry, or occupational health.

- **Industrial incidents** that spill over into the surrounding environment mostly have health **implications** connected to them or at best need an input from occupational health concerning the handling of such incidents, which includes **communication** to the community at large.

The reason for integration between occupational health and safety is obvious. The two fields have historically been very close, to such a degree that the distinction has not always been fully maintained and that occupational health has often been submitted to ill-fitting, inappropriate legislation and company procedures that were really designed for safety and that often made it subservient to safety. The development of occupational health has suffered because of this. It is critically important that occupational health be conducted like the totally **independent** discipline that it is and not be prescribed by safety in any way whatsoever. This pertains especially to decisions about employees' ability to work after injury or diseases. Integration is essential but it must be limited to the exchange of information.

An Occupational Health System must integrate with a company's **personnel department.** This interaction is mainly on two matters:

- **Employees' fitness for work.** The decision whether an employee is temporarily or permanently, partly or totally, fit or unfit for work, rests solely and absolutely with professionals at occupational health. These decisions often get challenged by line management and the personnel department, for various reasons, but should not be allowed to influence the outcome thereof. A personnel department handles administrative matters initial appointments, transfers, promotions, resignations and partial or absolute medical disability and all of these issues are subject to medical compatibility with the proposed action.

- **The personnel department's database** containing all employees' details should be accessible to occupational health. It is used to schedule employees for surveillance and to store information about the frequency and results of surveillance.

Occupational health plays a vital role in a company's **emergency response** plan and an Occupational Health System must integrate fully with all departments concerned with this issue. It must also integrate with systems of parties involved in such a plan, outside a company, like the **hospitals, fire brigade** stations and institutions like the **National Defence Force.** Integration between all parties to an emergency response plan should be practically put to the test from time to time, during trial emergencies.

In large companies that have their own, integration with the **fire brigade** is of importance. Since the fire brigade is likely to do evacuation of patients from high structures, confined spaces and unsafe areas, **first aid training** for firemen must **be provided or at least co-ordinated** by occupational health. The fire brigade also plays a major role in the emergency response plan, providing a further link with occupational health.

Most companies have a **business interruption** and/or an **incident reporting system.** Whether it is in the form of an informal notification procedure or a structured formal system which may be computerised or not, occupational health must have access to the information by **feedback** exchanged during this process. Incidents that cause normal business to be disrupted often involve exposure of employees to chemical and other stressors. Exposure may be during, or as a result of, the incident but may also occur during the repair and clearing up stages. If there are no injuries, or involved employees show no immediate reactions, **these incidents are often not associated with the possibility of having adverse health effects** and occupational health does not get to know of them. Occupational health must have access to the reporting process of incidents in order to be able to **initiate** medical action like biological monitoring for the stressors that employees were exposed to, should it be necessary.

An Occupational Health System should also integrate with a company's **security system,** for the same reason as stated above.

2.3 SUMMARY

This chapter contemplates the roots of occupational health by sketching the early history of the field and examining the reasons why it originated. An overview of the changing industrial environment within which it functions is given and the stakeholders in modern occupational health mentioned.

The requirements that stakeholders and the general industrial environment place upon modern occupational health is stated and examined. In addition, methods by which these requirements must be met are reflected upon and suggested. Critical factors that must be included in the practice of occupational health and therefore in any system by which it is conducted, are identified. A systematic approach to the design of a functional occupational health establishment is suggested and the preventative axis of activities, from workplace monitoring to medical surveillance data analysis, discussed.

CHAPTER 3: MODERN OCCUPATIONAL HEALTH – MANAGEMENT ISSUES AND CONCERNS

3.1 INTRODUCTION

Issues and concerns discussed in this chapter impact on the architecture of an Occupational Health System in one of two ways:

- **directly**, so that it must actively be borne in mind and considered in the design of the structure of the system, so as to ensure either inclusion or avoidance of the issue, as the case may be; or

- **indirectly**, by virtue of the effect that implications of the issue may have on the system. Some issues may not have a bearing on the **architecture** of the system at all and may rather have an effect in the **implementation** and/or **maintenance** thereof. Those issues are nevertheless discussed because the scope of this study is intended to stretch **beyond** the aspect of the particular **architecture** of an Occupational Health System: it is also intended to deal with the **approach** towards occupational health as a whole. Some issues involve not only occupational health in isolation but also safety and environmental management, thus making them safety, health and environmental management (SHE) issues, or affect occupational health because it is part of the safety, health and environmental management triad.

In many specific cases and also as a general fact, occupational health cannot function effectively on its own, isolated from the larger safety, health and environmental management milieu within which it finds itself. To address problems, each of the fields in the safety, health and environmental management fold must have its own management system, which must

effectively deal with aspects exclusive to it, and **integrate** correctly and effectively with the other fields (Labuschagne, 1998; Botha, 1999, 2000; Farnell, 1999).

The desired end-product is a powerful set of skills and resources that results from marrying these areas. It is this synergy that must provide a way to deal with the issues and challenges that industry presents, as this Xhosa saying illustrates: **"Alone, you walk faster. Together, you walk further**".

Occupational health, in particular, being a young discipline, still suffers from an acute lack of structure (Draaisma, 1993:15-17). Since structures are generally created to carry out strategies, it would be fair to say that a question mark can be put on the extent and quality of strategies in occupational health.

The issue is that there must be a train of thought and activities from:

- identification of hazards;
- development of strategies; and
- deployment of systems
- to give structure to the whole affair, in this order.

Workers in the field of occupational health realise the need for a **specific, clearly described** and **practically implementable** Occupational Health System that encompasses **strategy** and provides **structure** but have not got a number of existing systems from which they can compile a tailor-made system for their individual industrial setting. Therefore, such a system must be created.

The concern is whether applicable systems can be produced at the rate necessary to cope effectively with the demands. The need for extensive development work particularly in Occupational Health Systems is clear.

This study proposes that this summarises the challenges to each individual field and to the combined safety, health and environmental management-approach: to organise and structure each field individually and collectively, and to do it in the required time frame.

Collective issue = lack of sufficient structure.
Collective concern = can we create structure at the right pace.

Some specific issues are considered.

3.2 OCCUPATIONAL HEALTH AND BUSINESS MANAGEMENT

The **management hierarchy** within a company that occupational health slots into warrants some contemplation. The immediate management of occupational health itself is normally at company **middle management** level. This is also the level at which any **knowledge** about occupational health worth mentioning ends, as is the situation with safety and environmental management**.** In practice, occupational health gets grouped with these two fields and managed at senior business level as safety**, health and environmental management**, commonly known, also internationally, as **SHE.** Occupational health is part of the way in which safety, health and the environmental is managed at top management level. It is the relationship between safety, health and environmental management and **company top management** that is often cause for concern. This relationship will increasingly come under scrutiny in future as safety, health and environmental management matters receive more prominence in future.

In order for the individual fields and safety, health and environmental management collectively to be effective in industry, companies must really

want such systems and must provide active **support** in the development thereof. They must understand what safety, health and environmental management in general and occupational health in particular is all about and what the benefits are that they derive from these areas. **This important step establishes a tangible link between safety, health and environmental management and Business and commits management** (CAIA, 2000).

Strategic management of safety, health and environmental management, in itself, becomes an issue. The future calls for a new type of manager: one with much more skills than just those associated with his or her own specialist subject. **Business knowledge**, specific **management skills** and most importantly, the **vision** to direct and develop his or her own field as well as to **integrate** it with the two sister fields are aspects that are essential.

The management issue involves mainly two levels: management of **individual safety, health and environmental management divisions** and the management of safety**, health and environmental management combined, as a department.**

In both cases, managers must come from the field of safety, health and environmental management and then obtain the necessary management and business skills in addition to their professional expertise, to function at top management level. <u>It cannot be the other way round.</u>

The individual fields have, over the last decade, developed extensively. Much higher demands are placed on them technically and legally, both from workers and from society at large. It has become totally **impossible** for someone from the ranks of **general management** to accumulate enough knowledge about any one field of safety, health and environmental management to be able to meaningfully manage it or contribute to it. This is

even more valid for managers of safety, health and environmental management departments**.**

Safety, health and environmental management as a unit cannot be managed in a **remote control, delegate- everything** style. Someone who has first hand knowledge of the day-to-day practical matters must manage it in a **hands-on** fashion, as **project co-ordinator.** In practice safety, health and environmental management is mostly placed **incorrectly** within the managerial hierarchy of companies. It should be represented at top management level as an **independent, singular unit** and not as part of another portfolio. Grouping safety, health and environmental management under the portfolio of the senior manager who is responsible for support services, together with a few unrelated general management functions, is proof that a company does not **understand**, and thus does not **deal correctly or effectively**, with safety, health and environmental management. The same is true for companies who group safety, health and environmental management with human resources as far as senior management thereof is concerned. They are developed fields in their own right and can be grouped together organisationally because they interlink functionally but these are **fields, not aspects** of an existing field like human resource management or any other. The independence of each of the fields of safety, health and environmental management cannot be compromised and cannot be "watered down" further than grouping them together.

Incorrect positioning of safety, health and environmental management at top management level, which unfortunately is all too common, ensures that **real** knowledge about the **individual fields** of safety, health and environmental management as well as knowledge about the **integration** of safety, health and environmental management is **suppressed and kept at middle management level.** The knowledgeable safety, health and environmental management people report to someone (an engineer, general- or personnel

manager) who does not have sufficient **insight** into these fields to meaningfully represent it at higher company levels. Occupational health (and safety, health and environmental management) is often looked upon as a necessary evil: the reason why it is tolerated is often only to meet **statutory requirements.** It is not seen as part of core business and is looked upon as **wealth consuming** rather than **wealth creating.**

Senior safety, health and environmental management managers who do not have in-depth insight into the field tend to manage safety, health and environmental management in one of two ways: either they realise their lack of knowledge and **shy away from actively managing issues** that should be handled at their level, or, and probably worse, they **interfere** on a daily basis with matters that do not concern them because those matters are **operational, not strategic,** in nature and should not be addressed at their level. Fact is that without correct insight it is impossible to accurately place the level at which matters must be addressed.

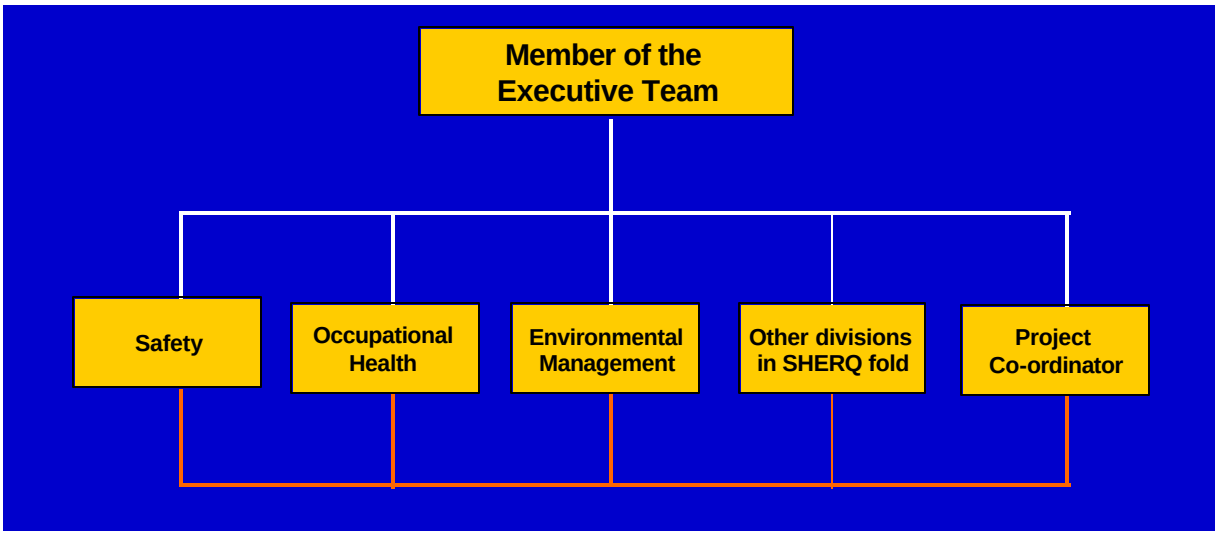
This study suggests that, in order to address this issue effectively, the management hierarchy in a company should accommodate:

- **central co-ordination** within safety, health and environmental management, **<u>or</u>**
- an **additional management level.**

By central co-ordination it is meant that there must be **alignment, chronology arrangement** of tasks and **project management** in general, as opposed to **integration** between safety, health and environmental management. Establishing integration is not the responsibility of the person(s) responsible for co-ordination. A co-ordinating function establishes the facility of a **central point** at which matters that fall within the realm of safety, health and environmental management are **noted.** The idea is not that **everyday,**

field-specific matters would be interfered with, but rather **particular issues** that arise from the course of business, because of legislation or as a result of incidents. The first action is to determine whether it is **primarily** a safety, health or environmental management issue, what other fields are involved, (or what **integration** is needed between the three fields) and what **other role players**, if any, are involved. This step implies that the person accountable for the co-ordinating function must be **knowledgeable** not only in one field of safety, health and environmental management but also have a good grasp of a **bigger picture** that includes **company matters** and a good working knowledge of **all fields of safety, health and environmental management.** Once all stakeholders in the matter at hand are identified, the co-ordinator keeps track of the progress of proceedings, making sure that all aspects are addressed and stakeholders involved. The role of the co-ordinator is that of **project manager, not that of operator.**

Figure 12: Suggested management structure

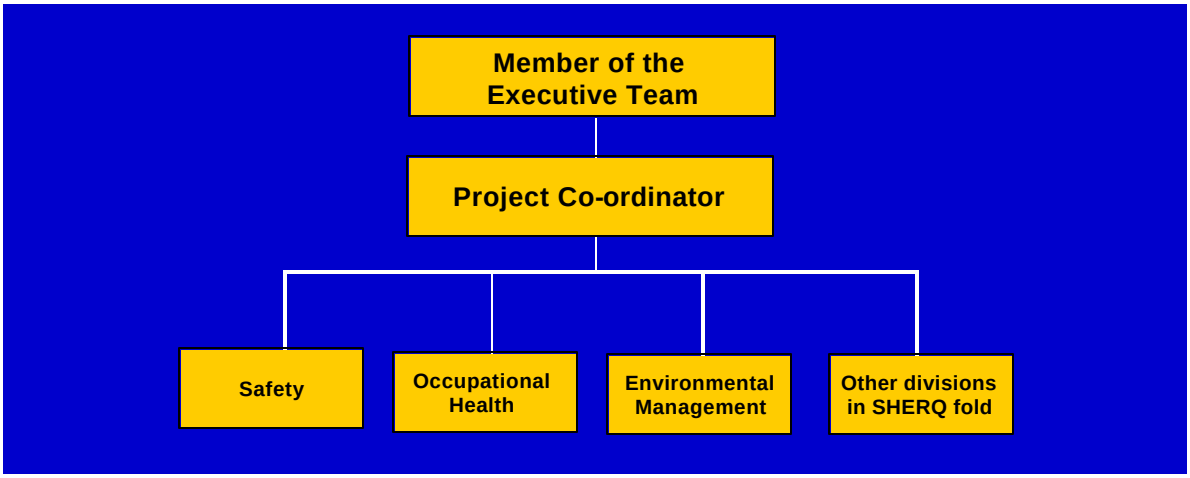


The co-ordinator post is at the same seniority as that of the individual area managers' (see figure 12). He or she has therefore no executive powers over

the area managers who, like him or her, report directly to the safety, health and environmental management manager.

The alternative is to have the area managers of safety, health and environmental management **report** to a co-ordinator (see figure 13). The seniority level of this post is pitched at a level that is **between** that the area managers of safety, health and environmental management and top company level. The requirements for the post are the same as those already described.

Figure 13: Alternative management structure



This is offered as a second and less desirable choice because the co-ordinator should primarily be concerned with **co-ordinating** and not with management.

The presence of a safety, health and environmental management **co-ordinator** does not remove the basic discrepancy between the operating level thereof and its senior management, as described. It does, however, ensure **involvement** of the **correct**, and **all**, stakeholders, in an organised, orderly and co-ordinated way. This enhances quality and makes the lives of practitioners of safety, health and environmental management a lot easier.

The shortage of managers with the right type of credentials to integrate activities within a safety, health and environmental management department and to steer safety, health and environmental management in the right direction is a major concern.

Industry will have to specify what knowledge base is required from individual specialists in the areas of safety, health and environmental management in order for them to function effectively at top management level. **In-house management training** must be provided to middle management safety, health and environmental management managers and **tertiary institutions** must be involved in providing **formal training** tailor-made for this purpose.

3.3 CORPORATE GOVERNANCE

In a big company or corporation with diversified interests and operating methods executed at various sites, business management is often conducted in a decentralised way. Corporate governance denotes central control of issues common to all divisions because of the importance thereof.

Whether there should be corporate governance of occupational health in a large company or corporation is an oft-debated issue. The issue becomes contemporary and increases in relevance in the light of policies of decentralisation in large corporations.

This study proposes that business divisions should not function independently from corporate influence and strongly supports the existence of an active **central safety, health and environmental management centre in a company.** The nature thereof, concerning its scope of activities and control, needs to be contemplated carefully and thoroughly, though. Its main functions

should be **co-ordination** and **determination** of the following aspects of safety, health and environmental management:

- the ***company's*** **philosophy, mission** and **vision** towards safety, health and environmental management;
- formal, company safety, health and environmental management **policies** (Botha, 1999);
- **procedures** to support the company policies;
- provision of **specific, integrated and comprehensive but nevertheless generic safety, health and environmental management systems**, with subsystems and supporting measures;
- minimum **training standards and requirements;**
- **audit systems** and **audits;**
- **active support** and **commitment** to the goals of safety, health and environmental management; and
- **research.**

What management or line authority should such a centre have, if any?
It should be:

- **prescriptive without leaving an option** ("Each centre shall perform the following tasks at the following prescribed way…..") (Farnell, 2000) in connection with statutory requirements. This concerns matters that could potentially cause **embarrassment** to the company if not done correctly.

An example would be the requirement to report all works injuries within 7 days, in the way prescribed by the Compensation Commissioner.

- **prescriptive but leaving options** ("Each centre shall perform the following tasks/have the following systems in place, *at this standard*, in a way applicable and relevant to that centre, as determined by the responsible line manager and relevant to that centre's circumstances") (Farnell, 2000) in connection with matters that the company regards as essential, like proper medicine control and a proper emergency response system.

- **purely advising, as a Centre of Excellence** ("We have determined this as world best practices and think it will be beneficial to incorporate these functions/aspects into your activities, if you agree") (Farnell, 2000) concerning matters that could be value-adding, like discussion forums with unions and computerised systems. **This should be its prime focus and the majority of its functions should fall under this heading.**

Traditionally, corporate governance is **non-prescriptive** *in toto* (OECD, 2000:3). This study suggests the above approach. If the governance centre of a corporation has no **executive** powers at all, the attention that it is going to receive in a large, diversified corporate environmental management that is geographically spread out, is likely to be **negligible** (Labuschagne, 1999). The submission is thus that a central body of governance is beneficial and necessary, but that such a centre should not be left to function in an **unqualified** and **unlimited** way. The climate that it must create and intention that it must exhibit, is important. There is no single model of good corporate governance (OECD, 2000:3). Strategy and governance in business traditionally happen at three levels namely **company, business** (or division) and **functional** levels (Grant, 1998:24). The question is what the scope of each level's field of influence should be. It is essential to clarify both the

levels' and personalities' roles, goals and values and for all role players to understand these factors well, otherwise conflict *will* ensue due to the presence of conflict sources, like:

- differing goals;
- structural imbalances;
- differing values;
- scarce resources;
- ambiguity; and
- lack of co-ordination (Anstey, 1998).

This implies that each level, as a unit, *and* **each role player individually,** have to be entirely open and honest about its or his intentions and divulge these fully. This is critical during its foundation as well as its functioning. Corporate governance is affected by the relationships among participants in the governance system (OECD, 2000:2).

An Occupational Health System should be **aligned** with the corporate approach to safety, health and environmental management matters and should provide for active interaction with it (Tansell, 1999).

3.4 FORMAL OCCUPATIONAL HEALTH TEACHING

Industry, legislatory requirements and **development** in the field of occupational health will have to specify the **level** and **extent of knowledge** required for occupational health to be run effectively. There will have to be close collaboration with **tertiary institutions** to provide appropriately trained manpower to face these challenges. Tertiary institutions should be open to suggestions and **incorporate appropriate management skills** teaching into curriculae of the occupational health related courses that they offer. Cramming courses full of a multitude of purely academic facts has little

practical value. Those facts are in any case largely if not totally available from literature. Diploma and even degree graduates in the field of occupational health find themselves equipped with **knowledge** but with vague ideas about the **approach to** or **operational needs** of occupational health and are unsure of how to, or to what extent to, integrate occupational medicine and occupational hygiene. Tertiary institutions must take a much **wider** view of the subject if they really want to produce occupational health experts. All aspects of occupational health must be addressed specifically and it must be understood that there is a chronological order to them because each aspect flows from the one prior to it.

3.5 MEDIUM AND SMALL SIZED COMPANIES

The general way in which occupational health is practised, or more accurately, not practised, in medium sized and small companies is cause for major concern. Small companies often:

- do not have the **infrastructure** and
- neither the in-house **knowledge** nor
- the **financial** means to practise occupational health.

There are also a substantial number of companies that follow an approach to occupational health that is very or purely **reactive to legal requirements.** Reactive to legal requirements means that, if the Government does not act in the form of **inspections** from the relevant department to ensure that occupational health requirements are met, there is no **reaction** from the company's side to install any such systems. In practice, the number of Government inspectors is quite inadequate to cover all the companies in the industry. **This results in Government concentrating on the large companies** (De Beer, 1996-2000; Schoeman, 1998-2000).

A very real issue in the case of small companies is often that of **cost**. Public and legal demands are often not met because of a lack of sufficient funds to contract the services of instances that can provide these services. Geographical considerations also pose problems: in rural areas, occupational health services are often not available from sources outside companies. Since small companies generally do not have these facilities available in-house, they often are just left undone. The shortage of inspectors, mentioned earlier, aggravates this condition and is, of course, to the **detriment of the worker.** The way in which this aspect involves the practice of occupational health in a large company is that most if not all such companies have a number of small companies (or large companies with a small contingent) doing **contract work** for it. Employees of these companies work **amongst** a big company's employees and more often than not also live on site, very often under less than ideal hygiene conditions. If left unchecked, these small companies that perform contract work can have a detrimental effect on the total health of a workforce through the possibility of **transferring diseases and conditions** and by **creating unhygienic conditions** on site. An Occupational Health System must therefore make specific provision for health **control mechanisms** to address this issue. This must take the form of **minimum requirements for accommodation, food preparation and handling, ablution facilities and applicable periodic health evaluation of their employees.** These measures must form part of the service contract between the two companies.

3.6 AIDS

This issue is too comprehensive to cover in any detail within the restrictions of this dissertation. However, any Occupational Health System should consider, be aware of and allow for the following factors:

- this issue involves everybody. “Even if you are not infected you and your organisation will be affected” (Harebottle, 1999).

- the incidence in the general population in South Africa is widely accepted as currently being **26%** and growing at a rate of **2-3%** per year. It is conservative to say that **20% of the general workforce is HIV positive and expected to rise to 31% by 2010. Some work forces, like those of the mines, have incidences of up to 40%** (Labuschagne et al., 1999:17; Harebottle, 1999; Moore, 1999);

- **depletion of funds** of **Pension Fund schemes** due to the increase in number of workers who are going to leave service early, is a given;

- a similar fate awaits companies’ **Medical Aid Schemes** (Labuschagne et al., 1999:17);

- **training programmes** must be adjusted (Sher, 1999; Harebottle, 1999; Bulala, 1996);

- the often apparently **apathetic attitude of management** and the **lack of planning for the future** impact of AIDS is disconcerting (Sulcas, 1999:14; Labuschagne 1997,1998);

- the principle that companies are not allowed to **discriminate** legally against HIV positive prospective and current personnel is **philanthropic but goes against the grain of business principles** (Labuschagne, 1997,1998; Sher,1999; Evian, 1999);

- **absence from work** and **worker attrition** are likely to increase as people fall ill and take sick leave;

- employees will require **time off to care for sick family members** (Dept of health, 1998; Ernst & Young,1999);

- more employees will want to take **compassionate leave;**

- employees will want **time off to attend funerals** of family members and friends (Bulala, 1996; UNAIDS, 1998; Sher, 1999; Harebottle, 1999);

- **supply** and **cost of labour** will be affected by a reduction in the number of adults in the 20-59 group;

- the workforce **average age** will **drop;**

- because of a younger workforce, **total experience will drop,** resulting in more incidents caused by inexperience;

- higher **recruitment** and **training** costs can be expected; and

- **poverty** in the workforce will **increase** (Dept of Health, 1998).

The destructive effect that AIDS will have on the workforce is often contemplated but an important aspect is often overlooked: the increase in AIDS in the community at large will cause a diminished **market** for the **products** of industry. An estimated 360 000 people have died until mid-1999 of AIDS. The average life expectancy for all South Africans have, in 1 year, from 1998 to 1999, dropped from 64,1 to 54,7 because of AIDS deaths. In addition, the population growth would have been 3,2% without AIDS but actually was 2,0% with AIDS in 1998 and is expected to drop to 0,4% in 2010 if no effective intervention is discovered. If the disease does not shrink the

workforce to the **same degree** as the market for industry's products, the result may well be increased **unemployment** and thus **poverty.**

The opinion is sometimes expressed that **an adult population's sexual habits and norms cannot be changed** (Dept of Health, 1998). It is reasoned that any factor that **decreases** the **incidence** of AIDS must be considered as **effective**. Campaigns concentrating on providing **information** and **education** about AIDS have not yet achieved that anywhere in the world (Sher, 1999). The often-quoted statistic of Uganda must be seen in context: the diminishing AIDS incidence figures are as likely to be the result of an epidemic having taken its full course than propaganda and education having an effect. Sufficient and correct information about AIDS abounds and it is fair to accept that everybody that is going to take note thereof and follow the necessary precautionary measures, have already received the message several times. Companies must bear this fact in mind when planning their anti-AIDS actions. Their actions and funds must be directed correctly:

- **condom dispensing** to employees is essential and should be undertaken and supported by all companies (Dept of Health, 1998; Sher, 1999; UNAIDS, 1997:22);

- involvement into the community at large should include partaking in general **sex education** and specifically **AIDS education** to **very young children.** The goal is to raise a new **generation** with new sexual norms that will be effective against the spread of AIDS. This, of course, represents a somewhat cold-blooded view that the current sexually active generation is partly lost and that one must accept that (Sher, 1999);

- **treatment** and **general care** of employees who suffer from AIDS must be monitored and co-ordinated by their **companies**. If the situation is left unchecked, AIDS sufferers are often treated and looked after by the

medical- and patient care fraternity at **astronomical cost.** With the spread of AIDS, this could deplete **medical aids** and **pension schemes.** Factory supplied facilities where AIDS-sufferers are being **accommodated** and **treated** are starting to emerge and are proving to be effective in curtailing cost. These facilities house employees who have become too ill to work and do not have the necessary support structures in the community to fall back on. The emphasis is on the provision of **food** and **hygienic housing conditions.** Very basic nursing care is provided and **only** medication that is proven to increase the **quality** and **duration** of life is provided. This, together with the fact that medication can be bought in bulk, provides huge **financial** benefits, compared to a situation where independent medical service providers are allowed to prescribe a multitude of medicines and supplements in a somewhat **haphazard** and **uncontrolled** way, at the cost of a company's medical aid. Both the company and the otherwise unattended to and often homeless employee, benefit from this arrangement (Sher, 1999; Evian, 1999; Harebottle, 1999);

- **companies' focus must shift** from primarily providing **information** on how to **avoid getting AIDS** – everybody has received that message by now and is in possession of the necessary knowledge. **The focus should instead turn to coping mechanisms:**

  - **training programmes** must be stepped up, condensed to be of **shorter duration** and **companies must take in more trainees**. Employees of all levels of seniority must be trained to **replace** people of the next level in the hierarchy of the company;

  - companies should **mechanise** optimally and their processes **automated** as far as possible to make them less **labour dependent** and less **labour intensive.** This seemingly cold-blooded approach is nothing less than **realistic** and is essential for a company that wants to

cope with the oncoming onslaught that AIDS is going to have on current business;

- the age at which employees **retire** should be reconsidered and it must be made attractive, through **incentive schemes**, to keep employees in **active service** for **longer** than the currently accepted retirement age of 55. It is going to become increasingly important to keep the expertise of these skilled and experience people within a company, in the light of the faster staff turnover due to AIDS;

- shortage of skilled workers is likely to turn matters into a **job-seekers market** in future. Companies must recruit **aggressively** and make it attractive for its workers to **remain** with the company by various pro-worker schemes; and

- medical aids must compile medicine **protocols** for the treatment of AIDS and only pay out for those medicines, instead of leaving the system open for abuse (Labuschagne et al., 1999).

3.7 TRIPARTITE PARTNERSHIP

Effective occupational health is not something that can be designed and practised by a remote group of people working in this field and then delivered to a target population. For occupational health to achieve its targets and to deliver the desired results, an interaction must take place between three parties namely:

- **workers in the field of occupational health;**
- **company management; and**
- **the workforce.**

The interaction between these three groups must arrive at a **synergy**, the result of which is employee well-being**.** It must take the form of a formally agreed upon **tripartite partnership** in which each of the three parties plays an active and committed role. The specific role and the duties of each of these parties can briefly be described as follows:

3.7.1 Occupational health

Workers in the field of occupational health must ensure that they possess the necessary **knowledge.** This pertains to **basic knowledge** that the field as such demands as well as **specific knowledge** relevant to the particular environmental management within which it functions. This knowledge must be **organised** in an orderly way and must be made **available** to the population that it proposes to serve. This implies that an Occupational Health System must contain:

- specific **training systems for occupational health personnel;**
- **information and education facilities** to convey the necessary information and knowledge to the **population** that it serves; and
- the necessary **backup capabilities** in the form of both **applicable knowledge** and **data bases.**

3.7.2 Company management

Company management fulfils its role in the tripartite partnership by providing the **infrastructure** necessary to achieve employee well-being. This includes:

- **tangible factors** like providing an occupational health department which includes **buildings, equipment and personnel;** and

- **intangible factors** like a **public commitment** towards employee well-being, **active involvement** in health matters and working towards a general company **climate** that is conducive to a healthy work environmental management and healthy work methods.

3.7.3 The workforce

Each worker must be educated up to the point where he or she fully understand that employee well-being is a **condition** or **state of being** that must be achieved by **him- or herself.** A worker must obtain a state of well-being by **using** the **infrastructure** provided by company management and the **knowledge** provided by occupational health. It is only when health becomes an **approach**, a **philosophy**, which is included in everyday actions as a **way of living**, that employee well-being can be achieved. This can ultimately only be done by the **worker** after he or she has associated him- or herself fully with the concept of striving towards health and safety both for him- or herself as well as for all (which includes the community at large).

The tripartite partnership advocated above does not automatically happen: it must be actively pursued and formally structured. An effective Occupational Health System should include this as a goal and should strive towards propagating the concept as well as active implementation of measures to facilitate it. Initiating a permanent forum at regular intervals where all three parties are present and during which health matters are **discussed**, remedial actions decided upon where applicable and where such actions are undertaken **together**, contributes greatly towards the establishment of a firm tripartite partnership.

3.8 NEEDS, WANTS AND DEMANDS

The ultimate goal of occupational health, namely that of employee well-being, is a concept that practitioners of occupational health understand, strive towards and actively pursue. There is no uncertainty about the principle. What is often less clear is to what **extent** this should be pursued: precisely **how far** and explicit moral duty stretches. Considering the business environmental management, the question relates to precisely how far occupational health's **legal** and **executive** mandate extends. Where are the **boundaries** of its obligation?

This study proposes a **model** by which this issue can be addressed (see figure 13). It is discussed in relation to occupational health but the principles would also apply to safety or environmental management**.**

The client base that occupational health services, be it the work force or management of a company, has particular **wants** from time to time. These wants may originate from various sources and/or reasons, for instance:

- from the **work force;**
- from **company management;** or
- from **unions.** This is not necessarily related to a want from the work force that they represent: it may have an external, usually political, origin.

Needs may also emanate:

- as a result of the **normal activities** of occupational health, like **results** from routine surveillance activities, determined health **trends** or determined dangers in the workplace;

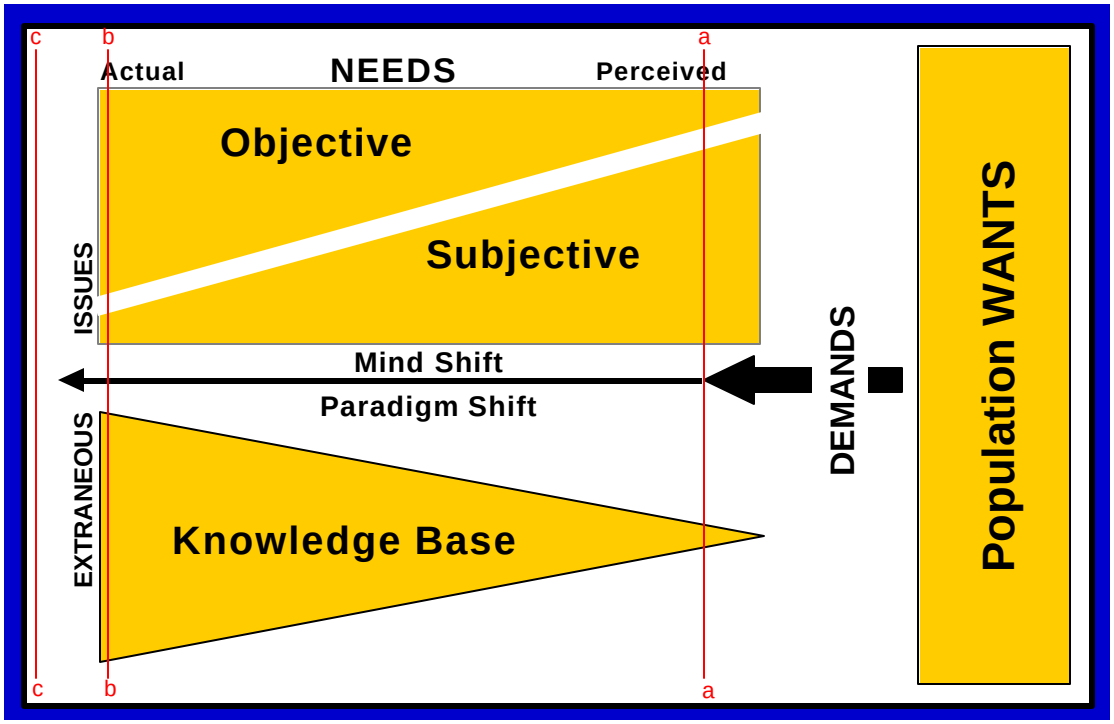
- as the result of **research** into matters that emanated from occupational health activities;

- as the result of **new**, or to comply with **existing legislation**; or

- as the result of new **developments** in the field of occupational health.

The want or need is presented to occupational health in the form of a **demand.** At the time that the want or need is identified and the demand formulated, it is impossible to determine whether the issue is a **real** or **perceived need** for the specific population that it comes from. This is because occupational health receives the demand at a stage when the **knowledge base** within occupational health, concerning that **particular** issue, is **small,** as depicted by line a-a in figure 14. Line a-a moves across the diagram from left to right at right angles to the horizontal axis thereof, and always remains at right angles. If an opinion about the issue is voiced at this stage, the quality of such an opinion would be **low in objectivity** and **high in subjectivity** because it will be based largely on personal perception, not necessarily fact. It is likely to be factually assailable. Ideally no opinions should be expressed and especially no actions initiated at this stage.

Figure 14: Responsibility levels



Occupational health responds to the demand by **broadening its knowledge base** about the issue. It is done via research, integrating with its sister fields, consultation with stakeholders and experts, literature studies and whatever applicable way can be identified. The process continues until resources of knowledge are **exhausted.** Occupational health is then able to voice an opinion which is likely to be **factually correct** and which is **high in objectivity, low in subjectivity.** It is represented by line b-b in figure 14.

Opinions, advice and actions instituted at the point in time represented by line b-b are likely to be **factually** and **legally** correct but do not consider **company policies, company culture, political correctness, financial-, human resources** and **industrial relations implications** or **company image.** These often-abstract considerations, **extraneous** to the core issue, are very often a **minefield** and may be of crucial importance to a company, to

such an extent that they carry the possibility of **changing** the purely factual indications comprehensively.

After the extraneous issues have been considered, a final and **formal** occupational health opinion about the original issue is voiced, which includes suggestions for remedial actions, where applicable. This point in time is represented by the frame of the diagram (figure 14, c-c) which is the **most important part** thereof.

It is crucial that everybody who works in occupational health should understand that the communication resulting from all the actions which followed the initial demand, is a **recommendation.** It must be very clearly distinguished from an **order, an executive decision** and an **admission of responsibility.** It is for the **company** to **accept and implement or to ignore** such recommendations. In practice the recommendations are made to the relevant areas' managers, who, in implementing or ignoring the recommendations, act as formal representatives of the company (De Villiers, 1997).

After occupational health has made whatever recommendation(s), it further remains their duty to **monitor** the situation as far as implementation of necessary remedial steps, as suggested, is concerned. Implementation should be evaluated on the basis of **presence, pace and standard** thereof (De Villiers, 1997; De Beer, 1997). The whole process, from receiving the demand to submitting advice and monitoring follow-up actions, should be clearly and fully **documented** and copies submitted to company senior management.

Regardless of company policy concerning the powers that occupational health may have within the company, it has not got any **legal executive**

powers in areas outside of its own field. Therefore, trying to **enforce** implementation of suggested measures is not to be recommended.

3.9 HEALTH INDEX VERSUS DISABLING INJURIES INDEX

Most companies, if not all, keep track of injuries sustained by their employees while performing their duties. This is especially true for disabling injuries. The data thus accumulated is used for different purposes and is often reflected in the form of a **disabling injuries index** and/or a **disabling injuries incidence rate.** Many companies, especially the larger ones, attach great value to these statistics. More often than not, a low disabling injuries index forms part of **high-level company goals.**

The **criteria** used to determine whether an injury is actually disabling is often open to criticism and in fact, is sometimes stretched to the degree that it becomes **ridiculous.** This enables companies to produce totally **unrealistically low** disabling injuries figures. This study proposes that the only **realistic** guideline by which to judge an injury as being disabling or not is whether an injured employee **is able to resume his or her regular, or similar, duties.** The mere **presence** of an employee at the workplace should not constitute **non-disability** (Halpern, 1996:320).

The practice of **tracking** accurately all injuries, **classifying** injuries into disabling and non-disabling categories and **compiling an index** from these data is commendable and should be encouraged. These actions represent a company's **commitment** towards safety**.** However, great care should be taken with the **interpretation** of a disabling injuries index. **It reflects the ability of a workforce to:**

- **perform tasks in a mechanically safe way;**

- **according to prescribed work procedures; and**

- **in such a way that no apparent physical injury or detrimental effect will result.**

It does **not,** however, reflect on or indicate the **total safety** of the employee whilst he or she is performing the task. Neither does it indicate detrimental side-effects that may only set in **afterwards.** A task that is performed in the correct **mechanical way** provides adequate protection against **physical** and **ergonomical** occupational risks. The **chemical, biological** and **psychosocial** risks that may potentially be present, are **not present in the equation** at all. The validity of this argument is directly related to the **complexity** of the work environmental management.

It can therefore be stated that a Disabling Injuries Index will reflect on the degree to which a **part** of occupational risks have been addressed. It refers to the **immediately apparent** or **overt** risks. The degree to which all other risks has been contained and the measure of the effectiveness thereof must be ascertained **elsewhere**. The process whereby that is ascertained is **medical surveillance.**

A health **index** can be compiled from medical surveillance results by the same method that a Disabling Injuries Index is arrived at. **All job associated conditions, diseases and injuries are considered in the compilation of this index.** All data used to compile a disabling injuries index, is therefore **encompassed** in this process. A health index reflects the **total effect** that the work environmental management has on the employee and ultimately measures **compatibility** between the two. It is not meant to **replace** a disabling injuries index although it is much more comprehensive and provides a much bigger perspective.

The health Index reflects the total well-being of a workforce. It encompasses the disabling injuries index.

In practice, most companies are at fault on two accounts:

- **a health Index is not calculated;** and

- **a disabling injuries index is wrongfully used as an indicator of the well-being of the workforce**

This leads to a situation where company management, in the presence of a favourable disabling injuries index, feels **reassured** and considers the workforce to be in **a good and healthy condition.** In reality, a substantial number of employees may be **severely affected** by work place conditions.

Put differently (and crassly): if a disabling injuries index alone is used as an indicator of workforce well-being, a company may well be patting itself on the back because **no fingers are being flattened by hammers in the workshops, while half of its workforce is dying because of cancer induced by chemicals in the workplace.**

An Occupational Health System should **include** a health Index which is calculated on the basis of **all** work related influences on the workforce. This index should reflect **real-time values** and must be **available** for the perusal of top management at all times. The **importance** of this index should be brought under the attention of company top management.

3.10 AUDIT METHOD

In the approach to different specialist fields of study in safety, health and environmental management there are a number of factors that have to be very clear. **The most important is how to establish the correct standard and method of execution of these fields.** There must be a clear view of the **strategic** and **functional** aspects of these fields before an **operational system** by which to pursue the goals and ideals that are set can be devised. This implies there must be:

- a clear **philosophy**, which is a belief statement;
- a **vision,** which is a perspective on the end result of efforts, flowing from the philosophy; and
- a **mission,** which states the field's reason for existence.

There must be clarity on:

- **critical success factors** that must be achieved in order to realise the goals; and
- specific **strategies** by which to pursue that to achieve this.

These seemingly obvious statements have a few implications. It implies in the first instance that the **knowledge, insight and strategic management capabilities** to accurately determine the strategic and functional factors mentioned must exist and secondly, that such capabilities be used to **contemplate** the fields of safety, health and environmental management. Practitioners often possess the prior but refuse to do the latter. Only then can

an **operational** system, which allows the practice of these fields individually and together in a way that is tailor-made for a specific company, be **constructed.**

Note that the audit system that one adopts or intends to adopt does not play a role at all in determining what the correct operational system should be. **An audit system should never be allowed to become an operating system** (Farnell, 1999; Tansell, 1999).

An audit system is a **generic measure** of standards determined from principles of that specific field that is presented as **guidelines** for **measuring** the **existence** and **degree of implementation** of systems that are suggested to be necessary, on a generic plane, for ensuring a **good or high standard.**

It does not necessarily strive towards and **does not guarantee at all excellence**, and a high degree of compliance suggests compliance to a **general** standard of that field. It is drawn up by persons and processes outside one's company and represents an outlook and ultimately a **standard** that is acceptable to the industry and the wider international community.

An **operating system** is a collection of **guidelines, procedures, rules** and **regulations** that **regulate** and **determine** the way in which the tasks and actions that construe the execution of a field of expertise are performed. It is tailor made and very specific to a particular set of circumstances that are relevant to one working environmental management as found in and for a specific company. It shares the **values** and **approaches**, in principle, with the audit system of the field that both pertain to but it has cardinal differences to it:

- it is **unique** to one business within an industry and as such only relevant to that one business;

- it is designed with **optimal fit** between the company's **needs** and
- deliverables of the available resources in mind;
- it aims at achieving excellence **relevant to the circumstances**, and in doing so may require and set **standards** that either **surpass** or **don't meet** the stipulations of the audit system; and
- it is in no way **bound** or **influenced** by an audit system. It is directed by company needs.

Is an audit system necessary at all? If it is, does it need to be performed by an outside company? Yes, as part of **system and management review**, as a **measuring tool** and as a **safeguard** against **complacency** in relation to the rest of the industry within which one functions**. It is a tool and nothing more.**

There are two factors:

- an **operating system** which strives towards maximum fulfilment of the **needs of a company** whether they be practical, image driven or culture-supporting; and
- an **audit system** by which the operating system is **measured** to ensure attainment of a management and systems standard that would at least **position it favourably** towards the rest of the industry.

How does one choose an audit system? There are two main types of audit systems available with basic differences between them.

The first group follow the **substantive or contextual approach.** This group:

- Largely consists out of **rigid, exhaustive and tedious checklists** of aspects that it suggests should exist in an operating system. Guidelines lack **flexibility** and **adaptability**, which are needed in the analysis of complex and dynamic issues.

- There is a very real possibility that major issues that are **site** or **company specific** are not listed and hence not dealt with in audits.

- Omission of a procedural requirement to scoping leads to **narrow perspective.**

- Often results in **tunnel perspective** of the people developing or writing reports because their goal is to compile reports for the sole purpose of achieving **compliance** to the system rather than to consider the work environment.

- Often results in the fostering of an **erroneous perception** by the proponents and consultants because, and this is the biggest danger of this group of systems, the nature of its composition is conducive towards it being misunderstood and misapplied, resulting in an audit system becoming an operational system. **Compliance to listed issues is perceived to be the ultimate goal.** This **guarantees** the achievement of **average** standards, possibly even **mediocre** for a specific company's circumstances, although this will not be reflected in the auditing results. In fact it will ensure a high **compliance figure** and therefore high total marks for audits. In reality it means aiming at achieving an **average** standard and if adopted as an operational system, that is all that it can ever achieve. Any alignment between company needs and audit system stipulations is **coincidental**. It is therefore **possible**, but not **probable,** that compliance

to the audit system will also represent **best fit** and **excellence** for the company.

- It does not occupy itself with the **outcome, degree of implementation** or **degree** to which concepts **is imbedded.** The mere existence of a factor, system, or measure that it suggests in the workplace is taken as **compliance** and is scored maximally regardless of whether it achieves the effect that it is meant to

In summary this group of auditing systems is **static** and **monodimensional** in nature.

The second group of auditing systems takes a procedural approach. The **Det Norske Veritas (DNV)** system as well as the systems supported and proposed by the **International Standards Organisation (ISO), the British Standards (BS) organisation** and the **International Labour Organisation (ILO)** belong to this group. These systems assume a **modified outcome based approach**, are **less prescriptive and restrictive** and have their emphasis on imbedded **functionalities** and **deliverables** of an operational system. During the auditing process, no points are scored for the mere **presence** of systems and procedures on paper unless the intended end result of such systems and procedures can be proven in the workplace itself. In fact, **evaluation** of systems and procedures only commences once the **presence** of the intended deliverables of such systems can be proven. By their nature, these systems require much more **insight** into the fields of study that they address and allow for considerably more **flexibility.** These systems address the majority of the inadequacies of the substantive approach. This group of auditing systems:

- encourage the **integration** of not only fields within safety, health and environmental management but also wider by virtue of the explicit requirement to consult with **interested and affected parties** in issues;

- require the adoption of the **participating approach;**

- require documentation of **processes and substantive findings** and not only of imaginary systems; and

- require that **processes and reports be reviewed** therefore updated.

The relationship between a company and the institution or company that conducts the auditing system that it supports needs to be contemplated. **They should not be bedfellows.** This is particularly valid if the auditing company has some kind of highly visible indication system of its findings. The custom of displaying very prominently, on large notice boards, how a company rated in terms of a particular audit system, often has **negative implications.** If **favourable**, the grading provides a company with a good **image** and there is a measure of **prestige** associated with it. If **unfavourable**, the grading may prompt a company to consider a **different** audit system.

A too-close relationship between a company and the audit system that it uses leads to a situation where:

- the audit system becomes the operational system;

- complying with the requirements of the audit system becomes a goal in itself, regardless of whether that is best for the company;

- a company is lulled into a **state of complacency** and **content** because it achieves high marks during audits but the real **value** that the exercise adds is not questioned; and

- a company spends weeks in **preparing** for an audit, **scores** impressively, **displays** the results very prominently and considers the whole exercise to be a **success.** Especially in the case of **substantive** audit systems, a large part of the inspected documentation is then put away into cupboards and kept for the next audit. The procedures and systems described in these beautifully prepared but essentially worthless documents are poorly met in everyday business. Nevertheless, the company is content because it has achieved favourable audit results and the auditing company is equally happy because it has retained a client (Labuschagne, 2000:1-3).

An Occupational Health System should stay firmly focused both during its design and its practice on what is most **value-adding** and **applicable** to its **goals** and to the **company.** It must set its **own** standards along those guidelines. As a **separate** decision, it should consider which auditing system it will adopt and also what level of **compliance** to it will be set as goal. There will be aspects of the audit system that are **not** directly applicable to an Occupational Health System that is tailor made for a specific company and compliance to those aspects are then consciously **not** pursued. Likewise, **full compliance** to aspects of the audit system that **are** applicable to the Occupational Health System becomes a goal. In this way, the **level of compliance** and the **marks** or other specific **result** that represents that level is determined (Labuschagne, 2000:4).

3.11 IMPLEMENTATION

The establishment of an Occupational Health System is a process that undergoes the same stages that any system would, from inception to being imbedded into normal everyday practice of the business environment that it is introduced into. The most important stage in the process is also the most difficult to execute and the one that will ultimately determine whether the whole system as such is a success or not. It is that of **implementation. Implementation is the difference between an idea and a system.**

The singularly most important factor in any system is that of implementation.

A concept or process is **implemented** when it is **incorporated** into the everyday practices of the business that it functions within. It is deemed to be **imbedded** when it is **fully incorporated** and **accepted** as an integral part of the business process.

An Occupational Health System contains a number of concepts and processes that may appear foreign to the environment that they are introduced into. The way in which they are **presented** to both the workforce and management of a business is of **critical** importance. **It will determine the success of implementation.**

The Occupational health and Safety Act (Act 85 of 1993) determines that an employer has to do everything in its power, as far as is reasonably practicable, to protect its employees against the dangers of the workplace. An employee has to co-operate by submitting him- or herself to measures that a company institutes towards this end, which includes, amongst other measures, medical surveillance. Employees are therefore **legally bound** to

partake in the actions that form the essence of occupational health namely continual determination of **compatibility** between **worker** and **workplace.** Furthermore, a company can have **internal** rules and regulations that **compel** employees to participate in occupational health processes.

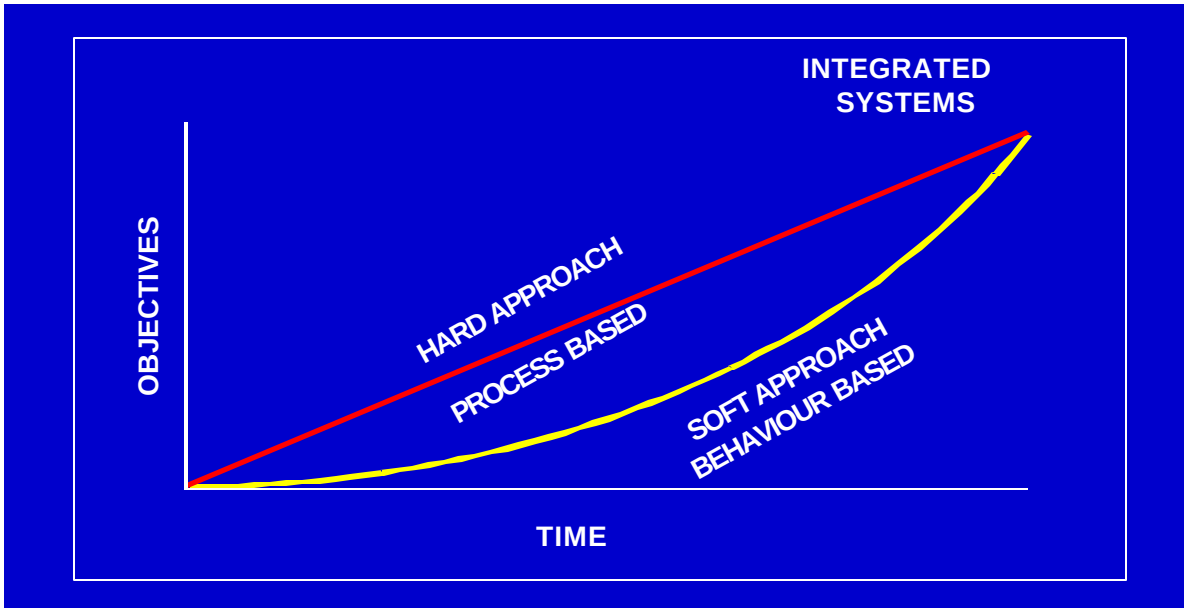
The aim of any good Occupational Health System is, however, not to **enforce** its aims and actions upon the workforce that it serves but rather to **convince** the workforce and to obtain their full **co-operation.** The idea is to establish a **tripartite partnership** (see paragraph 3.6) which cannot be enforced but which must be entered into by all concerned with **full commitment. Enforcement can never be the primary strategy to implement anything in occupational health.**

There is a principle choice between two **methods** of **implementation.** In the majority of cases, the solution lies in a **combination** of the two methods. The difficulty lies in determining accurately the **proportion** of the two methods in relation to each other and when to use each.

3.11.1 The hard approach

Correctly applied, this method involves **concrete** aspects or processes that can be implemented as **parts of a project** and over which there is complete **control.** It involves matters that do not need the moral, intellectual or in any way abstract **support** of either the target population of the system, in this case the employees of a company, or any party that has control of a more senior nature than the implementers over the system, like company management. Resources and means to implement these aspects are under direct control of the system implementers. This approach is **process based** and can be plotted along a **linear time line.**

Figure 15: Implementation approaches



Acknowledgement to Botha, FJ: 2000.

3.11.2 The soft approach

This approach is **behaviour based** as opposed to **process based** and is by definition aimed at human perceptions, ideas and beliefs. Systems and processes to be implemented are dependent on the **support** of the **target population** of the system. This is to a degree, but not totally, under control of the system implementers. The control that they do have is by virtue of the fact that it is primarily the duty of the implementers of a system to convince the target population of the benefits thereof. The target population must be convinced of the advantages of the system and of the need to utilise it maximally in order to achieve a state where the system is imbedded. In many cases and sometimes to a large extent, the target population can be forced to use the system because of legislation, company rules or disciplinary measures. This would, however, constitute a hard approach and is not

recommended. **People cannot be forced to believe in something: they can be convinced.**

A soft approach involves providing relevant and correct information. The information and method of transfer must be open and honest in order to be convincing. It cannot be planned and plotted as a straight line against time. At the beginning of this approach, experience has shown that very little results are achieved. There is a period during which the target population takes note of the information given to it and seems not to respond to it. Once the idea is accepted and the procedures that are advocated followed, there is a logarithmic upward achievement of the processes being implemented.

3.12 SUMMARY

The topics covered in this chapter represent matters that are cause for concern. They hamper proper development, implementation and conducting of the field of study of occupational health. If identified correctly and approached effectively and in partnership with the business environment, they can be avoided or remedied. It also discusses some issues like implementation philosophy and approach, that is often overlooked but is nevertheless essential if occupational health is to achieve maximum efficiency.

CHAPTER 4: THE EVOLUTION OF OCCUPATIONAL HEALTH IN SASOL SYNTHETIC FUELS

4.1 INTRODUCTION

The previous chapters dealt with generic occupational health issues and provide a background to the Occupational Health System that is suggested in this study. Chapter 4 provides a narrower, more focused scope on the study by dealing with the environment surrounding the study and the influence thereof on the planning of the Occupational Health System.

4.2 SASOL LIMITED

Sasol Limited is a large petro-chemical company. It is the largest **fuel-from-coal** company in the world and is internationally recognised as the leader in this field. **It was founded in 1950** as a parastatal organisation. The original Sasol fuel-from-coal project at Sasolburg (about 80 km south from Johannesburg) was based on a combination of the German fixed-bed Fischer-Tropsch, the American Fluidised-bed Fischer-Tropsch and Lurgi Coal Gasification Technologies for the synthetic production of petrol, diesel and other liquid fuels from coal.

Construction of the original Sasolburg plant took place between 1952 and 1955. At that stage it was the world's only **commercial oil-from-coal** project. In 1964 it began to distribute **industrial pipeline gas** to industries in the Johannesburg area. In response to the international oil crises of the mid-1970's, Sasol started the development of **Sasol II, the Secunda Collieries Coal Mines and the town of Secunda.** Sasol II produced its first **synthetic**

oil in 1980. The demand for Sasol's products was such that site work already commenced on the construction on a third synthetic fuels and chemicals plant, to be called **Sasol III** during the final construction phases of Sasol II in 1979. The Sasol III factory was to be built adjacent to the Sasol II factory. This project was completed in 1982. The Sasol II and Sasol III operations have since been **merged** as **Sasol Synthetic Fuels (Pty) Limited.**

Sasol became a private sector company in 1979. It bought the State's 50% shares in Sasol II in 1983 and the 50 % share in Sasol III in July 1991. With this, it stopped being a parastatal in the formal sense of the word. It did, however, still receive state **subsidisation**, based on the strategic importance that Sasol had for South Africa as a whole, in its capacity as provider of petrol, diesel and other liquid fuels.

Political changes in South Africa also saw the curtailment of this subsidisation, which was a process that took place over a period of four years, from 1996 to 1999.

During its first three decades Sasol's primary drive was to produce a range of high-quality synthetic fuels from coal to maximise to South Africa's self sufficiency. Since the mid-1980's the group's emphasis has been **shifting** towards developing **higher-value chemicals** for a wide spectrums of markets. **Chemicals today account for approximately 50 % of Sasol's income.** Over the last two decades, there has been a trend to accelerate the drive into down stream production of higher-value chemicals, among them **fertilisers, mining explosives, solvents, waxes and alpha olefins. Ammonia** is produced in abundance as a co-product of primary coal gasification, and this prompted the company to move into the **fertilisers** market in 1983 and into the mining **explosives** market in 1984. This saw the emergence of **Sasol Fertilisers** and **Sasol Mining Explosives.** The constant drive within Sasol to utilise by-products of the basic coal-to-gas

process maximally was the reason why project work commenced at Secunda for a world-scale **polypropylene** plant. It also emanated in Sasol I undergoing a major **renovation** between 1990 and 1993. As a result of this, the production of synthetic fuels was discontinued at Sasolburg in favour of the increased production of higher-value chemicals and the name of the site at Sasolburg was changed to the Operation Division of **Sasol Chemical Industries Limited.**

Further expansions saw the building of the **Sasol Acrylic Fibres** plant at Durban in 1994 as a joint venture with the state and extensive extensions to the **Alpha Olefins** plant at Secunda. A joint venture with Dow Chemicals saw the opening of the **African Amines** alkylamines plant at New Castle in KwaZulu Natal as well as **Polifin** in partnership with AECI Ltd. Polifin became a solely Sasol owned concern in 2000 and the name changed to **Sasol Polymers.** Its main sites are situated at Sasolburg, Secunda, Umbogintwini and Somerset West.

Sasol Petroleum International (SPI) was found in 1995 to undertake **oil and gas exploration and production** in Africa. A joint venture was also entered into with the Schümann Company in Germany to create **Schümann Sasol International.** This company ventures into **wax manufacturing and marketing.** A further joint venture was joined into the **Merichem** company of Houston, Texas in the United States to form **Merichem-Sasol (Merisol).** This company concentrates on the manufacturing and marketing of **phenolics.**

More recently Sasol has been exploring opportunities to forge joint ventures with appropriate companies for the production of high-quality, environment-friendly fuels from **natural gas.** This resulted in joint ventures with **Qatar General Petroleum Corporation** of Qatar and **Phillips Petroleum Company** of the United States for construction of a **Gas-to-liquids** production facility in Qatar. A project with Chevron Nigeria Limited for a

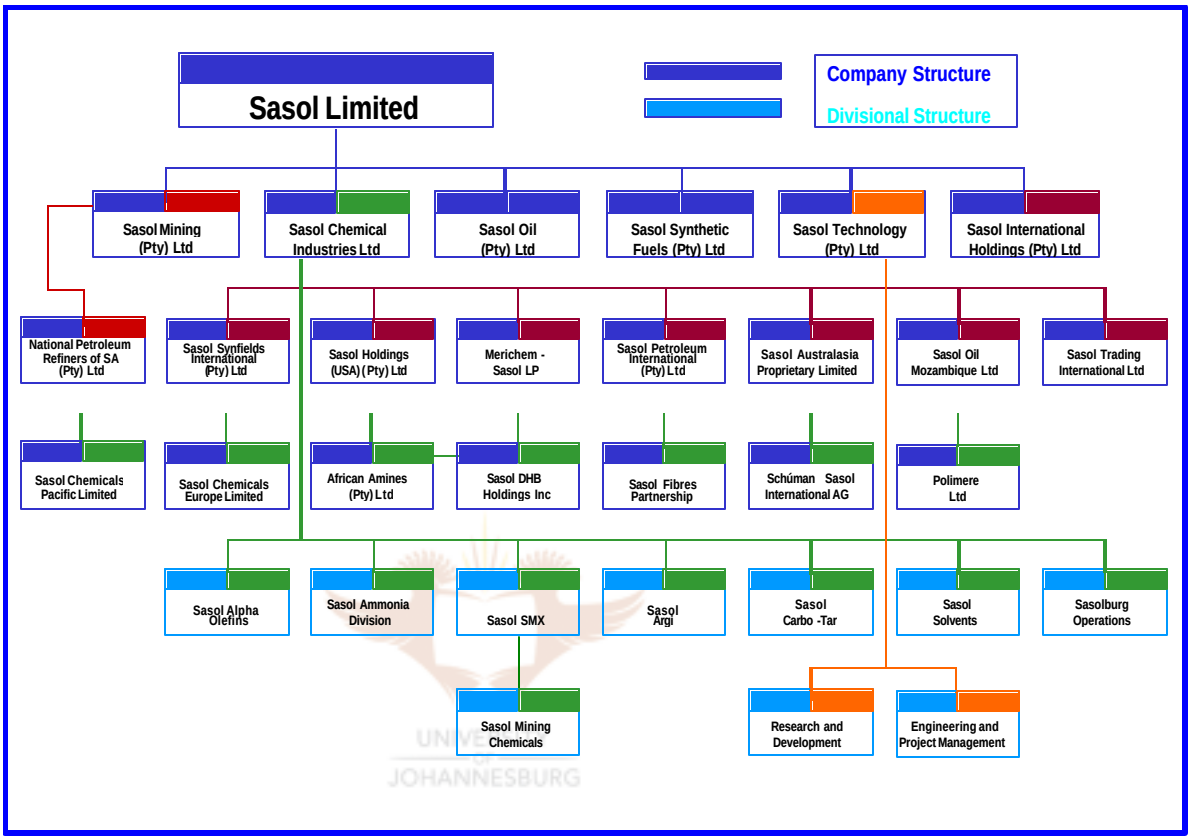
similar type plant situated in Nigeria has just been completed and a project in the North Sea with **Statoil** of Norway whereby a floating Fischer-Tropsch plant, constructed on a supertanker ship is underway. In summary, Sasol Limited comprises eight main operating companies:

- Sasol Mining (Pty) Ltd;
- Sasol Synthetic Fuels (Pty) Ltd;
- Sasol Chemical Industries Ltd;
- Sasol Oil (Pty) Ltd;
- Sasol Polymers Limited;
- Sasol Technology (Pty) Ltd;
- Sasol Petroleum International (Pty) Ltd; and
- Sasol Synfields International (Pty) Ltd.

Sasol is involved in the following companies as a joint-venture partner:

- Sasol Fertilisers, since renamed Sasol Agri;
- Sasol Mining Explosives;
- Schümann Sasol International AG;
- Merichem Sasol (Merisol);
- National Petroleum Refiners of South Africa (Natref);
- Tosas;
- Sasol Fibres; and
- African Amines.

Figure 16: Sasol Company Structure



Sasol Oil markets all liquid and gaseous fuels, lubricants and industrial pipeline gas manufactured by Sasol**. Liquid fuels** include **petrol, diesel, jet fuel, fuel alcohol, illuminating kerosene and fuel oils. Gaseous fuels** include **liquid petroleum gas and pipeline industrial gas.**

Sasol Technology (Pty) Limited (Sastech) comprises the engineering **Research and Development** functions. It provides the necessary co-ordination, technical and projects execution support during the business evaluation and execution phases of the groups many developments and technology related initiatives.

Natref is South Africa's only inland oil refinery. The crude oil piped from Durban at the coast to Natref is procured mostly from the Middle East.

Tosas (Pty) Limited is a joint venture between Sasol and Total South Africa. It modifies and markets **bituminous products** used mostly for road surfacing.

Based on market capitalisation, Sasol is currently South Africa's sixth largest company. It provides jobs to 25 500 people..

4.3 SASOL SYNTHETIC FUELS (PTY) LIMITED

Sasol Synthetic Fuels (Pty) Limited (SSF) the company at which this study was performed, is situated at **Secunda**, approximately 150 km south east of Johannesburg. It is a very large factory, the largest in South Africa, and from an occupational health point of view, certainly the most **complicated** due to the nature of its activities and its products. Divisions other than Sasol Synthetic Fuels also have plants its site such as **Sasol Polymers, Sasol Chemical Industries, Sasol Oil and Sastech.** A service is also rendered to a **Sasol Agri** factory situated 8 km from the main site.

The plant operates on a **24-hour** basis. The workforce consists of **6 500 permanent employees**, **2500-3500 temporary employees** and a large contingent of workers who are employed by various **contractors.** Contract companies do both temporary and permanent work for Sasol. Although these workers are not Sasol employed they share the site with Sasol employees and are bound by the same rules, regulations and legal obligations as Sasol employees. This is dictated both by the law and by Sasol Company policy. A medical service is therefore also provided by them, albeit not to the same degree as for full-time Sasol employees.

All Sasol employees belong to a **medical aid** by virtue of their terms of employment. **Medical practitioners** who practice in the adjoining town of Secunda therefore provide primary health care to employees. A well-equipped and modern hospital well staffed with a full compliment of medical specialists is situated in the immediate area. The hospital both compliments primary health care provision as well as providing a full set of specialist trauma facilities to the company. Medical facilities on site provide a **specialist** occupational health **service only.**

The exact scope of this study is the standard of occupational health at the onset and end of the period mid-1996 to the beginning of 2000: determining the baseline situation, needs analysis, goal setting and strategies adopted to fulfil the set goals. Primary health care provision is outside its scope.

4.4 AT THE BEGINNING

At the beginning, before 1996, no orderly, systematic occupational health was performed at Sasol Synthetic Fuels. A negotiable amount of work was done, consisting of **illumination** and **noise** surveys for parts of the plant and a very limited amount of *ad hoc* medical surveillance. All surveys and surveillance was done **reactively**, after having being requested to perform the tasks by production areas in the plant. The work that was done was not requested on any scientific basis but was based on a vague “feel” by production line management as a result of visual or otherwise detectable factors in the work environment that was associated with possible dangers to health. Examples are smells and noise.

The emphasis of medical activities was on the provision of a **curative** medical service in the form of facilities for and activities aimed at treating **injuries**

sustained in the plant. The **total lack** of any **preventative health care** was particularly obvious and disappointing. This situation was obviously unacceptable, especially given the large number of employees exposed to potentially very harmful effects of the products of a large petro-chemical plant.

Further contemplation of the situation led to the drawing up of a **high-level action plan** by which an Occupational Health System applicable to Sasol Synthetic Fuels would be installed. At this stage, planning did not involve any particulars of the system itself but concentrated on **basic principles** along which such a system would be arrived at. An action plan consisting of three stages was devised:

- **Phase 1,** during which an overall assessment of the existing situation would be made concerning the **level** and **type** of occupational health service as well as of the available **resources** and during which a high-level **needs analysis** would be determined. From this, a **gap analysis** could be made and from that the **extent** of the to-be-installed Occupational Health System could be deducted;
- **Phase 2,** which would accommodate:

  - identification of **goals**;

  - determination of **methods** with which to achieve the identified goals; and

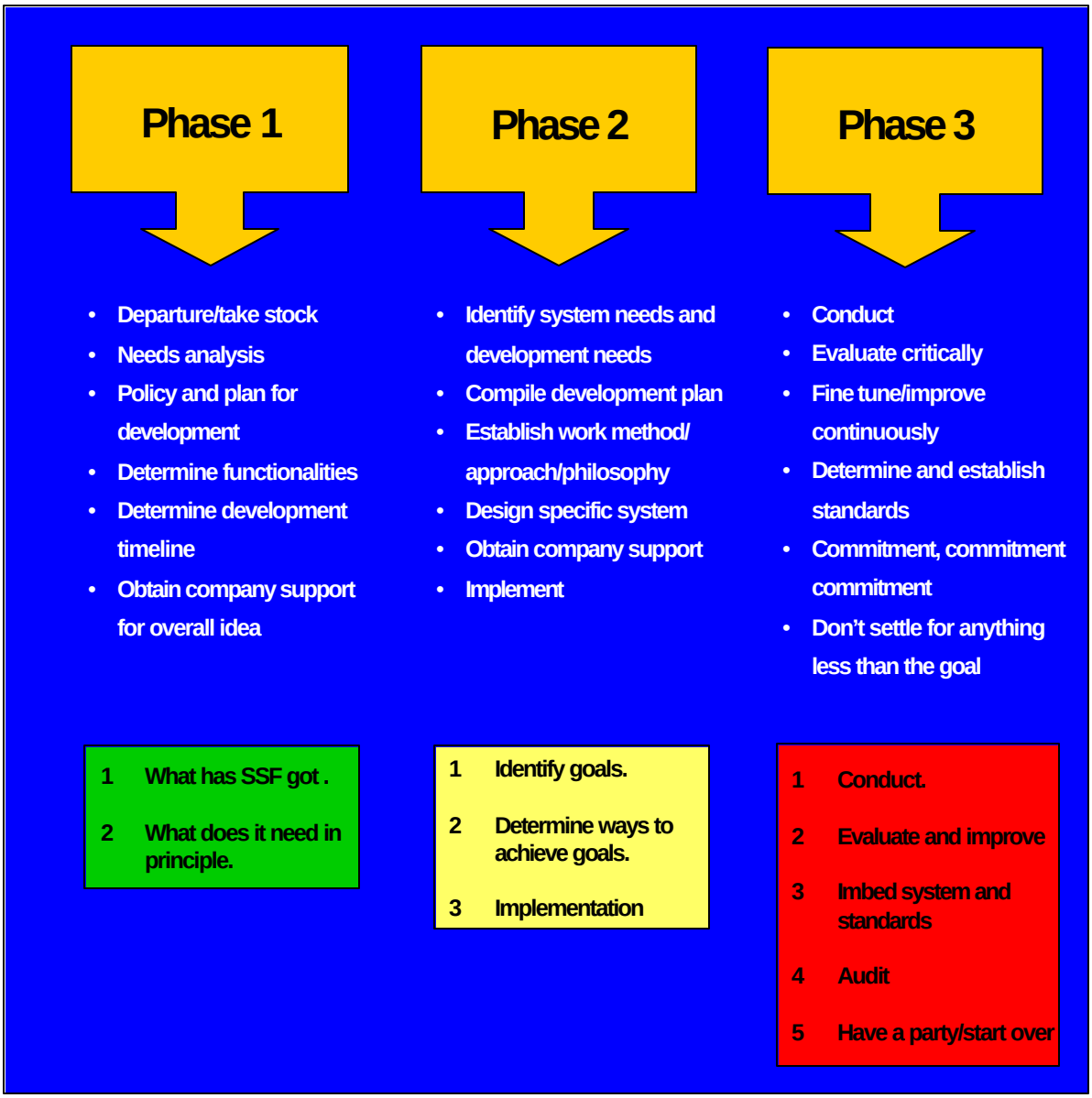
  - **implementation** plans;

- **Phase 3,** which had to encompass the stipulation of a **period** during which:

- the system had to be **conducted**;
- it would be **evaluated** internally and **improvements** implemented;
- a **final** system would be **embedded** into the activities of occupational health, together with the **standards** that the system had to maintain;
- an **external audit** would be requested to test the system by; and
- dependant on the results achieved and the outcome of the audit, to either **have a party** in the case of a successful system or to **start all over again.**

This action plan together with some steps contained in each phase is depicted in Figure 17

Figure 17: Phases of Development



Initial assessment of the situation as a whole revealed that available resources as far as **premises, equipment and personnel** were concerned, were probably **adequate in quantity** to provide a comprehensive occupational health service to the plant. Relatively minor alterations had to be made to the premises. The fundamental reason for the low quality of

occupational health being practised at that stage was, however, a **lack of organisation and management.** The emphasis of activities was very much on the provision of **primary** health **care** services and of providing an **emergency care service** aimed at treating injuries. Primary health care was practised to such a degree that the plant competed with the formal primary health care providers in town.

A document was drawn up during the last part of 1996 that reflected high level vision and mission statements and which set some primary objectives that were imperative to achieve if the standard of occupational health was to improve. It is attached as **Annexure A.** It was presented to Sasol Synthetic Fuels's Executive Management for approval and support and although it only managed to elicit a decidedly lukewarm, non-committal response the absence of objection to it was taken as approval. The steps and commitments as shown in Annexure A were communicated in detail to occupational health staff and the project to start developing an Occupational Health System was started.

The next step was to identify a number of companies that were considered to practice occupational health and Occupational Hygiene at a good or high standard and to visit them. The purpose of these visits would not be to do benchmarking but rather to conduct a **survey** in order to determine possible **future** benchmark partners. The overall idea was to determine established best practices and to incorporate them into the system, thereby saving time and avoiding having to design something that already existed.

Senior people in the fields of occupational health and Occupational Hygiene in South Africa were approached and in collaboration with them, ten companies were identified for this purpose (Schoeman, 1997; Smith 1997; Begley, 1997; De Beer 1997). The companies were:

- company A: a large **metal refining** company in KwaZulu-Natal;
- company B: a large company producing diverse **chemical** products, in the Gauteng area;
- company C: a medium sized plant of a **chemical** company, situated in KwaZulu-Natal;
- company D: a medium sized **mineral extracting** company in KwaZulu-Natal;
- company E: a small company producing **clothing fibres** in the Durban-Pinetown area;
- company F: a very large **vehicle manufacturing** company in Durban;
- company G: two plants belonging to a large **paper products** company, situated in the Durban-Pinetown area;
- company H: a medium sized **diamond mining** company in Namibia;
- company I: a medium sized **petrochemical** company in the Free State; and
- company J: a large **mining** company in Mpumalanga.

The survey was conducted during the latter part of 1997, with the exception of the visit to the diamond mining concern in Namibia which was visited in 1996. Twelve points of particular importance in an Occupational Health System were identified and the survey conducted with evaluation of these points in mind. These twelve points were compiled by the author of this study with

requirements of both a generic and Sasol Synthetic Fuels Occupational Health System in mind and according to the requirements of the field of study of occupational health. They were the **presence** of, degree of **implementation** and **quality** of:

- a **medicine control system** which includes legal compliance and sound business practices as far as stock control is concerned;

- **medical practice principles** by which matters such as patient flow, patient file flow and control, reception, patient referrals, premises outlay and staff application are included;

- an **accounts and reporting system** which includes communication to the Compensation Commissioner;

- **education and training** systems both for production employees and occupational health staff;

- an **Emergency Response** system ;

- **computerisation** of the system in place;

- **post medical specifications** for all posts in the company, individualised;

- a **scheduling system** for medical surveillance of employees stipulating specific intervals and ensuring that **all** employees be monitored;

- a **medical surveillance programme** which systematically and relevantly to risks and hazards, exposes each employee to medical surveillance;

- a health **trends analysis** system which meaningfully turns the data obtained from medical surveillance into information that can be used for strategic purposes;

- **feedback** on surveillance results to individuals, where indicated, to worker groups and work areas and to line as well as senior management; and

- an **Occupational Hygiene** programme. The reason for this is the enormous importance of accurate and complete Hygiene information, that the whole occupational health process is dependant on.

Each of the twelve aspects was scored on a scale of **one to five**, where:

- **five** represents a standard of excellence that we at Sasol Synthetic Fuels **aspire** to;

- **four** represents a situation where there are well established systems and the systems are working well but they don't provide the comprehensiveness, user-friendliness and most importantly, the **standard of excellence** that is needed for a company with the complexity and size of Sasol Synthetic Fuels;

- **three** denotes a state where the necessary actions, at large, are done, and necessary processes are followed, but there is no clearly defined, orderly and imbedded system, that can be audited, by which they are conducted. Therefore no checks and balances to ensure ongoing execution and excellence are possible;

- two **is allocated to a situation where the process or activity is present only in a** rudimentary; **and**

- one **indicates that there is no such function, process or system present.**

The findings are summarised in figure 18.

Figure 18: Results of Survey

	Comp A	Comp B	Comp C	Comp D	Comp E	Comp F	Comp G	Comp H	Comp I	Comp J
Medicine Control System	1	1	1	1	3	1	3	4	2	3
Medical Practice Principles	3	1	1	1	1	1	2	4	2	2
Account and Reporting System	3	3	2	1	1	1	2	2	4	3
Education and Training	2	2	1	1	3	2	1	1	1	4
Emergency Response	1	1	1	1	1	1	1	2	2	3
Computerisation	2	1	1	1	1	2	2	4	1	2
Post Medical Specifications	1	2	1	1	1	1	2	2	1	3
Scheduling System	1	1	1		1	1	1	1	1	3
Medical Surveillance Program	2	1	1	2	1	1	1	1	1	2
Health Trends Analysis	1	1	1	1	1	1	1	1	1	1
Feedback on Surveillance Results	2	2	1	1	1	1	1	1	1	1
Occupational Hygiene Program	3	3	1	3	1	1	1	3	3	1
Percentage of our Objects	36.7	31.7	21.7	25.0	26.7	23.3	30.0	43.3	33.3	46.7

The results of the survey tallied with the author of this study's impression and opinion of the state of occupational health in South Africa, based on his experience as a part-time consultant over a number of years in companies not included in the survey. This is that **the standard of occupational health in South Africa is low** (see Chapter 2).The survey did not identify any centre that could be used as benchmark standard for an Occupational Health System as a whole. Neither did any of the companies that were visited conduct any of the aspects that were concentrated on during the survey, at such a standard that follow-up, organised benchmarking on that aspect was warranted.

If Sasol Synthetic Fuels was to have an Occupational Health System that addressed its particular needs fully, was comprehensive and integrated and was world-class, it had to be developed from anew.

4.5 APPROACH

In designing an Occupational Health System for Sasol Synthetic Fuels, the design followed the system architecture as set out in paragraph 2.2.2, as depicted in figures 3 and 4, fairly strictly. The **specific methodology**, by which the architecture was followed, was deployed in order to support the architectural plan of the design. From the time that it was decided to build an in-house system, a timeframe of **three years** was set. In this period full **design, implementation, fine-tuning and delivery** of an **imbedded** system was to be achieved. Comparing three main stages, namely the stage where the concepts from which the operational system would emerge were contemplated, building of the system proper and design of supporting structures – refer figure 3, Chapter 2, the **first** was the most **time consuming** by far.

The first step in the specific methodology is to determine what **functionalities** the system must have. That, in itself, already forms part of strategy. Referring to the structural make-up of a system, it becomes clear that an approach in the form of a **philosophy, mission and vision** for any system that is to be built, needs to be established first. This must be aligned with **company values** and **-culture** and it must add specific **value** to business process and procedures. It must also be **applicable** to the specific surroundings that the ultimate system must function within and must be directly **related** to the desired outcome of the eventual system.

Methodology on the case of developing an Occupational Health System for Sasol Synthetic Fuels the following points were accepted for forming the **core** of the approach and philosophy towards the system:

- the system had to be **site-specific** and **tailor-made** for the occupational health needs of **Sasol Synthetic Fuels;**

- in addition, it also had to be **generic** to a large degree. The reason for this was to address the possibility of implementing the system elsewhere within the Sasol Group with its many diversified operations. The ultimate system also had to have the possibility of being marketed **outside** the company in the open market.

- The system had to be the **world's best** Occupational Health System or, if that could not be achieved because of some factor beyond our control, had to be comparable to world-best. The **size** of the Sasol Synthetic Fuels plant, the **complexity** and **nature** of its operations and the **multitude** and **type** of hazards and risks inherent in its operation demanded this approach. Two specific approaches were consciously **rejected** and **excluded** in the philosophy:

- ♦ striving for **legal compliance** as the **ultimate** goal. Legal compliance would be an aspect catered for in the system but would not at all be used as **leading** guideline for designing the system or the standard thereof. The standard of the system had to **exceed** legal requirements by a great margin based on the fact that the needs that the system had to address more **numerous** and more **complex** issues than those addressed in legislature; and

- ♦ designing a system aimed at addressing the **minimum requirements** of the business only. This "good enough" approach may well address the best **immediate requirements : financial outlay** fit, but does not strive towards **excellence** and does not have as its prime focus, the concept of adding **value**. Value adding is one of the prime movers of the system that this study proposes.

- The system would maintain a central theme, which is to pursue and ensure **compatibility** between employees and their work environment. The aim would be to ensure employee well-being to the equal benefit of both employees and the company.

- The emphasis of the system would be very strongly towards being **pro-active.** It would aim at **preventing** work-related conditions and diseases rather than have a re-active approach, which is aimed at **treating** such conditions.

A fairly broad **mission** was set for the development and establishment of the system namely that:

- The system had to produce practical information that could be used for **strategic** purposes by both health workers and management of the company;

- all employees had to be able to experience **daily advantages** of working in a company with an Occupational Health System of this kind. This had to be brought about by the fact that the system was **pro-active,** preventing work-related disease or conditions from **developing** rather than only providing benefits to employees who had already sustained conditions and injuries;

- the system would facilitate occupational health to becoming an integral part of the **value adding chain** by virtue of its existence and actions adding more value than the cost to maintain it. It had to facilitate a **paradigm shift,** from the perception of occupational health being considered as an away-from-core-business process providing a **service** to the main stream activities and processes of the company to it being an integral **part of** core business processes.

The **vision** at that stage of development was that, if the general **approach** as set out in the philosophy, as well as the **mission objectives** were followed, Sasol Synthetic Fuels Occupational health department could become a leading centre in occupational health. The end result would at least have to be a **world class** facility.

Literature studies, information on the **Internet**, indicators from **congresses** and **seminars** and **textbooks** are sources which were used to provide inputs concerning **specific aspects** of the system and will be covered in the description and proposal of the system itself. Occupational health **practitioners** had a very limited input into suggestions for the architecture of a system and the same was valid from **company management** members, **worker union representatives** and **academics.** Overall, disappointingly little help was obtained from all these sources together about **system architecture.** This emphasised the

importance of a **pilot study** in the methodology of the development of the system that this study proposes.

The only work method that could practically be followed was a series of development sessions during work time, in a rather haphazard fashion and depending on work pressure. By far the majority of work had to be done after hours. In developing each separate subsystem and aspect of the overall system, the desired deliverables were determined and development was aimed towards achieving that. Systems were implemented as soon as they reached a development stage where a degree of implementation became possible. Alterations were effected as was necessary. The development project as a whole took on a decidedly hands-on format with changes and fine-tuning being done on the move. Already implemented practices were evaluated very critically during work sessions set aside for that purpose and changes were effected immediately, according to the Continuous Improvement principle as described by Deming (Melnyk, 1996:307-321). Practices that worked well and achieved the desired effects were imbedded by training of the staff, drawing up of work procedures and incorporation thereof in the everyday practice of occupational health.

All development work had to be performed within normal operational budget constraints and with the regular staff component. Both factors complicated development work significantly and made it very difficult to adhere to the time frame that was originally set. This problem escalated as more systems were implemented. Towards the end of the project period, it became increasingly difficult to design new subsystems, implement, evaluate and improve, re-implement and imbed while still conducting occupational health on an ongoing basis.

In the absence of existing systems to benchmark against, the total needs analysis for the system that had to be designed had to be done by the designers of the system. This brought a high degree of subjectivity into the equation. It was therefore necessary to have both the situation as it was before any changes were effected upon it as well as the state of affairs after the system had been fully developed and implemented, evaluated by an objective party. After a survey of available audit systems, it was decided to request an audit according to the requirements of the Det Norske Veritas (DNV) audit system, based on the facts that:

- Det Norske Veritas is an internationally recognised business audit system;

- it includes a comprehensive and very stringent occupational health auditing module; and

- the result of an occupational health audit can be measured against the result achieved by leading First World companies.

The Det Norske Veritas audit system was represented in South Africa by a company called International Risk Control Africa (IRCA) and they performed an audit on the Occupational Health System at Sasol Synthetic Fuels as it was, in July 1997. A result of 56% was achieved. The world's foremost occupational health centres achieve audit results of 80% plus with the very best in the mid-80's (Begley, 1997;Schoeman, 1997). This led to an objective: a similar audit to the one conducted in 1997 would be requested in January 2000 and a result of 80% plus would be pursued.

4.6 SUMMARY

Chapter 4 provides a background to the environment that the proposed Occupational Health System must function in by sketching a profile of Sasol and more particularly, Sasol Synthetic Fuels. It describes how the decision to develop an Occupational Health System internally to Sasol Synthetic Fuels came about and states the general approach towards the development process that was decided upon.

CHAPTER 5: AN OCCUPATIONAL HEALTH SYSTEM – CURATIVE

5.1 INTRODUCTION

A **top-to-bottom** approach to the design and establishment of an Occupational Health System is strongly advocated. It consists of systems within systems. An **operational set** of subsystems cannot successfully be designed and implemented unless the **philosophy, mission, vision** and an overall **policy** that it stems from, are very clearly defined (Botha, 1998-2000; Schoeman, 1999; Wood 1997). The requirements and conditions of all three aspects have been covered in paragraph 2.2.2. **Strategies** and **critical success factors** pertain both to the whole system in its entirety as well as to each subsystem where it will be covered in the discussion and statement of objective(s) of each subsystem. Once the extent and specific nature of the operational system has been determined, the **supporting systems** to the operational system can be determined – see figure 3, paragraph 2.2.2. The supporting systems (training, research and auditing) will also be incorporated into the operational set of systems because of the fact that they are aspects that need to be **conducted actively** as opposed to be kept in mind as an **approach.**

The activities within an Occupational Health System can be divided into **four** main categories:

- **curative** actions involving all activities that are aimed at repairing or reversing injuries or conditions that have already occurred. Provision of **emergency medical services** and **treatment** of injuries and conditions resort under this heading. By implication, a totally preventative approach cannot be followed towards this group of activities by virtue of the fact that

they only become applicable once primary preventative measures have already failed and an injury or condition has already occurred. The highest degree of prevention attainable in a curative environment is **relative** and is aimed at **damage containment** rather than damage **avoidance.** The correct treatment and handling of injuries and conditions is therefore essential in order to still pursue a broad philosophy of prevention;

- **preventative** actions aimed at avoiding the occurrence of incidents or circumstances that could lead to detrimental effects on employees. **Identification** of potentially harmful factors in both the workplace and employees at an early stage, and the suggestion and implementation of **remedial** actions to prevent the establishment of **irreversible** harmful effects form the basis of these actions;

- **general management** actions covering "usual business" matters inherent in the process of conducting a business unit. Management of a budget, personnel management, administration and resource maintenance are actions that would resort under this heading, and

- **teaching and training** actions aimed at **familiarising** people in the work environment with the system, **maintaining** and **improving** standards by means of continuous tuition and by marketing both the system and occupational health in general.

The Occupational Health System that this study proposes was developed with the four main groups of activities in mind. The following seventeen systems are suggested to accommodate each group of activities:

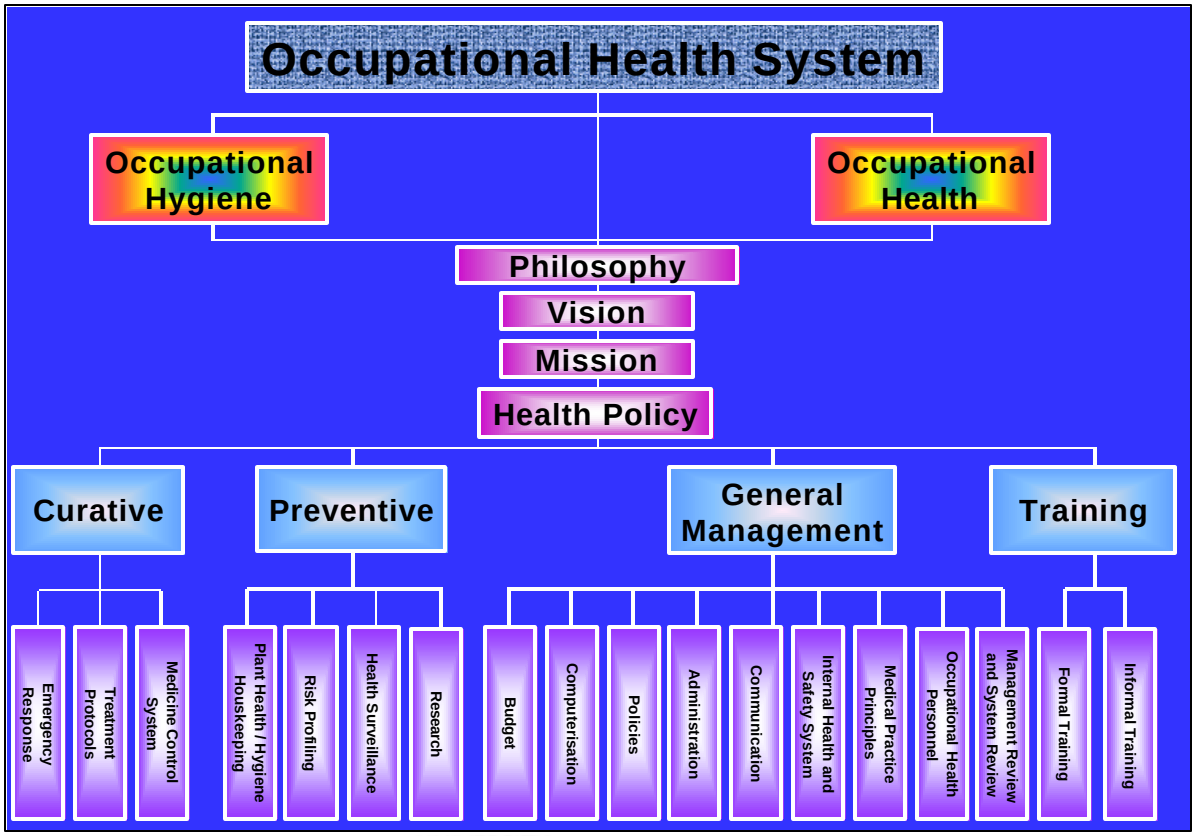
- Curative actions:
  - an emergency response;
  - treatment protocols; and

- medicine control system.

- Preventive actions:
  - a plant health/hygiene housekeeping;
  - risk profiling;
  - health surveillance; and
  - research system.
- General management actions:
  - a budget;
  - computerisation;
  - policies;
  - administration;
  - communication;
  - internal health and safety;
  - medical practice principles;
  - Occupational health personnel; and
  - management and system review system.
- Training actions:
  - formal training; and
  - informal training.

The high-level architecture of the proposed system, as discussed so far, is depicted in figure 19.

Figure 19: Occupational health main systems



Systems are discussed individually in no particular order. Suggested systems aimed at supporting curative actions will be described in Chapter 5, Chapter 6 will deal with systems necessary for preventive actions, general management systems will be described in Chapter 7 and Chapter 8 will cover teaching and training. Although they are discussed separately, most systems described, and certainly the overall system, are dependant upon integration with other systems, both within and outside of the total Occupational Health System.

The nomenclature used in Chapters 5, 6, 7 and 8 for description of the Occupational Health System with its content of other systems, will be derived from numbering the system levels, from top to bottom:

- the overall Occupational Health System will be considered as to be at level 0;

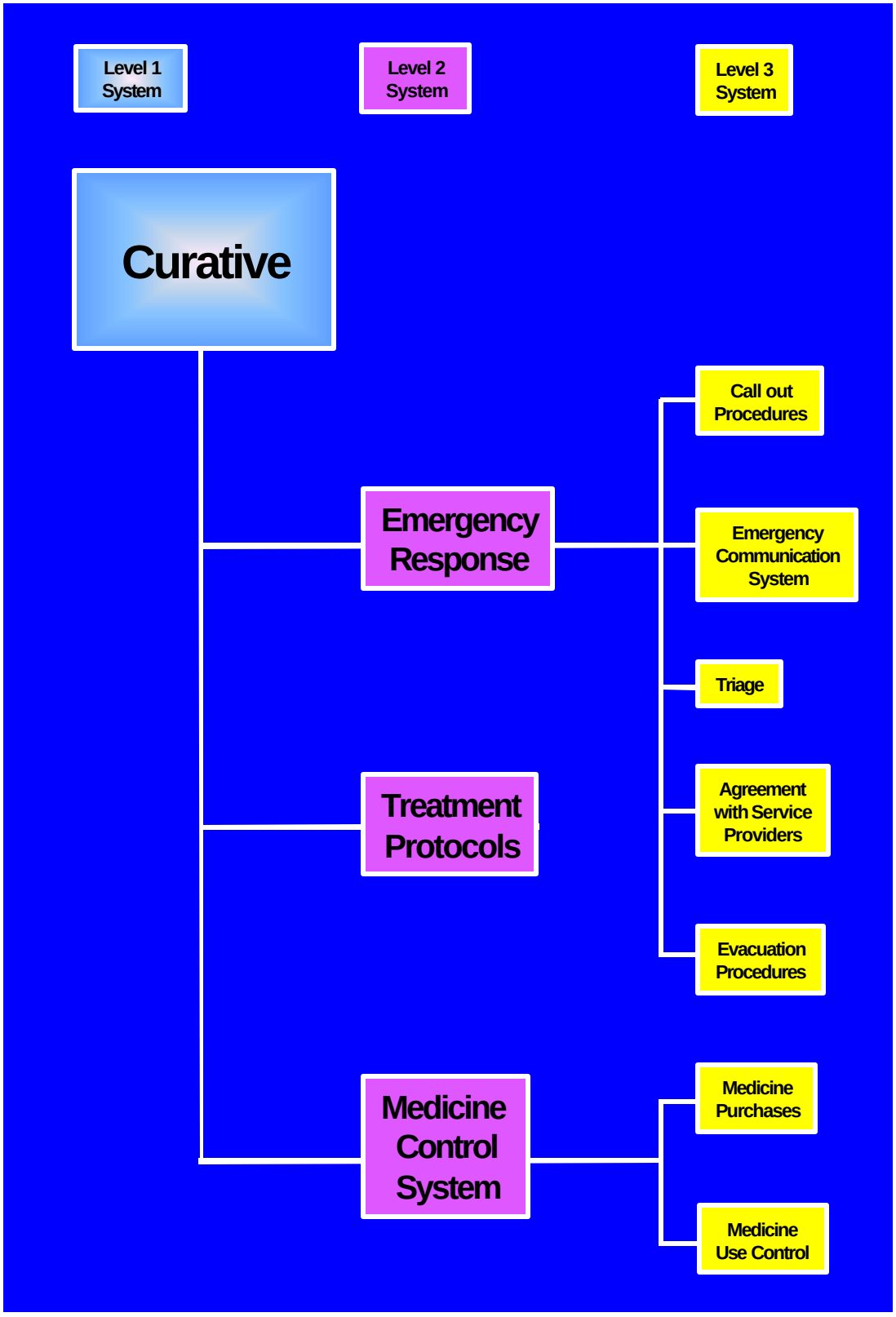
- the four main subsystems that the overall system is divided into, according to the three main groups of activities that they regulate, will be called level 1 systems;

- the systems that each of the level 1 systems consist of are called level 2 systems;
- the systems that level 2 systems consist out of are called level 3 systems; and

- each subsequent set of systems that form a bigger system, is named at a level that is one numerical higher than the collective system which it forms.

The various levels of systems are colour coded.

Figure 20: Curative System



5.2 EMERGENCY RESPONSE SYSTEM

A system according to which an occupational health centre or division of a company **responds** to an **emergency situation.** "Emergency situation" refers to the existence of a set of circumstances that poses a real and substantial **danger** to one or more **individuals**, and/or where injuries have already occurred. The individuals may be employees of the company or not. It also refers to cases where there is a danger of such circumstances **developing**. In addition, it also refers to a set of existing or threatening circumstances where substantial danger to the environment as far as fauna and flora is concerned, may result or where damage has already occurred (Florida Department of Community Affairs, 2001). This study will limit itself to suggestions pertaining to the structure and characteristics of an Emergency Response system that is an integral part of the total occupational health management system. In doing so it will be assumed that the company within which the occupational health department functions will have a **separate** Emergency Response system with which occupational health integrates. It will also be assumed that the company's system includes a singular **control point** which co-ordinates not only **actions** but also **communication** during an emergency situation. If a company has not got an Emergency Response control centre, it is the duty of that company's occupational health department to be instrumental in the founding of such a centre.

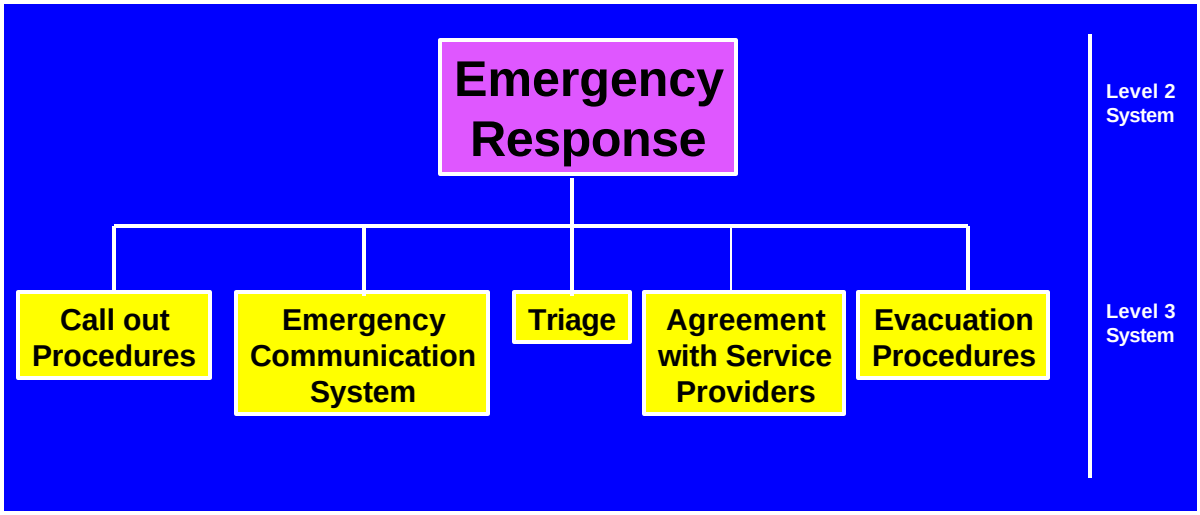
However well planned both occupational health's as well as the company's Emergency Response systems may be, they will not function correctly and efficiently if they are not repeatedly and continually executed and tested during **trial emergency exercises.** Two levels of functioning must be tested during trial emergencies:

- interaction between occupational health**'s** and the **company's** Emergency Response systems; and

- interaction between both Emergency Response systems and people and instances **outside** the company.

Occupational health's total Emergency Response system has five supporting systems, discussed individually.

Figure 21: Emergency Response



5.2.1 Call Out Procedure

The Call Out Procedure encompasses a systematic, orderly and agreed-upon manner in which occupational health's Emergency response is **activated.** It should only be activated by direct communication from the **company's central Emergency Response control point.** If it is left to the employees of a company at large to summon emergency services from occupational health, it results both in blocked communication lines to the occupational health department and surprisingly inaccurate, incomplete and often conflicting

information. The company's emergency response centre communicates a specific minimum amount of pre-determined information regarding the emergency, as known at that stage. The specific nature and content of the information is described in paragraph 5.2.2.

If the size of the plant is such that everybody, especially all occupational health personnel who may have to respond, knows the layout, an accurate description of the particular **part** of the plant is sufficient. If the plant is very large, as in the case of Sasol Synthetic Fuels, **reference points** are necessary. In that case a number of points must be identified throughout the plant according to a **grid** that follows a logical pattern. These points must be very clearly marked by means of brightly coloured signs placed prominently along the access routes to individual areas of the plant. An integral part of any call out procedure is that an employee from the area of the plant that emergency services are called to, should **await** the emergency vehicle either at the **entrance** to the area that it is called out to or at the **emergency point** described earlier. The emergency vehicle is then directed to the particular location where it is needed.

5.2.2 Emergency Communication System

This system dictates the way in which communication will be made and the specific channels along which it will be done under conditions of an emergency situation. It specifies the **route** as well as the **generic content** of communication and must cover all possible **types** and **modes** of communication. There has to be **two distinctly separate modes** of communication:

- communication that takes place only between the **medical centre** and **responding emergency teams from occupational health**. For purposes of ease of explanation, this will be called **Channel A** communication. Cell

phones work well for this purpose. If only one cell phone is available to be taken to the site of the incident and two or more teams respond, the phone stays on the scene and returns with the last team to leave. If another type of communication medium is used, the prerequisite is that **nobody** but the two parties mentioned above should be able to hear communication between them; and

- Occupational health, which includes responding teams, must have access to the **main communication network** used to control the situation. This is normally communication by portable radio. It will be referred to **as Channel B** communication. All communication to and from occupational health on this mode can be heard by anybody who has access to the common communication network.

The reason for the two separate channels of communication will be set out below.

Pertinent points that the emergency communication system should cover are:

- **communication between the company emergency response centre and occupational health:**

  - the type of emergency (for instance a chemical spill or release, fire, mechanical incident like a structure collapsing, vehicle collision, or threatening emergency);

  - the exact location of the emergency;

  - whether there are known injuries or not and if so, whether the number of patients are known; and

- the degree of activation desired from occupational health: to be on standby pending further information or to respond immediately. This information is normally conveyed via Channel B.

Occupational health's emergency response system should specify which member on its staff assumes **control** once communication has been received that activates it. In a well-organised, extensive department it is suggested that the **manager** responsible for **curative services** perform that duty. The point is that someone must **immediately**, by prior arrangement, **take charge** and his or her duties must be clear to everyone. It is mainly that of **co-ordinator** and (only) **spokesman** for occupational health.

- **communication at the site of the incident.** The person in charge is the most senior **fireman.** Upon arrival at the scene of the incident, occupational health personnel **confirm** arrival at the scene to the medical centre (Channel A) and physically position themselves and vehicles under their control at the location indicated by the person in charge of organising traffic. If there is no such person vehicles are provisionally parked out of the main line of traffic movement. They report to the person in charge and follow further orders, including positioning of vehicles and equipment. This happens physically or via Channel B communication. The **only** further communication that occupational health staff initiate on the site of the incident is to notify the person in charge that they are **leaving the site,** stating the reason for doing so (normally to evacuate a patient or patients from the site), and providing further applicable information via Channel B, like the **condition of the patient(s) in layman terms,** exactly how **many** patients there are and exactly **where** they are being transported to. All communication between occupational health personnel and the person in charge of the scene of the incident is aimed at regulating and facilitating affairs **at the scene.** Although the central emergency response centre is

likely to hear these conversations, it should **disregard** it as far as **detail about patients** is concerned. **Formal** information about patient detail is provided by the occupational health **centre** to the **central emergency response centre;**

- **between the occupational health centre and occupational health personnel at the site.** This is done via **Channel A.** The type of communication is different:: since this a line of communication exclusive to occupational health, the condition of the patient(s) is described in **medical** terms and the patient(s) is or are **coded** along international triage rules, as described in paragraph 5.2.3. All further **essential** communication between the occupational health centre and the responding team(s) are made on Channel A. If it is decided to transport a patient or patients directly from the incident site to anywhere but the occupational health centre, like a hospital, arrangements for such an action is made by the occupational health **centre** and confirmation conveyed back to the responding team. **Unnecessary communication is expressly forbidden** and that applies both to unnecessary contact as well as unnecessary and subjective content of communication;

- **between the occupational health centre and the central emergency response centre.** Only information that can be supplied with certainty and accuracy, including identification of patients, specific extent of injuries, accurate number of patients and whereabouts of patients is supplied and then **only** by the **person in charge** at the occupational health centre: and

- **between the occupational health centre and service providers** to the company like hospitals, medical specialists and ambulance services. In this regard, communication must only flow between the service provider(s) and the person in charge at occupational health. Once in possession of

such information, he or she conveys it to the company's central emergency response centre.

Orderly communication during emergency response poses as big a challenge as the execution of correct actions during this process. It is important to identify clearly the specific **occasions** when communication will take place as well as what the content of communication at those occasions will be. The absolute importance of limiting the **amount of communication** cannot be over-emphasised. **Unnecessary** communication leads to **blocking** of communication channels and irrelevant, subjective information leads to **sensationalism** and **wrong perceptions** which can lead to considerable **embarrassment** to a company. In retrospect after an incident, the cause of wrongful assumptions and information is, in most cases, **too much** information that was presented **too early**, before the contents thereof could be confirmed, and information that was **superfluous** and **uncoordinated**. ***Each piece of essential information should be communicated once and once only.***

Specific problem points are:

- **Patient count.** Uncoordinated communication easily leads to the same patients being counted twice or more and as soon as confusion sets in a multitude of messages all quoting different numbers of patients often ensue. Occupational health personnel communicating to incident site command, the central emergency response centre and the occupational health centre on the **same communication channel** is an example. Messages concerning the **same** get interpreted as referring to **separate** patients by people who access to the central communication channel. Further communication about the same topic between the occupational health centre, hospitals and departments like Industrial Relations and Industrial Social services greatly compounds the issue. Integration

between occupational health's and the company's emergency response systems should specify and bring about that occupational health provides a **singular** episode of communication to the **company's emergency centre** from where it gets co-ordinated. The central emergency centre must ignore communication on the scene between occupational health personnel and site command.

- **Patient identification.** Unless patients can be identified **beyond any doubt**, no communication should be made. Even when patients wear nametags, great care should be taken to ensure that loose nametags are matched to the right individual. In cases where chemical contamination of employees has occurred, decontamination measures on the scene result in injured patients clothed to various degrees or not at all, with nametags spread over the scene. Great care must be taken to positively identify individuals in cases like this and not to assume that close proximity of a patient to a nametag necessarily means ownership thereof. Even when a patient is able to communicate freely, two or more individuals with the **same** name may be involved in the incident and some **additional** means of identification, like a **company number**, must be requested.

- **Patient condition.** Information should only be issued once patients have been **assessed** properly and fully. Preliminary assessment of patients on the scene of the incident cannot provide such information. That is why communication regarding this aspect must be confined to occupational health personnel on an **exclusive channel,** described as Channel A. As soon as **accurate** information can be issued, if necessary after consultation with outside service providers, the person in charge at occupational health provides it to the company emergency centre.

Occupational health in particular, must adhere to the stipulations of the emergency response system especially as far as distribution of information

about patients is concerned. Wrong information about patients can potentially cause a lot of embarrassment and it reflects back to occupational health.

5.2.3 Triage

Triage in its entirety is an internationally recognised, comprehensive discipline with well-described, set principles (Eddy, 1997). Within the context of an Occupational Health System, it describes and dictates the way in which a **large number** of patients will be handled during an emergency situation that produces such a complication. An occupational health department's triage system must **integrate** with the company's emergency response system. This study proposes a triage system for a large industrial plant, wherever it may be situated. It can be **adapted** to suit different needs, retaining the suggested basic architecture.

The system must:

- specify procedures whereby a large number of patients will be handled **on the scene** of the incident. occupational health personnel do not physically move into the primary incident area: they are neither equipped nor trained to function under those circumstances. Emergency care workers, normally firemen, are in charge of the scene. They **visibly** cordon the primary incident area off and **place** occupational health personnel at a point where they will hand patients who have been recovered from the primary area, over. occupational health receives patients on whom only basic and immediate stabilisation, immobilisation and decontamination, if applicable, have been done. Immediately after having received patients from the primary incident area, occupational health personnel do a thorough assessment and **classify** patients by means of **colour coding:**

- **green** patients refer to the “walking wounded” – patients who are in no immediate danger, having sustained only superficial injuries or injuries that do not immobilise them. This category of patient is able to provide assistance to occupational health personnel in treating other patients, should it be necessary because of the number or magnitude of the incident;

- **yellow** patients – not seriously injured, fully stabilised or in the process of being stabilised. These patients are out of danger and although immobile and often acutely uncomfortable, these patients do not require immediate further attention. They are able to await removal from the scene;

- **red** patients, who have sustained serious injuries, are not stabilised and who need immediate further attention;

- **blue** patients, indicating patients who have sustained very serious and extensive injuries and who are unfortunately unlikely to survive. In the case of being presented with many patients with a variety of injury classifications, one of the difficult decisions is not to pay time-consuming, resource-intensive attention to this category of patient at the cost of neglecting lesser seriously injured patients who stand a chance of surviving; and

- **black** marked patients, indicating patients who are unfortunately in the final stages of dying or already dead.

A **safe area** is identified in collaboration with emergency response personnel **on site** and patients are accumulated in this area, which must preferably be **under cover** in order to provide shelter against adverse weather conditions. A very important part of the triage system is that

patients get **tagged physically** with coloured tags and also to clearly indicate on the tags, in **legible** writing, at what time the classification was done. This is important – in the case of a patient **changing** condition to a worse category, the **time span** that it happened within must be known. The tag must also reflect exactly what **medication** was administered, stating the **name(s)** of the drug(s), the **dosage**, **time** of administration and by **whom** it was administered.

When the actions described above have been carried out, **transportation** of patients commences. **Red** patients are transported as soon as they are received but in the case of a shortage of ambulances it is acceptable to postpone transport of the other categories until all the patients seem to have been removed from the primary incident area. The **sequence** of transportation of patients, seemingly self-evident, must be reflected in the formal documentation of the system: red, yellow, green, *then* blue;

- specify **where** patients are to be transported to. In **life-threatening** conditions where drastic intervention requiring specialised equipment and medical personnel is needed **and** there is a hospital nearby, transportation is directly to the hospital's casualty department. Routinely, patients are transported to the occupational health centre. **Red** classified patients are stabilised thoroughly and referred properly to the relevant medical specialists before they are transported further. **Yellow** patients are either treated and released for follow up or also referred, depending on the facilities available at the occupational health centre. Patients who need further referral to hospitals and medical specialists are referred in predetermined numbers to each centre, dictated by capacity of such centres (New Jersey Department of Health and Senior Services:2000). The number of patients that each centre can handle in the case of a mass emergency is determined during trial emergencies;

- the way in which a **large number** of patients will be handled at the occupational health **centre.** Predetermined areas where patients will be accommodated, in injury categories, must be demarcated both inside and outside the occupational health centre. **Patient flow** is of particular importance during this stage of planning: a specific area must be allocated for **receiving patients** and sufficient space allowed for ambulances to manoeuvre around this area. A patient flow route from receiving area to treatment area to waiting area must be determined and described.

5.2.4 Agreement with Service Providers

Pre-existing and **specific** service agreements with relevant service providers not only form part of an emergency response system but is also important for **routine** activities. The **type** and **extent** of agreements depend on:

- the extent of existing available occupational health **resources;**
- the size of the **workforce;**
- the **nature of activities** of the company ;
- the availability of applicable **resources** in the immediate vicinity to the company; and
- the likelihood of **large incidents** happening.

As in the case of the rest of the emergency response system, there are no definite guidelines to indicate whether provision must be made for the worst possible scenario that can happen or to which lesser degree planning should aim at. Using historical data is obviously inaccurate, and “reasonable” is a vague, subjective term that can always be challenged in retrospect. However,

provision to the extent where it is felt that it can be defended as “reasonably practicable” must be taken and agreements with service providers entered into that reflect such a level. Service providers that must be considered are:

- **hospitals;**
- medical **specialists;**
- **ambulance services,** both private and belonging to local governments;
- the **Army;**
- **neighbouring companies** with emergency response resources; and
- **doctors** who practice in neighbouring geographic areas (National Health Care for the Homeless Council:1995).

Only service providers relevant to the occupational health emergency response system are mentioned. The **extent** of agreements should address **availability**, immediately or within a short period, of service providers and the specific **nature** of the assistance that may be required of them discussed and agreed upon. This includes arrangements concerning the **number of casualties** that can be handled by institutions like hospitals and ambulance services. **Maps** as well as **geographic co-ordinates** reflecting the locations of hospitals must be available, for service providers like ambulances services and the Army, in order for them to find their way both by road and by air. **Landing pads** must be clearly marked. A single, easily accessible **assembly point** at the company, like the occupational health centre, should be decided upon, communicated to and preferably physically pointed out to all service providers so that they know where to respond to during an emergency situation. If the nature of the company’s activities is such that release of a **toxic chemical substance** into the air may happen, an **alternative** assembly point should also be identified at a point which is at the **opposite wind direction** to the first.

Formal documentation prescribing all actions that form part of occupational health's emergency response system must exist and all occupational health personnel must at all times be familiar with the contents of these work procedures.

5.3 TREATMENT PROTOCOLS

Treatment Protocols are **prescribed guidelines** along which a number of specified conditions must be treated if company personnel administer such treatment. The conditions covered are selected on the basis of the fact that they are **life threatening** or that they could become so if the initial and follow-up treatment is not handled correctly. They also cover conditions or injuries that are **seldom seen** because they are unique to a specific work environment, like cyanide poisoning or water lance injuries. The reason for the protocols is thus threefold:

- it ensures that the **patient** receives the **correct**, most-recently agreed upon treatment for serious conditions or injuries that he or she may sustain;

- it safeguards the **person who administers** the treatment according to the protocol because in doing so, he or she adheres both to work procedures and to treatment methods that are relevant and indicated as being of choice; and

- it safeguards the **company** against claims of incorrect treatment being administered by its employees.

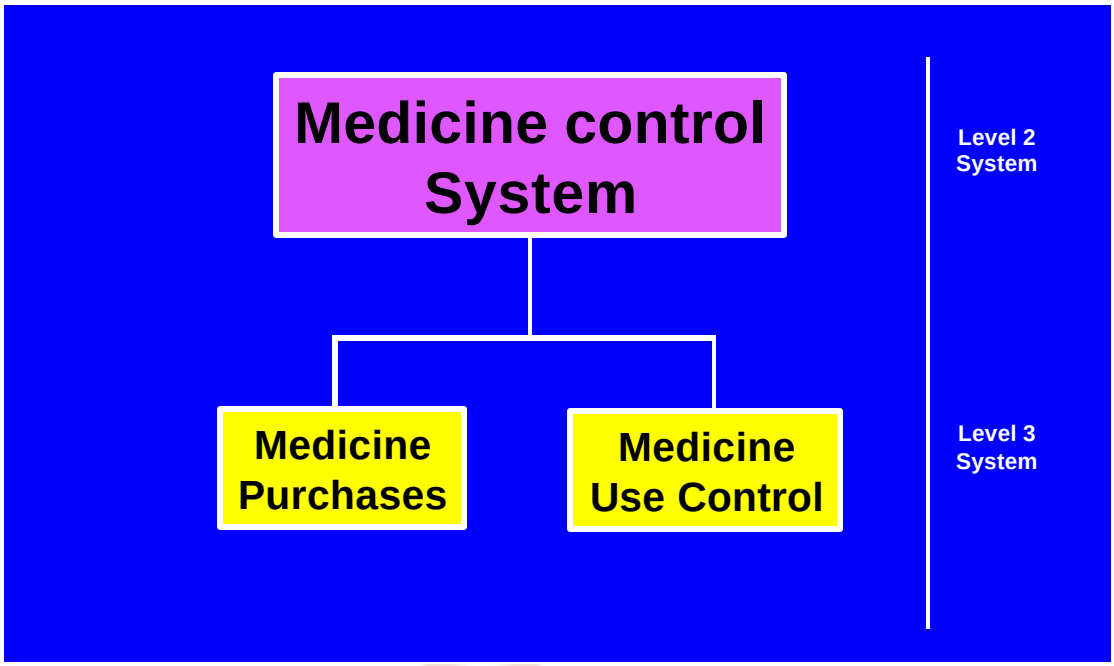
The specific conditions to be included depend on the work environment.

5.4 MEDICINE CONTROL SYSTEM

Medicine control is, to a fair degree, determined by **legislation**. A centre that practises occupational health **only** (and not primary health as well) functions under the regulations of a permit issued to the centre under the stipulations of the **Medicines and Related Substances Control Act (Act 101 of 1965).** This Act dictates that medicine may only be issued to an individual patient, who is a member of a medical aid, in sufficient quantities for **one day's** treatment. Should the patient require more medication for his condition, a private prescription should be issued by a doctor for the patient to obtain more medication from a retail pharmacy and for the cost of his medical aid. According to the stipulations of the Act, an occupational health centre has to apply to the department of health for a **permit** to **buy**, **stock** and **dispense** medicine. The permit contains a **list** with the generic names of medicines that the centre is allowed to keep. Any medicine not on the list must be applied for before it can be kept in stock and issued to patients. The occupational health centre is subject to inspection from the department of health for all matters pertaining to the handling of medicine.

The Occupational Health System that this study proposes will function under the legislation mentioned. If it is provided from a hospital, clinic or institution other than a dedicated occupational health centre, different legislation may apply, depending on the nature of the licence that the facility functions under. These permutations fall outside the scope of this study.

Figure 22: Medicine Control System



5.4.1 Medicine Purchases

Purchase of medicine must be stringently controlled. Accountability for this function must be clearly allocated to a specific individual, who should be a senior member of staff. Sophisticated control actions and procedures must be put into place. Several commercially available computer programmes aimed at facilitating medicine stock control are available. Stocktaking should be performed **monthly** and accurate figures reflecting:

- medicine **turnover,** as far as the **amount** and financial **value** of medicine is concerned;

- medicine **in stock,** as far as **quantity** and financial **value** of individual medicines as well as of the **total** stock held is concerned; and

- medicine **purchases,** as far as **quantity** and financial **value** of individual medicines as well as of the **total** quantity is concerned for the preceding month supplied by the person in charge of the facility's medicine stock.

5.4.2 Medicine Use Control

Effective control of medicines used relies heavily on the **accurate documentation** of ***all*** medication that is issued to patients or used during the treatment of patients. All **patient-doctor** or **patient-nurse** contacts must be recorded and even more so if any **medication** was involved.

The person treating or consulting a patient enters **full** details of the condition or injury, the treatment given and medication used into the patient's file. This is done in the **presence** of the patient and the entry is **signed**. During normal working hours, the treating nurse or doctor accompanies the patient to the dispensary and hands the patient's file to the person manning the dispensary. The patient receives medication directly from the person doing the dispensing and signs for receipt thereof in the patient file. This enables the patient to verify that he or she has indeed received what was prescribed. Medication is ***never*** handed over to anyone but the patient. This implies specifically that nobody can receive medication **on behalf of** a patient. If a patient cannot physically move to the dispensary, the person responsible for dispensing receives the file from a nurse or doctor and takes the medication to the patient. The patient verifies the number of items and the quantity of medication before signing for receipt of the medication.

Outside normal working hours, the dispensary is locked and a different arrangement is necessary. **The principle is that at all times, one specific person must be identifiable who is accountable for the amount of medicine that is accessible at that moment.** A defined amount of

medicine, estimated to be sufficient for the period that the dispensary is closed, is kept outside the dispensary but still under lock and key. Access to this stock is limited to the **person in charge** of the occupational health facility after hours. In the case of an occupational health centre operating on a 24 hours basis with staff working shifts, an amount of medicine is kept for **each shift,** with access to it limited to the **shift leader** of each shift. After hours dispensing of medicine is done from the stock accessible to the staff that is on duty. All medication is recorded and the files of all patients treated after hours kept aside, for the person in charge of the dispensary to collect the next morning. This person, who also has access to all amounts of medicine kept outside of the dispensary, replenishes all medicines issued according to the records in the patient files. Any shortages are noted and the person who has access to the stock that shows a shortage, is responsible for that specific loss.

The person accountable for the total stock of medicine considers **all stock issued,** does reconciliation of the total stock and compiles monthly reports reflecting total deviations from expected stock. This study suggests an acceptable loss figure of no more than three percent of total stock purchased.

A medicine control system should be comprehensive to the extent that it should include control of consumable medical supplies like bandages, plasters, ointments, suturing material, X-ray plates and Plaster of Paris used during the acute treatment of patients. Usage of such supplies should be recorded in the same way as for medicine.

5.5 SUMMARY

This chapter provides a background to the architectural structure of the Occupational Health System that this study suggests. It states the four main action groups and the systems within the overall system, namely curative,

preventive, general management training and names the specific systems within each group. It then proceeds to discuss the curative group of systems.

CHAPTER 6: AN OCCUPATIONAL HEALTH SYSTEM – PREVENTIVE SYSTEMS

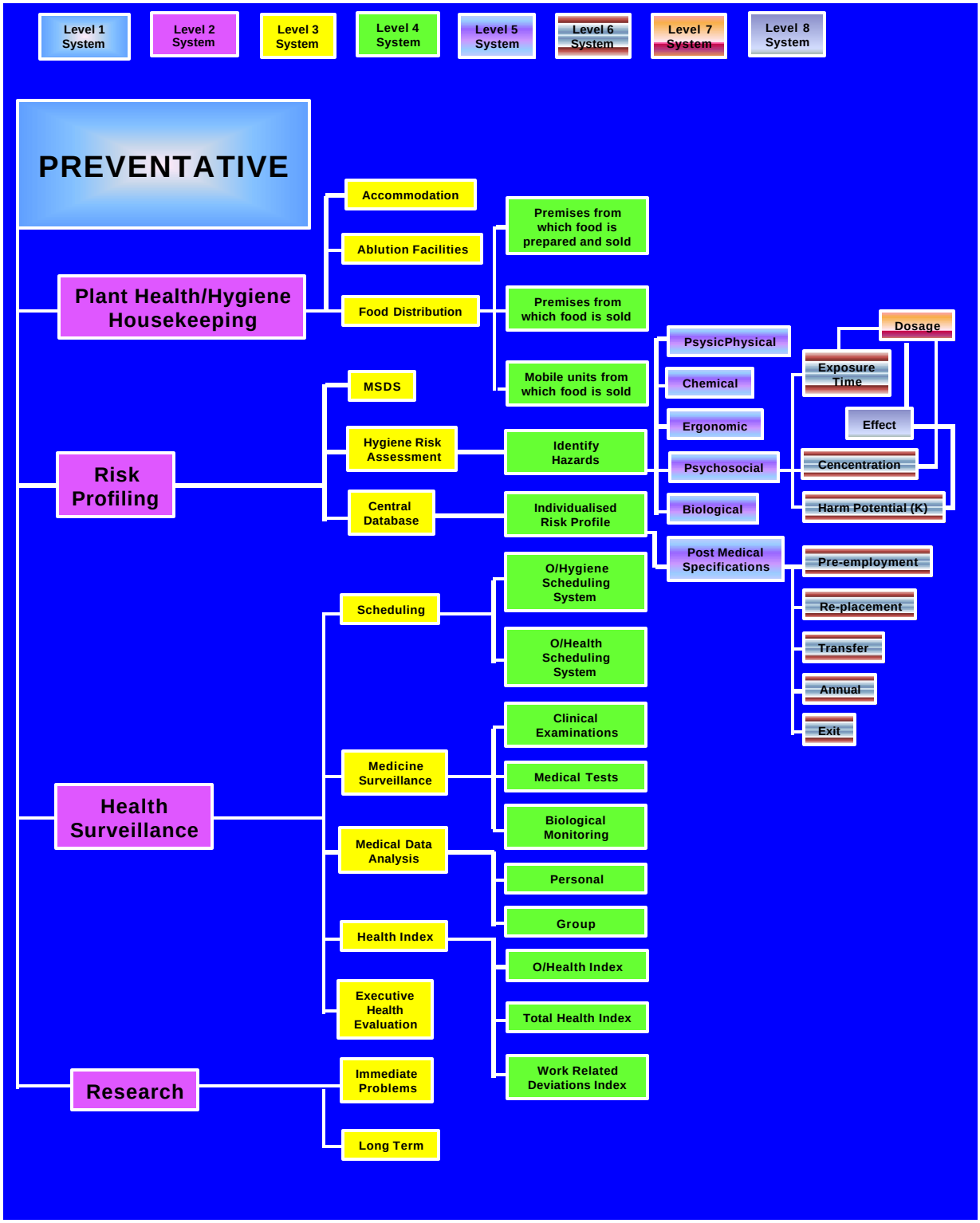
6.1 INTRODUCTION

The Preventive system represents the main focus of the Occupational Health System. Effective functioning of this system will ensure achievement of an important goal in occupational health: each employee should benefit from the existence of occupational health **all the time,** because it ensures ongoing compatibility between worker and workplace, and not just at **some times,** when an injury has occurred. As in Chapter 5, systems are not discussed in any particular order. See figure 23.

6.2 PLANT HEALTH / HYGIENE HOUSEKEEPING

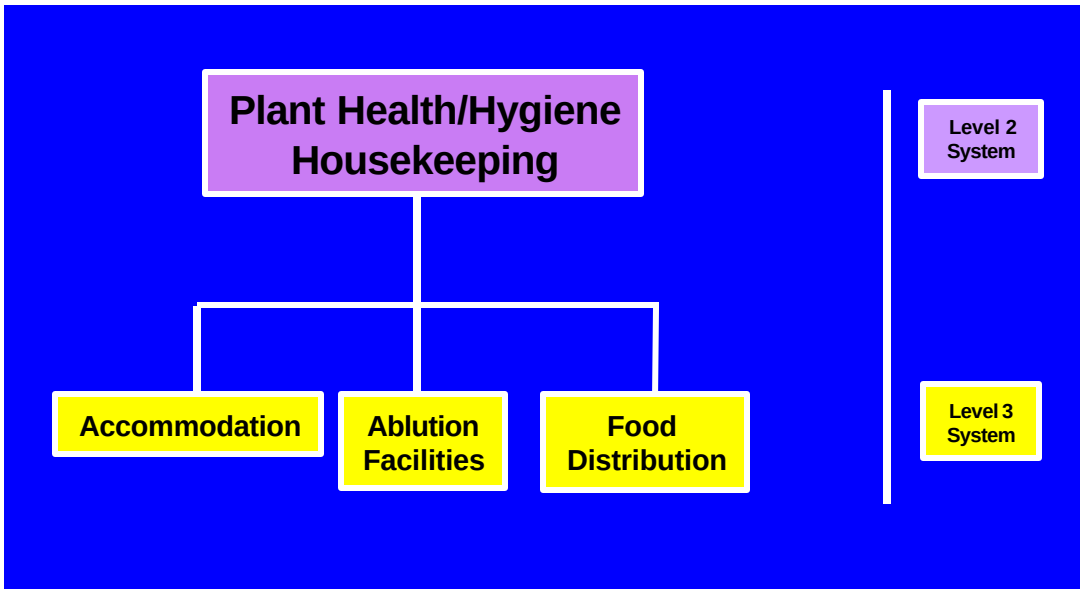
This system facilitates the control of orderly conducting of **general cleanliness** of the **workplace and its surroundings.** The objective is for employees to work in surroundings that are conducive to good hygiene and health. The actions referred to in this system are under direct influence and control of the employees who work in that area. It pertains to **habitually** keeping the immediate work surroundings neat and clean. occupational health must regularly, but at random and at irregular intervals per area, visit all areas of the company for the purpose of inspection. Deviations are pointed out in writing to the line manager of the particular area and are to be remedied forthwith.

Figure 23: Preventative System



For deviations that require changes to **structures** to be set right, areas are given a reasonable time within which changes must be effected. Such changes should take priority above business processes and it is very seldom necessary to grant more than a week for the completion thereof. Remedy must be to the satisfaction of occupational health. Repeated and/or continued default should result in reporting of the situation to relevant higher management and, depending on the mandate that a specific occupational health division has from its company, closure of such a facility by occupational health. All reports concerning deviations and remedies thereof are treated as formal occupational health documents.

Figure 24: Plant health/Hygiene Housekeeping



The system must integrate with the work done by health and safety representatives. The Occupational health and Safety Act and Regulations (85/1993), specifies; as follows:

- "Art 18 (1): A health and safety representative may perform the following functions in respect of the *workplace* or section of the workplace for which he has been designated, namely –
  (a) review the effectiveness of health and safety measures;

  (b) identify potential hazards and potential major incidents at the workplace;

  (c) in collaboration with his employer, examine causes of incidents at the workplace; and

  (d) investigate complaints by any *employee* relating to that employee's health and safety at work".

This is in line with the objectives of this system and necessitates communication between the occupational health and safety divisions of a company.

6.2.1 Accommodation

A company should have an accommodation policy – see paragraph 7.4.6 - which states a company's position on accommodating employees, whether it be it its own employees or employees of other companies on its site. It pertains to hostels, temporary accommodation structures and any structure whatsoever that is used for accommodating employees after hours/during the time that they are not formally on duty in the workplace. A system should exist whereby this policy is executed.

The system should distinguish between a workplace and premises intended purely for accommodation and should stipulate that the two areas are not

inter-changeable. It should lay down specific minimum requirements concerning:

- the type of material that accommodation premises may be constructed from

- minimum space per person particularly pertaining to sleeping areas;

- minimum space per accommodated person in entertainment areas like TV rooms, and lounges;

- minimum ablution facilities per number of inhabitants. The specific hygienic rules and regulations will be laid down as for the rest of the plant, and contained within the general regulations concerning plant hygiene. It should specify clearly in what areas preparation of food for own purposes is allowed and minimum requirements for these areas must be set. The requirements may be the same as those for areas in which food is prepared, in which case it must be specifically mentioned in the accommodation policy because a company's food code is, as a rule, only applicable to areas that prepare food for commercial purposes;

- the type and nature of electrical appliances that may be utilised;

- the existence and minimum requirements of specific areas set aside for washing of clothes;

- areas for washing of eating utensils;

- who exactly will be responsible for the upkeep of general good housekeeping and hygiene in accommodation areas, particularly referring

to areas that are shared by all inhabitants of an accommodation facility, like lounges, recreation areas and dining halls; and

- responsibility for general upkeep of premises surrounding accommodation facilities such as parking areas, walkways, paths, corridors and possibly lawns.

The objective of this system is to ensure orderly and hygienic accommodation on the site of a company. It is to avoid a situation where especially contractors house people in over-crowded and unhygienic conditions. Insisting on decent accommodation facilities for everybody associated with a company's activities is conducive towards good company image and is indicative of a company's commitment towards general caring principles as contained in the Responsible Care ideology.

6.2.2 Ablution facilities

Specific requirements of that this system prescribes must be encompassed in a **formal document** which may take the form of a standing order, works instruction, work procedure or policy. This may seem superfluous but if it is not done, arguments ensue about what exact **standards** of hygiene are aimed at. Aspects such as:

- the **number** of ablution facilities to number of employees;

- the **location** of such facilities, with accessibility in mind;

- the **construction** thereof, specifying floor and other surfaces; and

- **equipment level** as far as the presence of liquid soap, paper towels, deodorant and refuse containers are concerned; and

- the presence or not of **lockers** and if so the requirements surrounding them must be specified.

6.2.3 Food Distribution

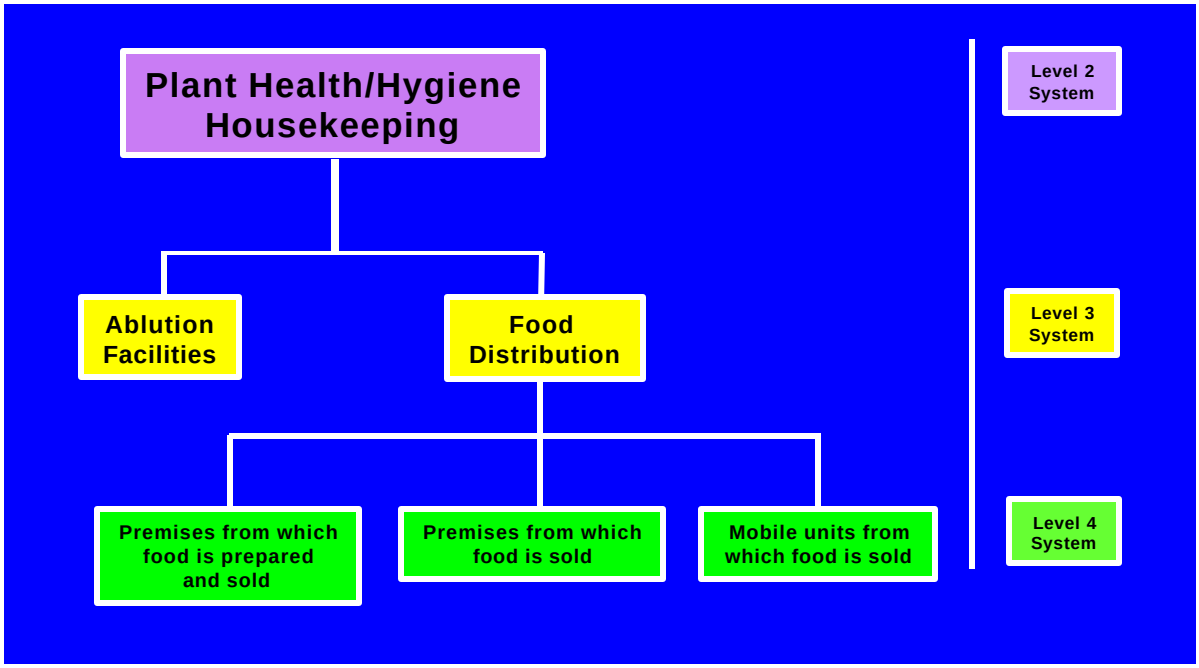
A system that regulates the standard at which food is offered **for sale** to employees. It does not involve food, in whatever form, which employees bring from home, meant for **private** use. As in the previous one, this system must be supported by the necessary **procedures, works instructions** or **policies**.

The precise extent and contents will vary according to individual company circumstances. This study suggests a food distribution system that distinguishes between different methods of food distribution because control of each of these types is different. Separate documentation describing and setting requirements for each is necessary. All food distribution points are inspected regularly

6.2.3.1 Premises from which Food is Prepared and Sold

The aspect of ***preparation*** of food changes the extent of the legislation that has to be adhered to and determines the appearance and nature of premises from which food distribution is done. A system for distribution of food from premises where food is prepared and sold must address:

Figure 25: Food Distribution



- **legal requirements** for establishments where food is prepared and offered for sale. These requirements must include the prescriptions, rules and regulations of:

  - the Act on Foodstuffs, Cosmetics and Disinfectants, Act 54 of 1972;

  - the SABS' Regulations on Food Hygiene Management, coded SABS 049 – 1989;

  - the health Act, Act 63 of 1977; and

  - the Extraordinary Administrator's Notice 1317, dated 16 August, 1972, known as the Standard Food handling By-laws;

- **company requirements,** starting with clear, unambiguous definition of **terms** pertaining to **conditions** that these premises will be inspected to so as to avoid arguments based on different interpretations of what terms like **preparation** *(in particular)***, fresh, adequate, clean, food, food handling, food handler, perishable, packaging material, pre-packed, utensils, waste** and other terms that are going to be used in the evaluation of such premises, actually mean**;**

- what exact **tests** and **biological monitoring** food handlers are required to undergo, including the **intervals** at which it must take place;

- exact **clothing** requirements of food handlers;

- the fact that no foodstuffs may be received or kept as stock unless such foodstuffs are thoroughly **packaged**;

- the exact condition that **premises** used for the preparation and sale of food is required to be in, from a health point of view;

- **geographical areas** within and outside factories where this type of food distribution will be allowed. Preparation of food may, for instance, be prohibited in the immediate vicinity of chemical manufacturing areas, by decision of occupational health; and

- what information should appear on packaging of foodstuffs, pertaining to **preparation- and expiry dates, specially prepared** food (Halaal, Kosher), **contents** and whether the food is suitable

for people with **specialised needs** due to diseases and conditions like diabetes and allergies.

6.2.3.2 Premises from which food is sold

By definition, this refers to premises that function as **outlets** for **pre-packed** foodstuffs. No food is prepared or allowed to be prepared in these facilities. The term "prepare" is not well described in either of the laws that govern distribution of food for commercial purposes. It is therefore important that this term be accurately described in the company's documentation that occupies itself with it. It is strongly suggested that:

- **preparation** be defined as **"*Any* handling of food out of its *original packaging* and/or *alteration*, in whichever way, of foodstuffs from their *natural state*."** A loaf of bread may thus be taken in and kept as stock, in packaged form, but may not be cut in half because that constitutes preparation**;** and

- that, after all is said and done and everything is described, defined and seemingly agreed upon, occupational health maintain the right to be the ultimate judge as to when something or some place is untidy, dirty, unhygienic or unsatisfactory in whatever way.

The same laws and regulations mentioned in paragraph 6.3.2.1 apply to food distribution establishments where pre-packed food is sold, albeit not to the same degree and stringency. One of the most noticeable areas of difference is located in specifications for working surfaces that are allowed to be of "ordinary" material and construction instead of stainless steel and staff, who should be presentable but need not wear special garments.

A specific aspect that occupational health should bear in mind and control is that pre-packed foodstuffs that an outlet takes in as stock, should be prepared in a facility that is legally entitled to manufacture food for commercial purposes. Food prepared in private kitchens is not acceptable due to the fact that such kitchens cannot be inspected whereas food prepared in places licensed to do so, get inspected formally.

6.2.3.3 Mobile units from which food is sold

Essentially the same conditions apply to mobile units as to premises from which pre-packed food is sold. Having a separate system and set of documentation referring to mobile units serves largely to clear up any confusion. Mobile units must adhere to the same level of basic equipment and general hygiene as built premises, specifically as far as:

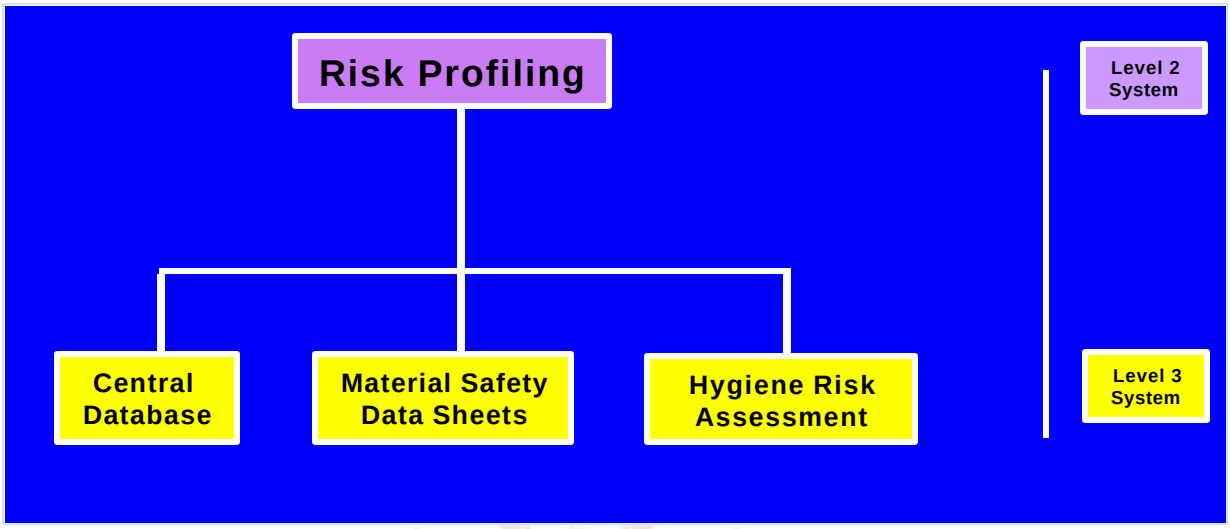
- refrigeration facilities;
- hot and cold running water; and
- sufficient protection of stock from direct sunlight, dust and high atmospheric temperatures is concerned.

6.3 RISK PROFILING

The concept of risk profiling has been discussed at some length in 2.2.2.5 and is not repeated here, other than to re-state that Risk Profiling is one of the five pillars of occupational health – see 2.2.2.7 and figure 10. The Level 2

Risk Profiling system is divided into two level 3 systems namely Hygiene Risk Assessment, central database and Material Safety Data Sheets.

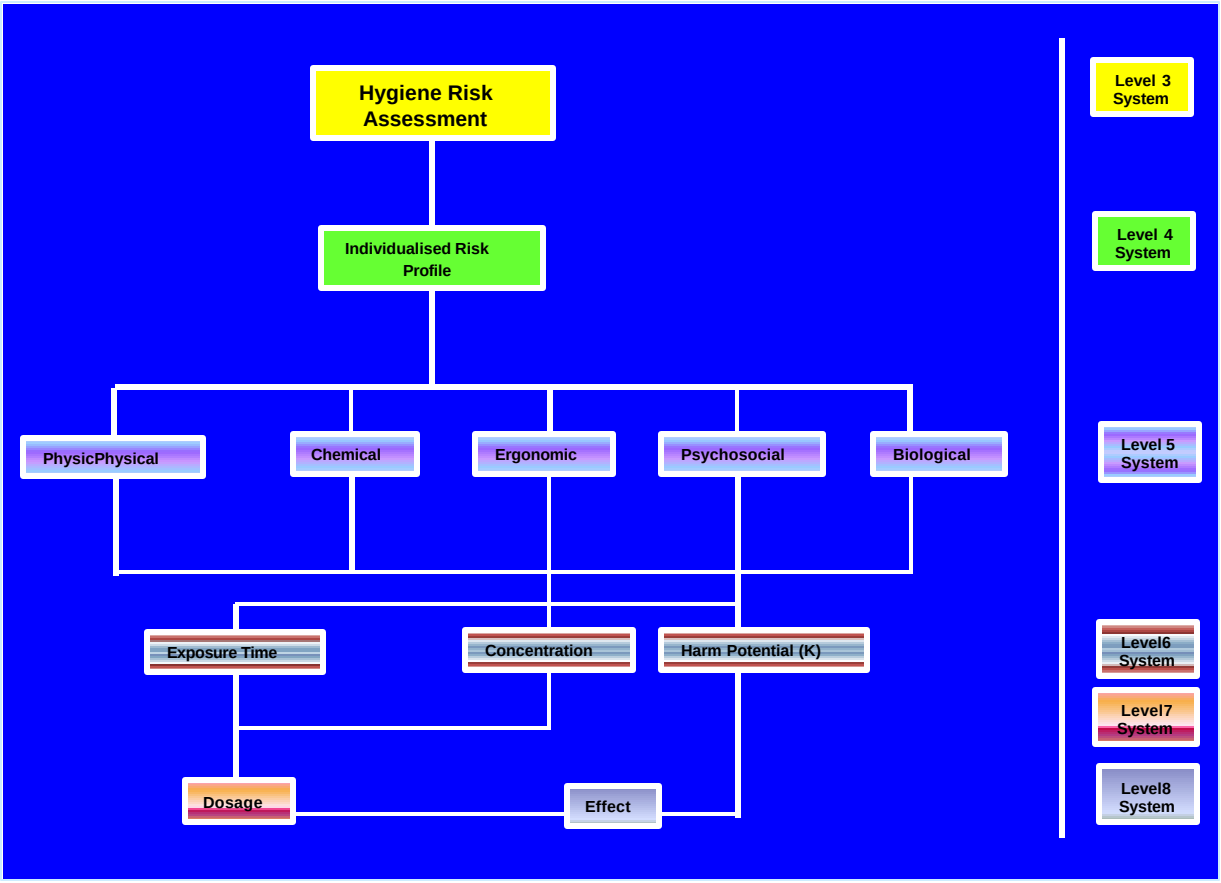
Figure 26: Risk profiling



6.3.1 Hygiene risk assessment

The first step in the Risk Profiling process happens with an assessment of the work area by Occupational Hygiene, as described in 2.2.2.3 and depicted in figure 6. It is followed by the compilation of a **generic occupational risk exposure** profile for the work area and therefore for everybody working in that area. The generic risk profile eventually leads to an **Individualised Risk Profile,** which refers to each individual employee. This process is described in 2.2.2.5 and depicted in figure 8.

Figure 27: Hygiene risk assessment



6.3.2 Material Safety Data Sheets

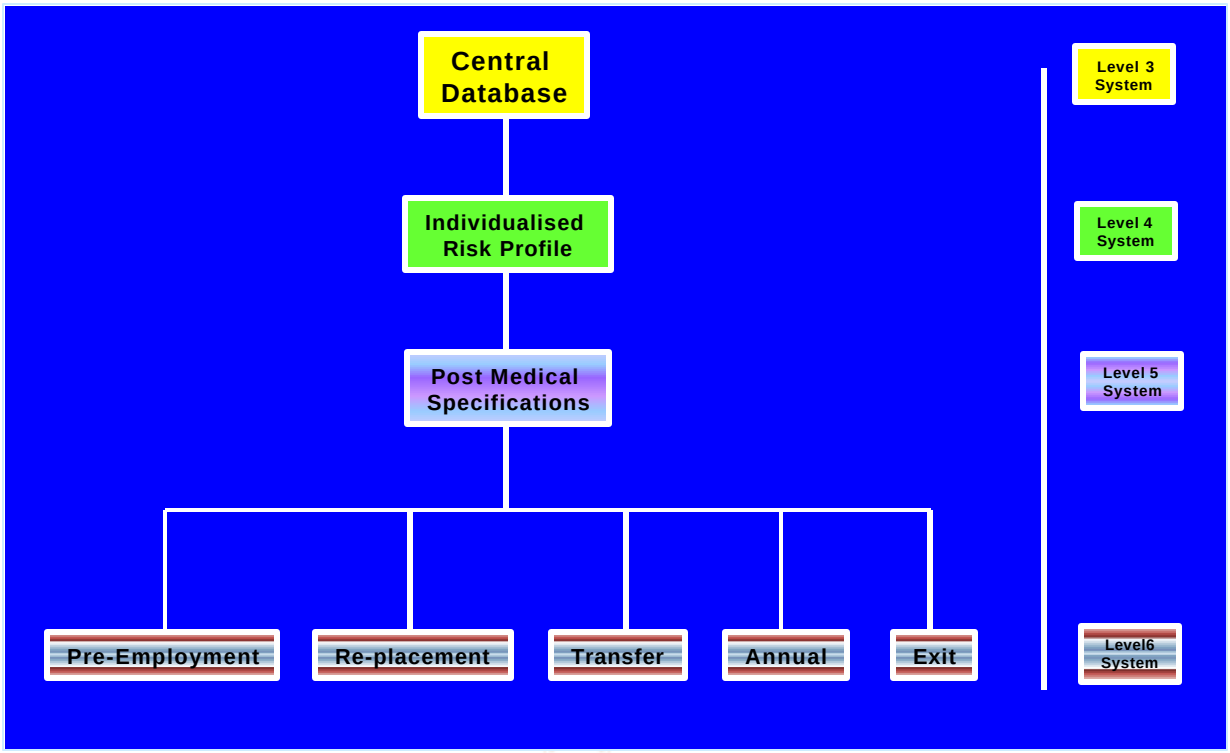
The compilation of material safety data-sheets is a very important part of occupational hygiene. This is especially so in a chemical working environment. Each chemical substance used during the course of work, requires that a material safety data-sheet been drawn up about its characteristics. A material safety data-sheet should not just reflect the information already provided by the manufacturers: it should serve as a much more comprehensive document. It should contain information like the effects of it on the environment in the case of spills, correct mobbing up procedures

and effects of releases of large volumes of the chemical. Copies of this document will be carried by drivers of vehicles, trains and other vessels that transport the products. In the case of any incident, it will serve as source of information to emergency services, members of the public and everybody concerned with containing and clearing up the effects of an incident (Wahl, 1995:74-78). In such cases, complete and applicable information concerning health effects, environmental effects, environmental pollution potential and neutralising agents if any will not only create a good image of the company but may be instrumental in avoiding claims. A complete set of material safety data-sheets should be made available in readily accessible form to occupational health, environmental management, the emergency response division and the fire brigade and preferably to all production areas as well. Within large companies and corporations, there must be liaison between different divisions where the same chemical is used so as to ensure that only one official copy of a material safety data-sheet per chemical exists.

6.3.3 Central database

The idea of having a central database that feeds data to various functions, where it gets arranged into information from which individualised risk profiles and post medical specifications are compiled is discussed at some length in paragraph 2.2.2.4 and shown in figure 7. The applications of the **person medical specification system** is also discussed in the same paragraph. It is important to bear in mind that the central database is compiled from data obtained during execution of the hygiene risk assessment system.

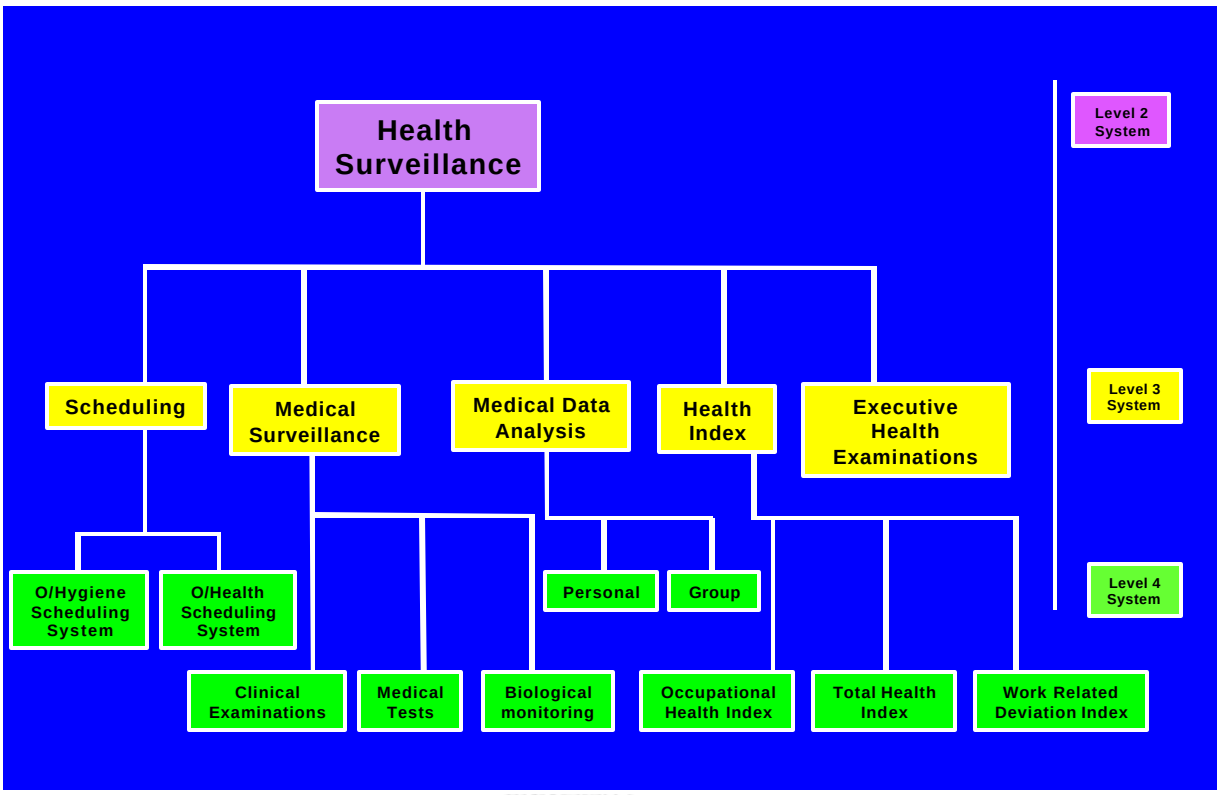
Figure 28: Central Database



6.4 HEALTH SURVEILLANCE

The medical surveillance system is possibly the most important system in the overall Occupational Health System. Not only does it produce most data but the ultimate results that this system must deliver are of the utmost importance (Agius, 2000). The health Surveillance system follows upon the Risk Profiling system and relies heavily if not totally on information contained in the central database.

Figure 29: Health Surveillance



6.4.1 Scheduling

This function is important because it determines the **workload** and **orderly flow** not only of **work** both as far as occupational hygiene assessments and occupational health medical surveillance is concerned, but also of **information flow**. It is essential for good **integration** and a specific **chronological order** between the various scheduling systems in an Occupational Health System. From an employee's point of view, actions should ideally be scheduled in such a way, chronologically, that:

- **occupational hygiene** does an **assessment of the work area** to reconfirm the hazards and risks, making sure that information about this aspect is fresh and accurate;

- occupational hygiene gives **feedback** on the condition of the work environment and suggests remedial actions if applicable;

- **occupational medicine** provides statutory information about

  - **why** medical surveillance is necessary, legally as well as in order to keep the workforce healthy;

  - what the **medical implications** of exposure to the hazards and risks that the specific work group that he or she belongs to, are; and

  - as a result, what specific generic **surveillance tests** the group that he or she is a member of, will be submitted to;

  - occupational medicine schedules employees to undergo medical surveillance;

  - he or she arrives for medical surveillance fully informed, understanding the necessity for and the actions of medical surveillance;

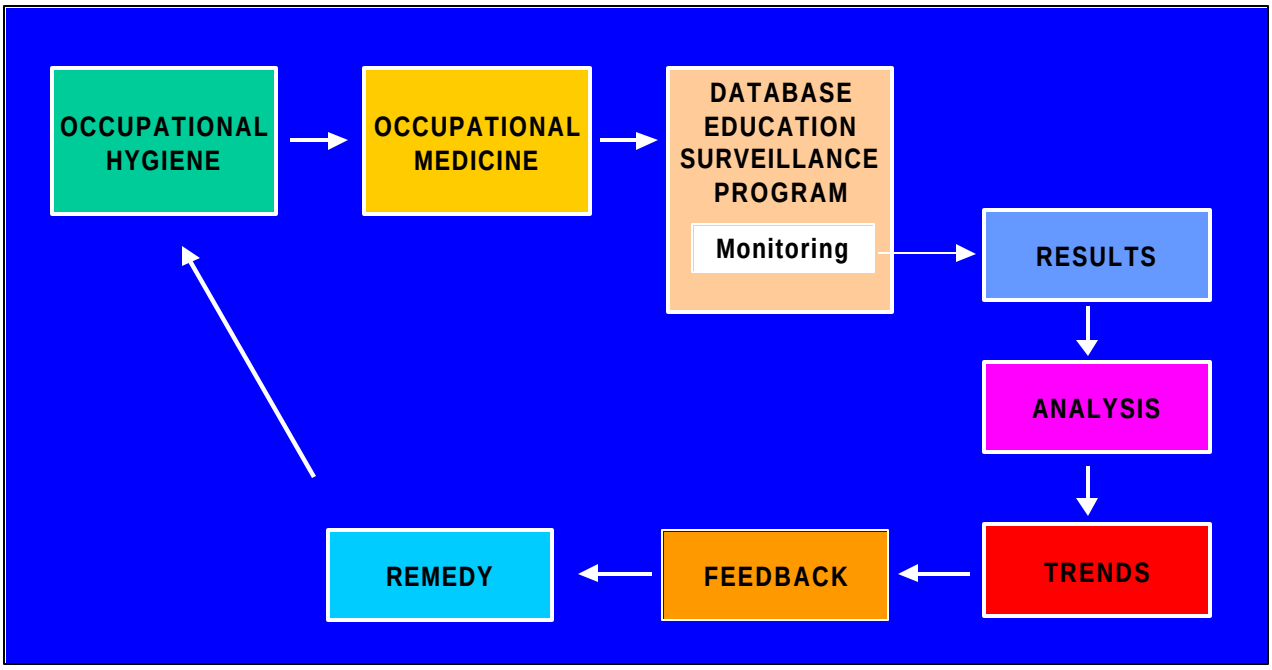
  - occupational medicine provides full, individual feedback to employees in whom health deviations were identified and institutes the necessary follow-up actions;

  - occupational medicine gives feedback to work areas in group context; and

1

- occupational health gives relevant feedback and remedial suggestions to top management.

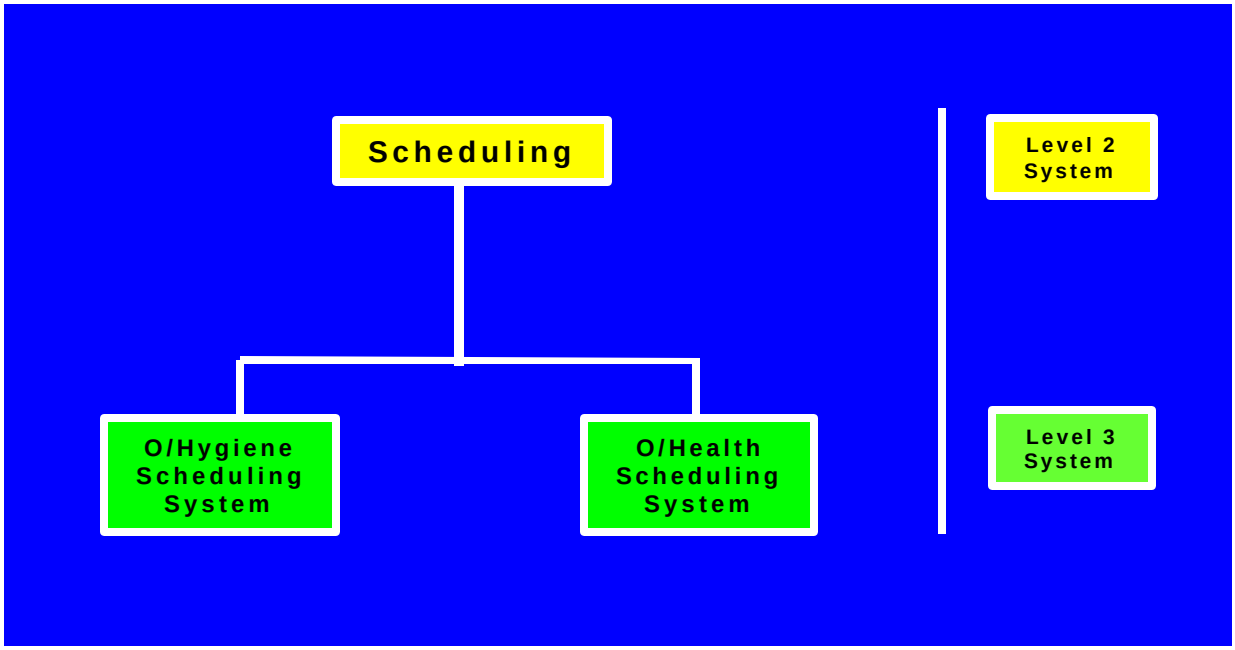
Figure 30: Work Flow



In order for this chronological order to be achieved, good co-ordination must take place by means of constant communication between people administrating the various scheduling systems. Scheduling should be such that, even if a yearly frequency for provision of services is determined, the **time of year** is **different** every time. If workplace assessment always takes place at the same time of year, it is impossible to pick up differences in risk profiling brought about by seasonal changes. Factors like windy, hot or cold times of the year are examples. Social events like the festive season and company routine like yearly maintenance shutdown periods introduce factors that impact on individual risk profiling. The effect of such calendar bound events should be **spread evenly** over the whole spectrum of risk profiling by correct scheduling.

Some scheduling systems are covered in this chapter, others in the chapters on communication.

Figure 31: Scheduling



6.4.1.1 Occupational hygiene scheduling system

The particulars of this system will be determined by the structure of and resources available to the Occupational Hygiene division. It deals chiefly with setting up a system whereby visits to predetermined areas in the factory or plant are paid for the purpose of doing Occupational Hygiene risk assessments. It must **integrate** with other scheduling systems, as stated above. The area that it provides a service to must be **divided** into smaller areas and **this division has to be the same for all the systems that have to do with scheduling** of whatever kind, so as to enable co-ordination between the scheduling systems. In a very large plant or factory, a frequency of **one year** for providing

preventive occupational health services is suggested. This is not a scientifically determined interval but is largely derived at from a practical point of view. A different interval can equally be chosen – it is much more important to ensure a **shared** interval for all service functions where scheduling is done. It becomes exceedingly difficult to co-ordinate actions that are scheduled, and to achieve the correct chronological order, if services like workplace monitoring by occupational hygiene, provision of statutory information about effects of risks in the workplace and actual surveillance actions are not on the same frequency. The main reason why there has to be a specific, tangible occupational hygiene scheduling system is that it must integrate with the other scheduling systems so as to arrive at the chronological set of actions described in paragraph 6.4.1.

6.4.1.2 Occupational health scheduling system

This system deals with the important aspect of scheduling all employees of a company, at predetermined intervals, for the performance of medical surveillance tests upon them. It must take several factors into consideration, like:

- availability of **human resources** and **equipment** at occupational health;

- periods during which **fewer employees** are available to undergo surveillance, like **factory shutdown** periods for maintenance, **holiday** periods and during major urgent **projects**;

- the company's **shifts** system(s), particularly when each area's shifts change. Surveillance must be completed within the duration of an employee's shift and they must generally be back at their

workplace before the end of the shift in order to “clock out” and to “hand over” to the next shift;

- the **specific tests** that will be done on employees working in a specific area, in order to make sure that an **even distribution** of patients will be possible at various service points like the audiometry, X-ray, lung function and vision testing points in the occupational health facility, and thus an **even workflow**;

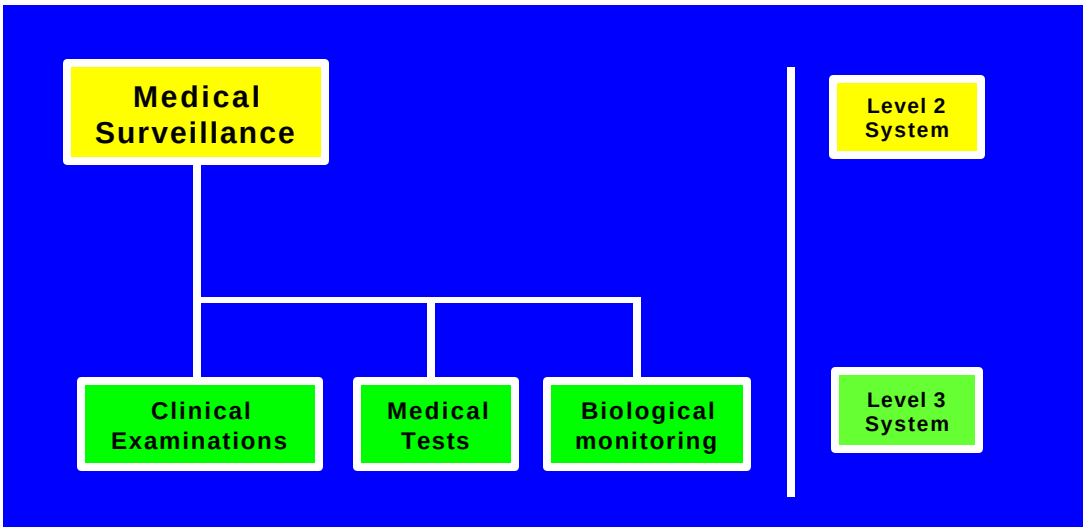
- using information from the central database, the total geographic area over which medical surveillance is to be conducted is divided into **low, medium** and **high** risk areas. This classification is done by considering the total quantity and quality of risks recorded per area, as ascertained during Hygiene risk assessment. An equal distribution of employees from low, medium and high risk areas must be scheduled over any given period. It is done for purposes of being able to compile a health Index; and

- **re-scheduling** of employees who do not turn up at their initially scheduled times, must be accommodated.

6.4.2 Medical surveillance

The medical surveillance system encompasses all actions necessary to establish the state of employees’ health, including **physical** examinations, **medical** tests like lung function tests and **invasive** tests like blood sampling. It involves standard medical and nursing procedures that are not discussed further because it falls outside the scope and intention of this study.

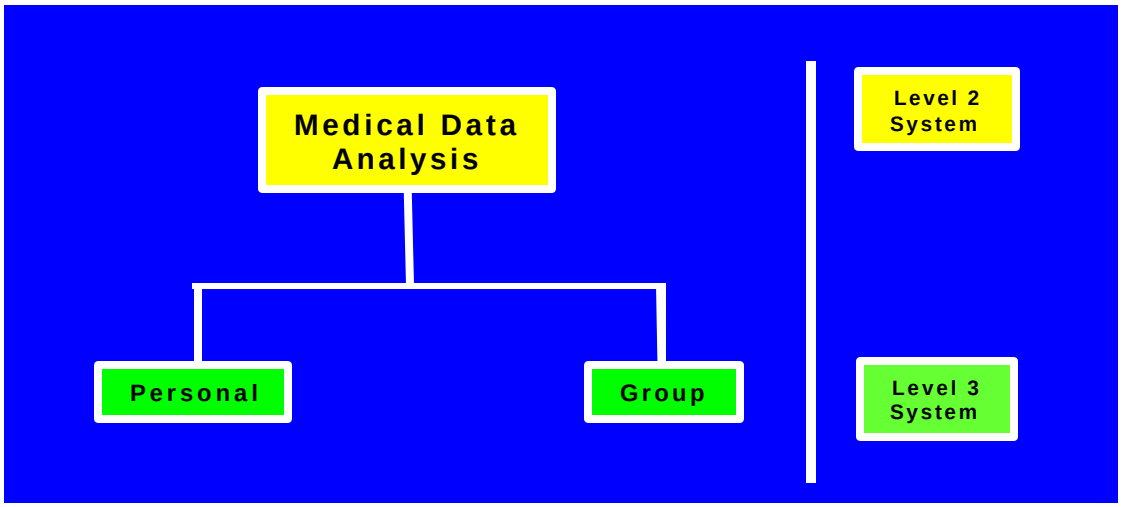
Figure 32: Medical surveillance



6.4.3 Medical data analysis

Analysis of data accumulated during the medical surveillance process is most important. The function of the analysis system is to convert **data** into strategically useful **information.** The most important result that this system must deliver is to identify **health trends** (Gowers, 1998:685-696)**.**

Figure 33: Medical data analysis



Trend: *verb:* to extend in a general direction**;** follow a general course; to show a tendency. *noun:* a line of general direction or movement; a prevailing tendency or inclination; a general movement; a line of development the general movement in the course of time of a statistically detectable change (Merriam-Webster's Collegiate Dictionary).

In analysing health data obtained from medical surveillance, it is essential to adhere to the principle that establishment of a health **trend** is much more **significant** than an absolute, momentary **value.** The efficiency of an analysis system is measured by how **accurately** and how **early** health trends can be picked up. This constitutes the very concept of being **preventative** and the degree thereof. The results of biological monitoring tests, like those performed on employees during biological monitoring, are reported as absolute values. A value so obtained pertains to the specific sample that was analysed. **Normal** is constituted by the value of a sample being within a **range** and similarly, an **abnormal** result is represented by a value that falls **outside** the **normal range.** Although a value that falls outside the normal

range, for example higher, always constitutes an abnormality, it may be a point in a series of findings that extends in a generally downward direction, **towards** the normal range. It may also be a point in a series of findings that extends upwards, **away** from the normal range. This illustrates the **relative** importance of the **f**inding, depending on its relationship to the **trend** that it helps to form.

This study advocates that a health data analysis system should be able to determine health trends on five levels:

- at the level of the **individual** employee;

- in groups of **worker categories** at a specific division, who share a common workplace, for example in the group of electricians at the mechanical workshop

- in groups consisting of the personnel of a **division**, like in all employees who work at the mechanical workshop;

- in departments consisting of various divisions. Although employees in such a large grouping may work in areas that vary considerably in specific nature, they share a common function, broad working environment and generally, the same philosophy, approach and practical adherence to measures aimed at ensuring health. This is often the result of a top-down culture passed down from that department's management; and

- in the whole **company.**

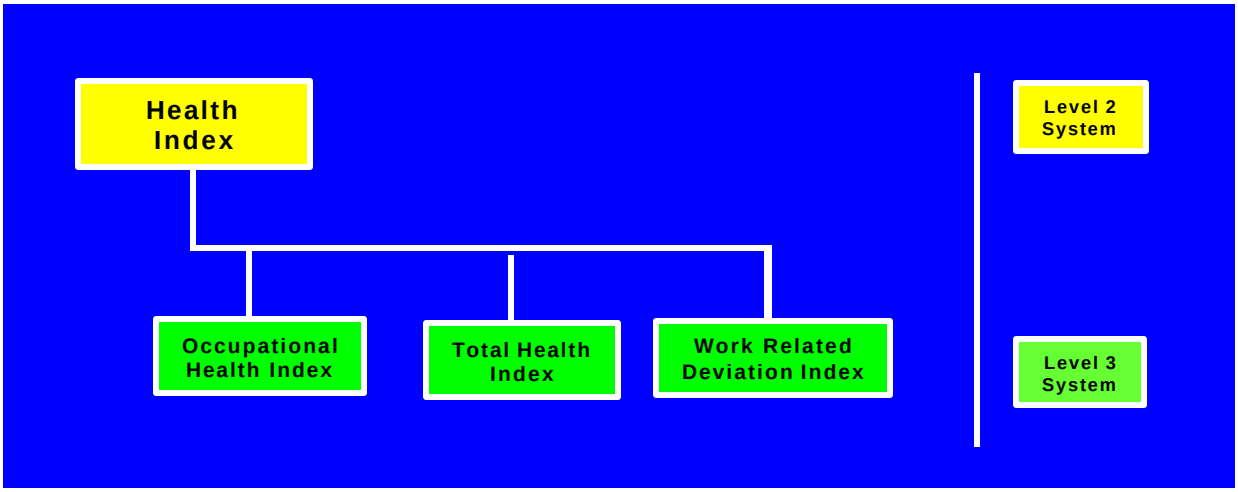
Health data analysis is a time consuming activity and must be done by a person or persons with a particular interest in the topic. This study recommends that **for every five thousand employees** that are submitted to

medical surveillance, **one staff member at occupational health** should be appointed to perform this duty on a full time basis. **Computerisation** of the function of trends analysis is essential – it is both too time consuming and too complex to deploy as a manually operated system in any company larger than modestly sized (Lukes, 1998; Morgan, 1998).

6.4.4 Health index

Index: a number (as a ratio) derived from a series of observations and used as an indicator or measure; specifically : the ratio of one dimension of a thing (as an anatomical structure) to another dimension (Merriam-Webster's Collegiate Dictionary).

Figure 34: Health index



It is essential for a company not only to **have** a health Index but also to consider the level thereof as one of the company's key performance indicators. Most companies, especially in South Africa, have indexes for their performance as far as safety and environmental management is concerned and these indexes are, quite rightly, regarded as highly important. These two indexes reflect a company's **commitment** towards and the **degree of success** that a company has achieved with adopting and implementing **safe**

work procedures and functioning in a way that is environmentally friendly**.** Safety, health and environmental management are recognised as fields that function in close proximity with each other. The commonly used acronym, SHE, and the fact that the majority of companies have SHE departments, prove it. It is **astonishing** that health is left out as far as having a closely tracked index is concerned. There is the **misconception** that the health and **well-being** of a company's workforce is reflected in its measurement of a safety index. The safety index, normally in the form of a disabling injuries index, should be seen in context. It is an index that reflects not even how **safely** employees work, since it doesn't include unsafe work conditions or actions that result in minor (non-disabling) injuries, but only **how effectively employees are able to avoid serious (disabling) injuries.** This has nothing to do with either health or **well-being.** If a disabling injuries index is used as measurement of the well-being of a company's employees, a misleading situation arises. The workforce's health may be adversely affected by risks in the workplace while the company is lulled into a sense of false confidence due to the fact that they use the **wrong** index.

Although it may vary considerably from company to company, depending on individual circumstances, this study advocates the compilation of four indexes, briefly discussed below. The following principles are adopted:

- employees seen for the purpose of medical surveillance are scheduled in a way that they constitute a **representative sample** as far as risk exposure is concerned – see paragraph 6.4.1.2;

- **healthy** (absence of deviation) vs. **affected** people are counted. Therefore, an employee is only counted **once:** either having no deviation or else with whatever number or nature of deviation within the period of measurement;

- depending on conditions within specific companies, health indexes are unlikely to be 100% accurate. They provide an **indication** rather than an **absolute;**

- suggested indexes do not reflect **severity** of conditions or injuries: they do not count different conditions in the same individual as more than one, neither do they regard re-visits for the same condition separately; and

- **conditions under control** are **not** counted. Therefore, someone who exhibits, for example, a normal blood pressure under treatment, is not considered as having deviation.

6.4.4.1 Occupational Health Index

This is an index that reflects the number of employees, seen by occupational health, in whom **no health deviation** could be detected within the period that the index is calculated over in relation to the **total number of employees employed** by the company over the same period. In companies where the occupational health department provides the full extent of primary health care to its employees, this index will be the same as the total health index. In the case of Sasol Synthetic Fuels, the company that this study refers to and in the case of most companies, occupational health and primary health is provided via different facilities and therefore the two indexes will differ. In that case the occupational health Index provides an indication as to how closely its results relate to the total health index. The index is calculated by counting the number of employees seen during medical surveillance who have a health deviation, and adding the number seen as part of curative services. This number is expressed in relation to the total number of employees as the index.

For example: in a company with 7000 employees, where

- 1000 were submitted to medical surveillance, of which 450 had no deviation of any kind and 550 had;

- of the 550 with deviations, 300 had work related and 250 non-work related deviations; and

- 600 employees visited occupational health for acute injuries or conditions, some more than once, thus leaving 5400 out of the remaining 6000 with no deviation, the index would be calculated as: 450/1000 + 5400/6000 = 5850/7000 = 0.835. Any health index figure denotes a more favourable situation, the closer it gets to 1 (if everybody were healthy in the above example the figures would be 1000/1000 + 6000/6000 = 7000/7000 = 1). Thus:

- any deviation index indicates the opposite, therefore the closer it gets to 1, the worse the health situation is (if everybody had a deviation in the above example the deviation index would be 1, the health index 0); and

- the health index + the deviation index for any given period will be 1. In the example used above, the deviation index is:
  550/1000 + 600/6000 = 1150/7000 = 0.165

The occupational health index can be calculated accurately because all necessary data is available from the occupational health department.

6.4.4.2 Total health index

The total health index is more comprehensive than the occupational health index because it includes primary health data. The number of employees who saw their primary health providers within the period that the index is calculated over, is included in the figures that the index is compiled from. The index reflects the total state of well-being of the whole workforce, regardless of what may detract from it.

It is calculated as follows:

say figures are as described previously, with 100 additional employees who saw their primary health care providers. The occupational health index showed that 5850 employees out of 7000 were healthy for the period of the index. The new information would change that to 5750 out of 7000 being healthy. The total health index would then be:

450/1000 + 5400/6000 = 5850/7000 – 100/7000 = 5750/7000 = 0.822

The total health index can only be totally accurate if **all** visits to primary health care providers are ascertainable. Depending on specific company structure, this may require special arrangements and liaison with the company's human resources department and its medical aid scheme. Direct information from the medical aid scheme about the number of all visits paid to primary health care providers by members of the workforce (not their dependants), regardless of the diagnoses or the outcome, during the period of the index, is the most obvious method, if possible. If such information is not available from the medical aid scheme, the human resource department can provide part of the information but that would only reflect employees who were

booked off from work. The number of employees who visited health care providers outside occupational health for conditions that did not warrant absence from work,. is not included in that equation. If it is accepted that such an omission from the data:

- would not materially affect the outcome of the index;
- that it is a constant omission and thus a constant factor in the calculation; and
- that trends in the total health index is of more importance than separate values, the total health index can be calculated from occupational health and human resources data only.

6.4.4.3 Work related deviation index

This is a very important index since it reflects that portion of identified deviations that a **company**, via its safety, health and environmental management departments, has **control** over. It should form a prominent part of a company's objectives to constantly improve upon this index as part of its **Continuous Improvement** policy and as part of its commitment towards a **safe** and healthy workplace. An unfavourable index can and must be improved upon by following a twofold approach, namely actively identifying and addressing the source of the deviation as well as isolating affected employees from further exposure.

The index considers all deviations **caused or possibly caused by the workplace** identified in employees within the period that the index is calculated over. It expresses that number in relation to the number of employees seen during the same period as an index. In the original set

of figures, given as an example, 1000 employees underwent medical surveillance. Out of the 550 individuals in whom deviations were identified, 300 were considered to have one or more deviations that were or could be, work related. In addition 600 employees were seen for injuries and conditions stemming directly from work.

The index is calculated as:
300/1000 + 600/6000 = 900/7000 = 0.128

6.4.5 Executive medical evaluations

Members of company top management undergo medical surveillance like anyone else in the company. The type and frequency of surveillance is determined as described earlier. There is, however, a particular aspect that has to be borne in mind. This group of employees frequently has to make decisions that influence the prosperity of the company and the lives of members of the workforce. They also project an image of the company to the world outside of it. Their ongoing as well as temporary fitness to do so, as far as it can be ascertained, must be determined. It is arguable whether they have jobs that are more stressful than the average. However, stress from whatever cause may have more serious **consequences** for a company by virtue of the fact it may impact upon decisions that they take.

Apart from periods of personal trauma and stress like divorces and injury or disease of close family members that may render top management members temporarily unfit to make decision critical to the company, long term medical afflictions that may affect decision making like thyroid, blood sugar and endocrine diseases and conditions should be contemplated. Specific biological monitoring for these conditions should be carried out at intervals not exceeding one year, during which time adverse circumstances like those mentioned above should also be ascertained.

Incompatibility of whatever kind, temporary or permanently, should be unambiguously pointed out to both the individual and if necessary to his or her superiors or peers, in the interest of the company and regardless of the company politics involved.

6.5 SUMMARY

The collective preventive approach of the overall system is discussed in this chapter. It starts off with the aspect of plant housekeeping and continues to contemplate the preventive axis, from workplace monitoring to medical surveillance and the analysis of data accumulated during the processes performed as part of prevention.

CHAPTER 7: AN OCCUPATIONAL HEALTH SYSTEM – GENERAL MANAGEMENT SYSTEM

7.1 INTRODUCTION

This Chapter deals with the Level 1 General Management system that encompasses lower level systems designed to facilitate and group activities necessary to run an occupational health department. Systems are not discussed in any particular order. As with the systems already discussed, each suggested system, at least up to a level 3 system, has to have clearly documented criteria that establishes it as a system, as set out in the introduction to Chapter 5. These will be mentioned briefly in the discussion of each system.

Figure 35(a) : General Management

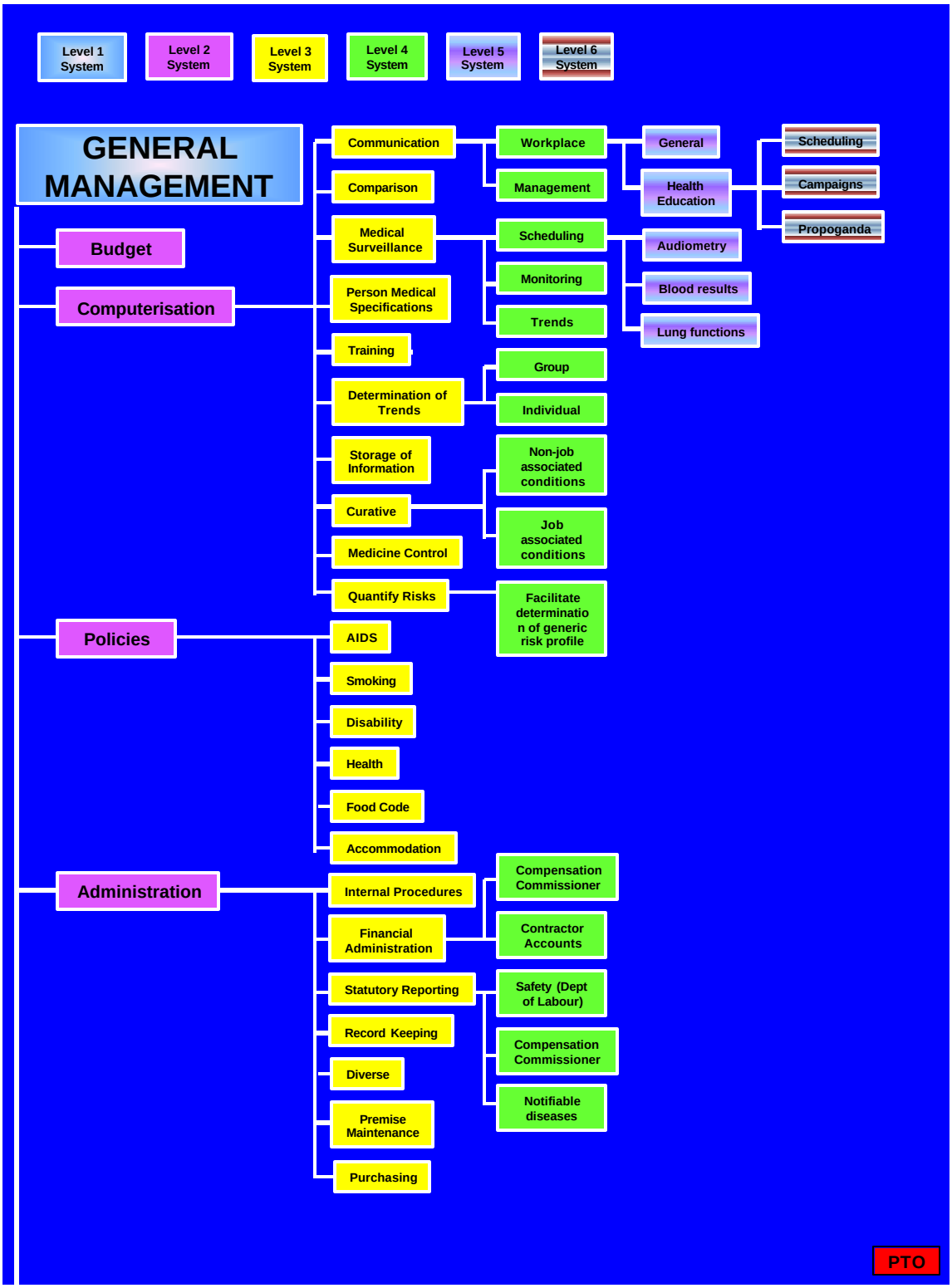
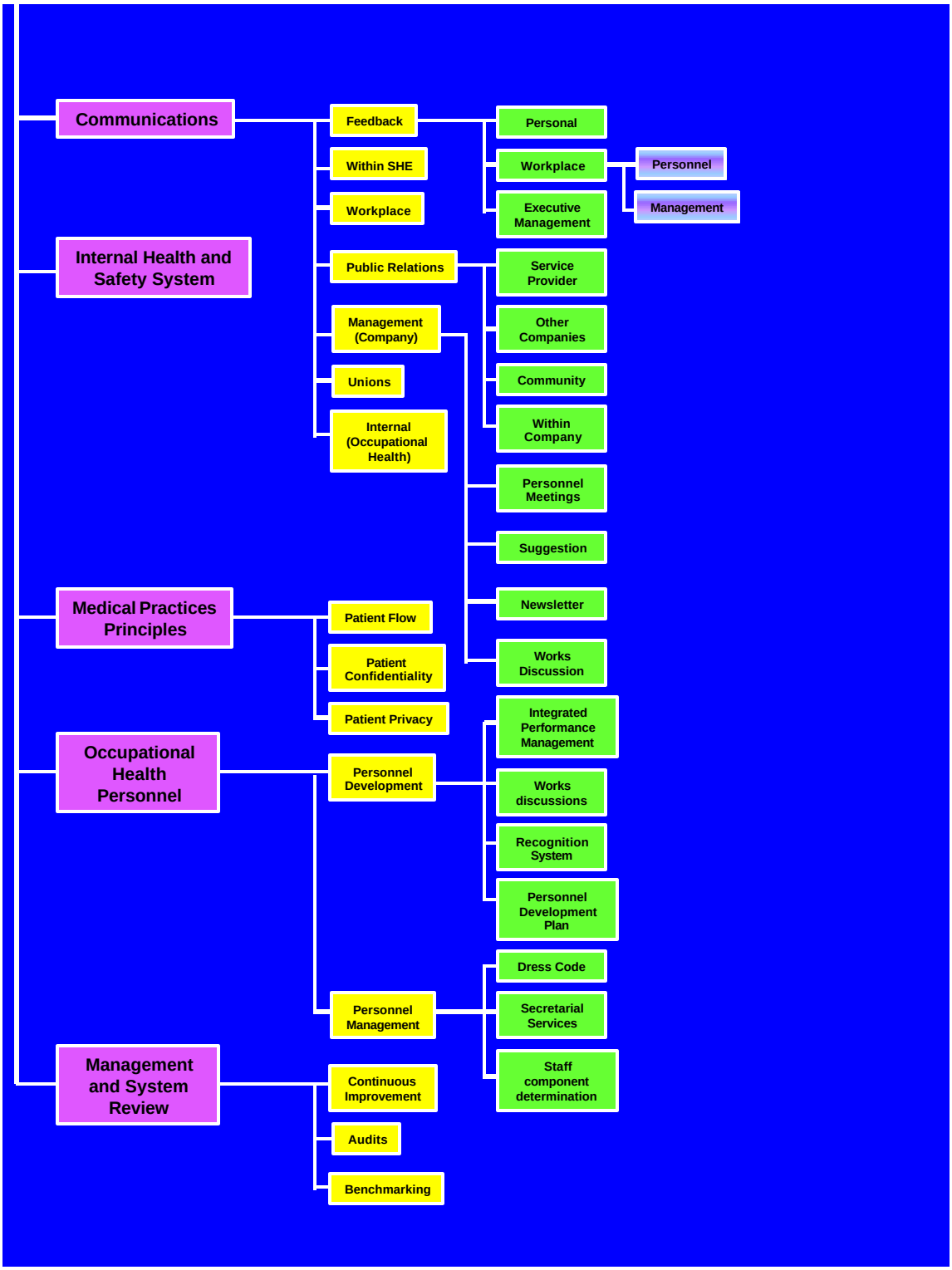


Figure 35(b) : General Management



7.2 BUDGET

It may seem superfluous to design a budget system into the overall Occupational Health System because it appears obvious that a business unit like an occupational health department will function under budgetary restraints that the company imposes upon it. However, this study proposes to suggest a complete Occupational Health System as a functional unit and as such, a well defined and proper budget system, according to company prescriptions, forms part of it and should be mentioned.

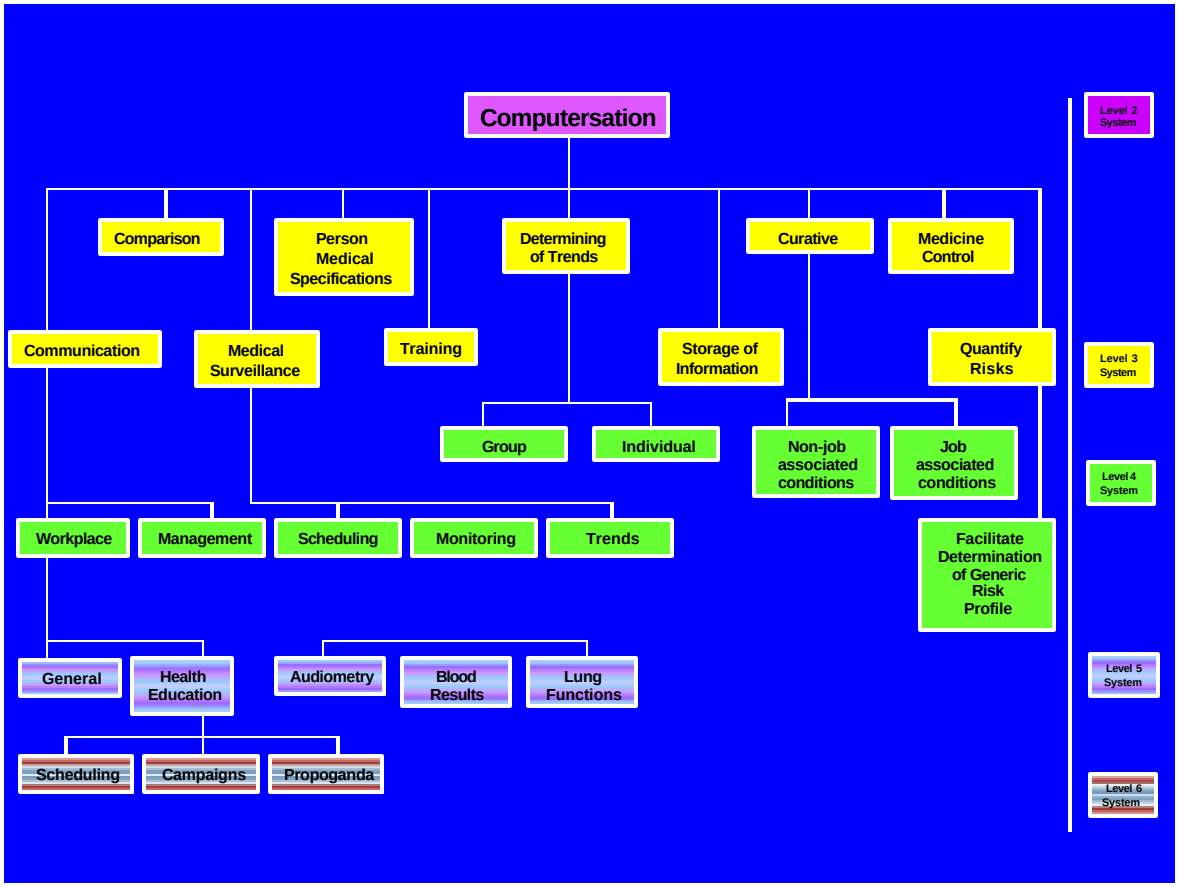
7.3 COMPUTERISATION

Computerisation as a process can neither replace **designing** of systems nor bring any type of **intelligence** to a system. Computerisation is no system on its own – it is a **tool** that facilitates general handling of data as far as:

- storage;
- grouping;
- analysis;
- distribution;
- presentation; and
- creation of information from new arrangements of data

is concerned (La Grange, 2001). It contains the inherent capability to create orderliness and to save time (Piater, 2001; Simpson, 1998).

Figure 36: Computerisation



The specific technical aspects of each of the functions mentioned above falls outside the scope of the study and are not discussed in any detail. The process of computerisation is presented as a system in the sense that the possibilities and implementation of computerisation must be done **systematically**, with specific goals and responsible as well as accountable people appointed for each aspect that is to be computerised.

This study suggests that at least the following aspects of an Occupational Health System be computerised, to an extent suitable for each company's set of circumstances:

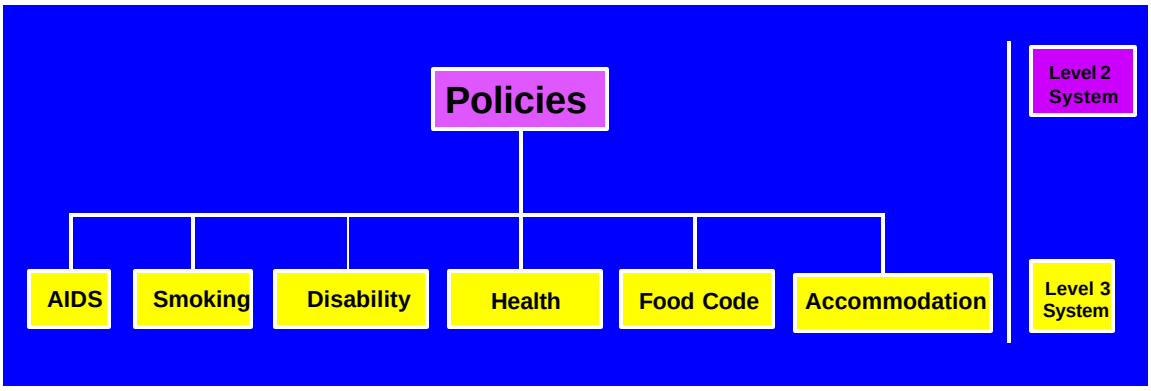
- communication at large, but particularly inside a company, to both the workplace and management;
- the surveillance process as far as scheduling of workers, computerisation of surveillance equipment and processes and data transfer from laboratories is concerned;
- analysis of data obtained from the surveillance process;
- establishment of person medical specifications;
- training;
- storage of patient information (Morrissey, 1996);
- risk profiling;
- curative processes like medicine control and statutory reporting; and
- general administration.

7.4 POLICIES

A company should have specific policies, procedures and protocols suited to its nature of activities and in support to its statutory obligations. Policies support inherent company **culture** and **commitments** and serve as public statements concerning commitments towards specific issues. All company policies must be readily available to all concerned and interested parties. This can only be possible if policies are actively promoted and made public.

Although considerable variation in the number, nature and type of policies that a company will have may exist, this study suggests the existence and active application of at least policies on the matters discussed below.

Figure 37: Policies



7.4.1 AIDS

An AIDS policy is essential, more so for its public relations value than for the specific contents thereof. The way in which a company deals with AIDS-sufferers is determined largely by law. The fact that prospective employees cannot be tested for AIDS and even if the AIDS status of such persons should be known, discrimination on the basis of a person having AIDS is prohibited by law. An existing employee can likewise not be tested for AIDS and even if it becomes known that an employee has, in fact, got active AIDS, discrimination in any way against such an employee is prohibited by law. Specific circumstances under which testing for AIDS is warranted, and the legal procedures that such an intended action needs to be followed in order to perform AIDS testing legally are well described and not repeated.

Without discussing the merits thereof, the fact remains that comprehensive legislation governing all aspects of this disease in an industrial setting exist and must be adhered to. Companies have very little, if any, leeway within this legislation to formulate and to practice their own approach towards this issue. Therefore, an AIDS policy, to a large degree, only echoes existing laws, rules and regulations.

7.4.2 Smoking

Smoking is a contentious issue, and becoming more so in modern society. The fact that the Tobacco Products Control Amendment Act, (12/1999), came into operation on 1 October 2000 made it a statutory duty of employers to have a smoking policy. There is also a practical matter of smoking and the presence of matches causing a fire risk in the workplace. In the case of a steel manufacturing plant the reason for a smoking policy may well be confined to the needs and demands of its employees and to meet the law. In the case of a petrol or explosives plant, a smoking policy plays a very real part in diminishing risk.

The objectives of a smoking policy are mainly to afford smokers to opportunity to practice their habit in such a way that they do not impinge on the rights of the non-smokers to work in a smoke-free are and to stay within the law. The following factors, as specified in the applicable legislation needs to be born in mind:

- the smoking of tobacco products in any public place is prohibited;
- a public place means any indoor, enclosed area which is open to the public or any part of the public and includes a workplace and a public conveyance;
- a workplace is an indoor or enclosed area in which employees perform the duties of their employment and includes any corridor, lobby, stairwell, elevator, cafeteria, washroom or other common area frequented by such employees during the course of their employment; and
- the term workplace excludes private dwellings, unless the private dwelling is used for commercial childcare activities.

In terms of the schedule attached to the act, smoking is permitted in workplaces subject to clauses 3, 6 and 8 of the schedule. Clause 3 determines that an employee **may** designate a portion of a workplace as a smoking area. The act therefore does not create an obligation on an employer to provide smoking facilities to employees. It further determines that a designated smoking area should be subject to requirements that it does not exceed 25 % of the total floor area of the workplace. The rest of the clause deals with specific prescriptions about signs that must be displayed.

In terms of Clause 6 employers must ensure that nobody smokes anywhere other than in the designated smoking areas. The employer must ensure that employees who do not want to be exposed to tobacco smoke in the workplace are protected and employees may object to tobacco smoke in the workplace without retaliation of any kind.

In terms of Clause 8 employers must have a written policy on smoking in the workplace and the policy must be applied within three month from date of coming into operation of the Tobacco Products Amendment Act 1999 being 1 October 2000.

7.4.3 Worker disability

The specific format and contents of a company's disability policy will depend on how its pension fund is structured in relation to the aspect of disability. In all cases though it amounts to determining partial or total incompatibility between a workers physique and psyche on one hand and job requirements and nature of his or her work environment on the other hand. This matter is greatly compounded and made a great deal more difficult if there are no specific criteria by which to base decisions upon. By implication determining compatibility between an employee and the post that he or she is occupying

at the time of evaluation as well as being able to suggest and alternative position for such an employee, requires two sets of information, namely:

- full and accurate information concerning each post, including physical requirements of the job, hazards and risks inherent to the post and predetermined incompatible physical conditions to the post. These aspects have been covered in detail earlier in this study;

- a well recognised (preferably internationally) set of criteria towards disability. An example of such a set of criteria would be the guidelines set up by the American Medical Association.

The objectives of a good disability system is to be able to access accurately and fairly a worker's ability to perform both his own as well as a different set of duties so as to both determine disability for an existing post as well as to be able to offer alternative duties in an alternative post (Van Niftrik, 1997:22-26). The criteria occupied should be clear and universal so that a different assessment done by a body outside the company should arrive at a disability figure of not more than 5% difference to the one set by the company (Doege, 1995:291-313). Aside of the aspect of fairness, in cases where disability assessment is challenged by an employee, the credibility of having used an impartial assessment system with clearly scientifically based criteria that are widely accepted, facilitates the matter of settling such a conflict.

7.4.4 Health

The health policy as a public statement of a company's commitment, approach and philosophy towards employee health has been covered extensively in previous chapters and is not entered into again. A company's health policy should be visibly displayed in prominent places within the

business premises should be readily available to any employee. All employees should be familiar with the contents thereof.

7.4.5 Food code

As in the case of a health policy, the importance, nature and reasons for a food code has been dealt with in some detail and is therefore not covered in any detail again.

7.4.6 Accommodation

An accommodation policy should state a company's position on accommodating employees, whether it be it its own employees or employees of other companies on its site. It pertains to **hostels**, **temporary accommodation structures** and any structure whatsoever that is used for accommodating employees after hours/during the time that they are not formally on duty in the workplace.

The policy should distinguish between a **workplace** and premises intended purely for **accommodation** and should stipulate that the two areas are not inter-changeable. It should lay down specific minimum requirements concerning:

- the **type of material** that accommodation premises may be constructed from;
- minimum space per person particularly pertaining to **sleeping areas**;
- minimum space per accommodated person in **entertainment areas** like TV rooms and lounges;

- minimum **ablution facilities** per number of inhabitants. The specific hygiene rules and regulations will be laid down as for the rest of the plant, and contained within the general regulations concerning plant hygiene;

- in what areas preparation of food for own purposes is allowed and minimum requirements for these areas. The requirements may be the same as those for areas in which food is prepared, in which case it must be specifically mentioned in the accommodation policy because a company's food code is, as a rule, only applicable to areas that prepare food for commercial purposes;

- the type and nature of electrical appliances that may be utilised;

- the existence and minimum requirements of specific areas set aside for washing of clothes;

- areas for washing of eating utensils;

- who exactly will be responsible for the upkeep of general good housekeeping and hygiene in accommodation areas, particularly referring to areas that are shared by all inhabitants of an accommodation facility, like lounges, recreation areas dining halls; and

- responsibility for general upkeep of premises surrounding accommodation facilities such as parking areas, walkways, paths, corridors and possibly lawns.

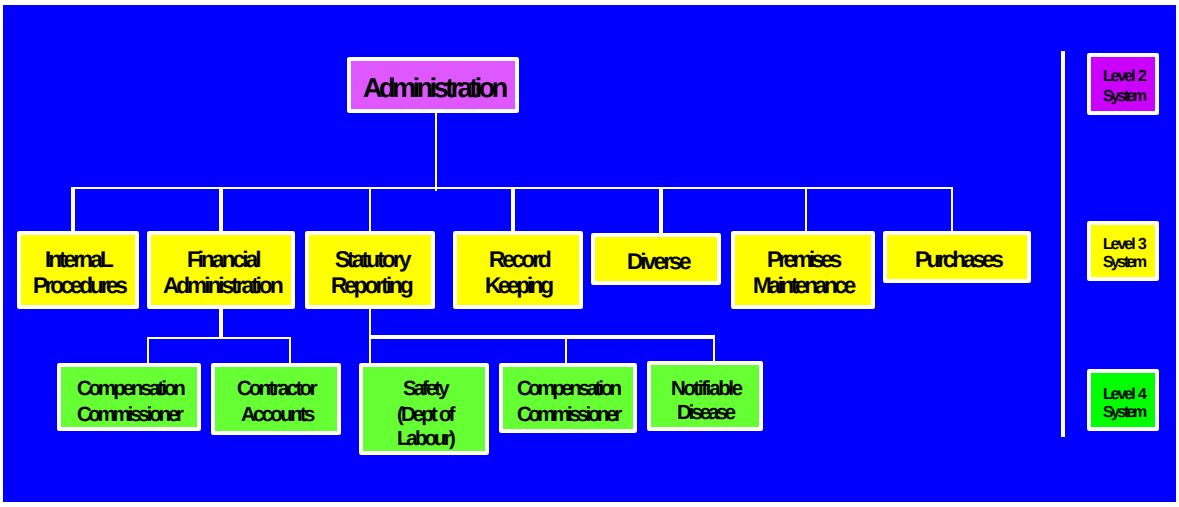
The objective of an accommodation policy is to ensure orderly and hygienic accommodation on the site of a company. It is to avoid a situation where especially contractors house people in over-crowded structures that are not suitable to provide human accommodation and under unhygienic conditions.

Insisting on decent accommodation facilities for everybody associated with a company's activities is conducive towards good company image and is indicative of a company's commitment towards general caring principles as contained in the Responsible Care ideology.

7.5 ADMINISTRATION

The system is rather generically titled. It groups systems that address general business processes that would apply to any business unit.

Figure 38: Administration



7.5.1 Internal Procedures

The purpose of this system is to stipulate a number of work matters as far as accountabilities and responsibilities of members of the staff, methods and standards of execution of tasks and lines of communication are concerned. The prime objective is to bring orderliness in a workplace that is shared by a number of employees by ensuring that tasks are performed and by avoiding possible causes of frustration and friction between staff members. The

procedures covered in this system could be considered to be menial in context of whole company policies but is nevertheless very important in the immediate work environment because it addresses everyday housekeeping. It reflects the micro-culture which exists between employees who share tasks and is instrumental in setting a specific climate within a specific workplace. These procedures obviously have to be in line with guidelines laid down by the company, but they reflect the individual approaches to tasks and duties within those guidelines. The system may cover matters integral to regular duties of a department, for instance vehicle maintenance, to matters that would appear totally insignificant from outside a specific circle of employees, like who is responsible for ordering fresh milk everyday. If not particularly described and documented some of these matters have the tendency to develop into major frustrations and can become the source of discontent that is totally out of proportion to the original action, or omission thereof.

7.5.2 Financial administration

This study strongly advises that no physical money be handled or direct payments made or received, in whatever form by an occupational health department other than manage a limited amount of money as petty cash. Finalisation of accounts, whether they constitute an income or an expense for the department, should be channelled into the company's central financial system.

7.5.3 Compensation Commissioner

It is a fallacy to reason that, the less a company claims from the Compensation Commissioner per year, the bigger the saving for that company will be. The Compensation Commissioner originally determines a company's yearly premium by calculating it as a **percentage** of the total amount paid out in **yearly salaries** (Van Assen, 1999). On the basis of that,

the Commissioner then receives a company's yearly contribution as a single payment and keeps such funds interest-free till the end of that year. The situation is then evaluated over a **three year cycle**: if a company claims more money from the Compensation Commissioner than the sum of its contributions over that period, a new yearly premium is likely to be calculated by the Commissioner. Should a **surplus** amount at the end of a year result, after all claims from the company have been met by the Commissioner, he is under **no** legal obligation to return such a surplus, but may use it to finance companies in the same industry that claimed more than their yearly contribution. If the Commissioner should decide to pay out the yearly surplus amount to a company, he routinely **retains 25%** of such an amount. It is thus not beneficial to allow a surplus of money to remain with the Commissioner at the end of a year, considering that contributions have to be paid in **advance**, are kept **interest free**, that there is no guarantee of receiving **surplus** money back and if it is received, a 25% **penalty** is paid on that for no obvious reason. The ideal administration of this system demands that an optimum value-for-money situation can only exist when the **total claimed amount corresponds to the total yearly demand.** It is therefore beneficial to a company to treat injuries of its own employees, of whatever magnitude, and to claim for such services from the Commissioner. **Claiming** steadily for services rendered to a company's **own** employees over a period of a year and monitoring the situation closely in the last quarter of the year so as to ensure that as close as possible to the total annual premium is claimed is the objective. If a surplus amount of money nevertheless remains for consecutive years, it is a company's **right** (and the obligation of the occupational health department) to challenge the amount that is accepted by the Commissioner as a yearly premium. A company that **historically** leaves a surplus amount with the Commissioner has the right to be assessed at the **lower** rate than the one that leaves the surplus. This however, is not an automatic process but must be initiated from the company's side.

It is essential to continuously keep an accurate tab and to verify amounts at stake. This implies that a company must keep very close tabs on accounts sent by **outside medical service providers** to the Commissioner. These accounts must be scrutinised for correctness and applicability and the accurate total balance between yearly premium and total claims up to any stage closely monitored.

7.5.4 Contractor accounts

Injuries to the employees of contractors who perform duties on the site of a company should be treated in the **same** way as it would treat injuries to its **own** employees. The same infrastructure concerning the services of external medical service providers should be at the disposal of contractors. **Accounts should be rendered for this service.** The argument that these people should be treated for free, in order to avoid the contractor discounting the cost for this treatment into its tender price for tasks is not valid. The Compensation Commissioner will pay all job-associated conditions that accounts are rendered for and the contractor will have that as a **constant expense**, regardless of who provides the service. There is therefore no sense in treating a contractor employee for a work associated condition and not charging for such treatment, thereby leaving a surplus amount of money which was paid by the contractor at the Compensation Commissioner with little chance that the contractor will get anything back. It is strongly suggested, in line with the previous suggestion, that the occupational health department receives **no** direct payment from contractor firms. The suggested way is to prepare complete accounts for services rendered to contractors and then rendering these accounts to the company's financial department. Money is then recovered from the amounts owned to the contractor by the company and **credited** to the occupational health department accounts. Prior agreement must be reached with contractors concerning the fact that

accounts will be rendered for services rendered and what the scale of fees would be.

7.5.5 Statutory reporting

A certain amount of statutory reporting must be performed and must be done within periods specify by law. These periods vary between **7 – 14 days** and may appear quite ample. Additional information to the actual injury or condition has to be included in the reporting process, such as full personal particulars, work history, earnings and information pertaining to the fact that the relevant person is a bona-fide employee of the company. Obtaining this additional information involves liaison with other parts of the company like the **human resources** and **salary** departments. If any problems are encountered in obtaining this additional information, the statutory periods within which reporting has to be effected may become quite short, and therefore requires the presence of an well-organised system.

7.5.6 Reporting to the Department of Labour

According to the Occupational Health and Safety Act and Regulations Act 85 of 1993, Article 24, a company has to report each incident occurring at work in which:

- any person dies;
- becomes unconscious;
- suffers the loss of a limb or part of limb; or
- is otherwise injured or becomes ill to such a degree that he/she is either likely to die or to suffer a permanent physical defect; or
- likely to be unable for a period of at least 14-days to work,

to the Regional Inspector of the Department of Labour. An occupational health department is instrumental in determining whether any of the degrees of disability mentioned in the act is present of likely to become present. For

this reason it is essential for close collaboration exist between the division and persons actually accountable for the reporting for these incidents and occupational health.

Although no specific minimum period in which reporting of this nature need to be finalised is pertinently mentioned, the common interpretation of this stipulation in the law as well as the practical execution thereof has established the norm that such incidents are reported immediately after having occurred or at least as soon as possible. This is interpreted as within hours of the incident having occurred. More comprehensive information as well as investigations as laid down elsewhere in the law normally follows this up. The important aspect for an occupational health department is that the early assessment of the conditions and likely consequences of injuries and conditions in employees who were involved in such incidents must be made accurately and quickly. A specific communication system between occupational health and the point in an organisation from where this reporting is made is necessary.

7.5.7 Reporting to the Compensation Commissioner

The system caters for statutory reporting of injuries as well as occupational health conditions and diseases to the Compensation Commissioner.

In the case of an injury, the Compensation For Occupational Injuries And Diseases Act, Act 130 of 1993, determines that an employer must notify the Commissioner of any casualty of injury suffered by any of its employees within 7 days of having obtained knowledge of such an injury or casualty. This type of reporting is accompanied by a substantial amount of additional information requested by the Compensation Commissioner, as referred to earlier. Apart from details particular to each employee, medical

reports describing the injuries of conditions accurately must be completed by medical personnel and submitted to the Commissioner.

7.5.8 Record keeping

The Occupational Health and Safety Act, Act 85 of 1993, provides clear legislation in connection with requirements of record keeping:

- records of the results of all assessment, air monitoring, and medical surveillance reports should be kept;
- personal medical records shall only be made available to an occupational health practitioner;
- all other records should be kept and be available for inspection by an inspector;
- records excluding personal medical records can be made available to any persons subject to formal written consent of the relevant employee;
- records of assessment and air monitoring should be available to the relevant health and safety representatives or health and safety committee;
- all records of assessment and air monitoring should be kept for a minimum period of 30 years (40 years in the case of mines);
- all medical surveillance records should be kept for a minimum period of 30 years (40 years in the case mines) and if the employers ceases activities all those records shall be handed over or forwarded by registered post to the relevant Regional Director; and

- a record of the investigations and tests of both the environment and employees as well as any repairs resulting from these investigations and tests shall be kept for at least 3 years (Occupational health And Safety Act And Regulations, Act 85 of 1993, Hazardous Chemical Substances Regulations, Regulations 7, 9, (1) (a)–(g)).

In order to comply with the stipulations of the law it is clear that records must be kept in an orderly and correctly filed way so that individual records can easily be obtained for perusal by parties who are legally entitled to do so, if necessary. Traditionally and practically, at least the majority of records are in **printed** form, posing specific challenges to storage as far as both physical space as well as accurate filing is concerned. In order for such records to remain in usable form, storage will be necessary in **fireproof** and **damp proof** surroundings and special precaution taken to protect records against both the already mentioned factors as well as against insects and other biological agents that may attack them. At the time of this study, no clear-cut rules exist concerning the storage of information and records in electronic form. Together with the natural progress in technology an increasing amount of information and data in electronic form is the norm, and this tendency is likely to increase substantially in future (Poggio, 1994:48-52). Electronic storage of information must be carefully contemplated (Morrissey, 1996). The main reservation against storage of data in electronic form up to date has been that servers onto which information is stored, which belong to the company itself, are **unsafe** by virtue of the fact that a company's own Information Technology staff are likely to have the technical skills and means to access such information. This problem has, in some cases, been overcome by using technology which "scrambles" data at the company after which it is sent in that form to another company which has the facility and core business of storing such "scrambled" and therefore unusable information. When records stored in this way are needed, the information is retrieved back to the original company and "descrambled" immediately before

being accessed by selected staff from the companies occupational health department, from where it gets distributed further. Various other technical ways of protecting data from access thereto by unauthorised persons exist and are being developed.

7.5.9 Diverse administration

It may appear non-sensible to have a lower level system in an overall system which occupies itself with "diverse" issues: because it doesn't concentrate or deal with specific known actions and issues, it cannot have any particular objective, key performance indicators or definition of victory. However, by virtue of the fact that life is not perfect, no system of circumstances that it has to deal with will follow pre-set rules and be predictable and foreseeable. Therefore, there must be a specific set channel of procedures and responsible staff members by which unforeseen matters are dealt with. These, as a rule, exclude strategic issues and matters that have a substantial influence on the way in which occupational health is conducted. Rather, it deals with smaller and less important day to day issues that are unforeseen and arise out of the normal flow of business. These matters may not be of grave importance but if not handled systemically, can be disproportionately disruptive in a business unit. It is difficult to allocate the accountability for matters that will resort under this system to any specific person: it will depend on each specific individual issue. The closest practical arrangement is for a senior member of occupational health to serve as contact person and co-ordinating function, from where unexpected matters are referred to people who would ultimately the accountable for the individual issues.

7.5.10 Premise maintenance

It is important that the premises from which occupational health is conducted not only be functional but representative of the state of well-being that it

pursues. Therefore premise maintenance extent beyond obvious aspects like ensuring that the roof does not leak or that the walls are clean and painted. It involves ensuring that premises from which occupational health is practised reflect a cheerful and pleasant ambience and involves matters like well-looked after lawns and garden, well kept, comfortable and brightly coloured waiting and recreational areas and with a generally spacious and climate controlled environment. Visits, especially waiting periods in and on the premises should be made as pleasurable and comfortable as possible. Fresh magazines and newspapers, ergonomically correct furniture and structures like stairs and steps and a general climate of user friendliness with attention to facilities for disabled persons is necessary. The total appearance and general atmosphere of premises can be enhanced considerably by inexpensive measures like the presence and placements of plants, the use of the correct colour scheme as well as some relatively basic gardening. The objective of the system is to achieve a general atmosphere and appearance in the medical facilities as described and this objective can only be achieved if premise maintenance is allocated to a member or members of the staff who have the responsibility and accountability for achieving the objective.

7.5.11 Purchases and petty cash

This system does not include major acquisitions or big expenditures. Any acquisition that requires a major financial outlay which has to be justified by a business case and which must be approved at higher level than the management of occupational health itself is well outside the scope of this system. Likewise, it does not involve itself with accounts for services rendered by occupational health to third parties or to other areas of a company and neither does it deal with any kind of financial transaction that has an existing method by which it is handled elsewhere in the company. It mainly occupies itself with purchasing consumable items necessary during

the course of ordinary day-to-day business. Examples of matters that my be addressed by this system are:

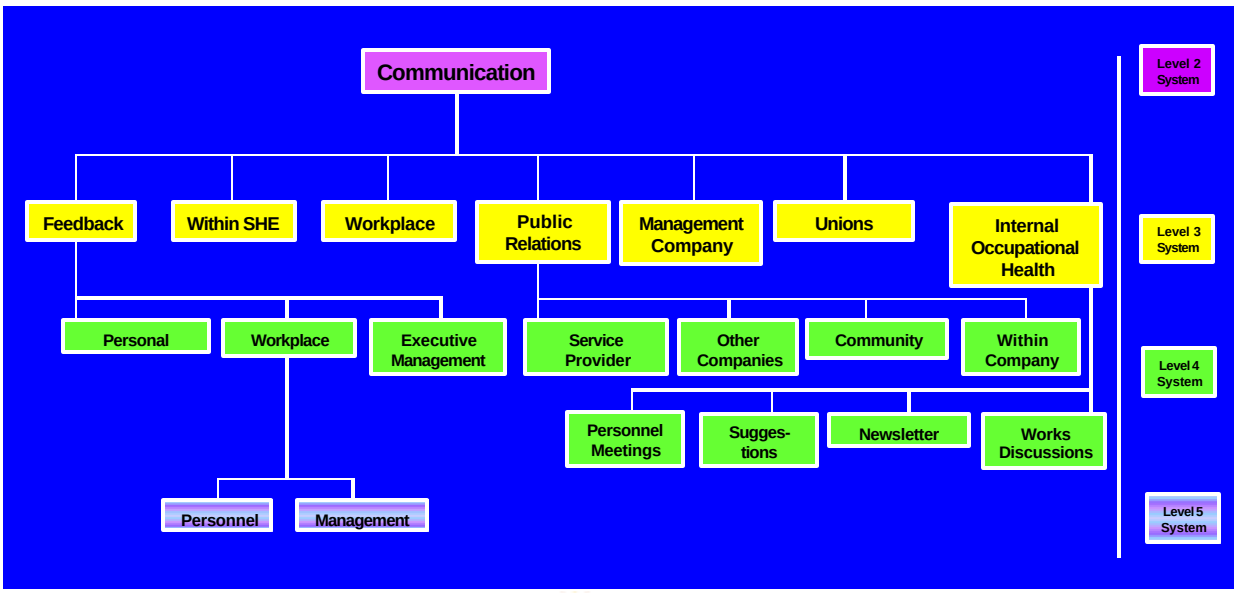
- purchasing of beverages and refreshments for consumption by visitors to occupational health;
- stationery and related utensils;
- minor repairs to equipment and premises; and
- recovery of moneys paid out by members of the staff for things that they have a right of refund to.

The person accountable for this system must not only administrate it but also accept responsibility for control and legitimacy of application of funds. Lack of tight control over petty cash spending and of exactly what is purchased is likely to lead to embarrassment: purchases and petty cash application are systems that routinely get audited and scrutinised by both internal and external auditors.

7.6 COMMUNICATION

Occupational health must actively use communication as a tool whereby it is brought under the intention of the employees at regular intervals, if not constantly. It must utilise this possibility to impress upon a company, management and employees alike, that occupational health has a constant presence and that it occupies its rightful way in an organisation's structure namely that of a leverage operation that can be used by a company to its benefit. It is not a loose-standing service-rendering facility that is just there in order for the company to comply with the law.

Figure 39: Levels of communication



7.6.1 Feedback

The feedback system is extremely important in an overall Occupational Health System. The term feedback refers to reports about the results of the medical surveillance program that are submitted to both employees and the business. Being able to accurately report back on the results obtained implies that there must be an accurate **analysis system** of the data obtained from surveillance. Employees have a moral right to know the results of the surveillance tests that were performed on them, in line with the philosophy and approach to occupational health. The combined actions of **analysis and trends determination** of data obtained from surveillance together with **feedback** of such results and **trends**, provide a right of existence to the whole surveillance program. Without these actions, doing medical surveillance for the sake of doing it and in order to meet provisions of the law makes no sense at all and amounts to a waste of time, resources and energy. The whole train of actions from determining what an employee should be

monitored for, performing the surveillance program, analysing the results and giving feedback about the product of these actions should be focussed towards the goal of ultimately arriving at **strategic information,** besides the obvious overruling objective of employee well-being. This should be used for the improvement of both employees' working conditions as well as the company in general. An essential part of the feedback action is to suggest **remedial** actions on the determined trends. In order to arrive at practical and relevant remedial actions, consultation should be sought with the people who are in charge of the business processes and understand and control the production processes that contain the risks at stake. Finally, remedial actions to developing adverse health trends can only be put in place as a joint effort between occupational health and its sister fields in the SHE-fold together with a strong business component consisting out of people from production engineering areas.

7.6.1.1 Individual Feedback

An employee must be notified of the results and interpretation of his/her tests and any recommendations made, keeping the confidentiality of personal medical records in mind. The full meaning and implication of the test results must be explained to him or her in non-technical terms and care must be taken to ensure that an employee understands fully the content of the information conveyed to him. This is particularly important in the case of employees who speak a different language to that of the person doing the feedback communication. Where necessary, an interpreter must be used who must obviously also be a member of the nursing or medical staff of occupational health. One of the implications of the feedback results to an employee is that an employee's fitness to remain in his or her specific job must be re-evaluated. Results must be compared against the actual, pre-determined post medical specifications for this purpose.

Follow-up actions may include repeating the test, further medical examination, removal of the employee from further exposure and notification to the employer of remedial actions necessary and already taken. Should it be necessary to remove an employee from his particular job, protection of conditions of service must be guaranteed. (Occupational health and Safety Act and Regulation (85/1993), Hazardous Chemical Substances Regulations, Regulation 4.4.1(f) – (g)).

The individual employee should at all times be part of the search for remedial actions, and therefore of the final solution to the problem. During feedback, active assistance should be sought from him or her concerning the possible sources of exposure that he or she may be exposed to that may cause the findings obtained during monitoring. Finally, remedial actions that are being imposed on an individual employee should be discussed at length with employees so to ensure their full participation and positive attitude towards their remedial actions. Ultimately, the effectiveness of remedial actions will depend on the individual, not on the way management implements such actions or the way in which they are enforced.

7.6.1.2 Feedback to the workplace

After feedback has been given to individual employees in whom deviations were identified, the next step is to give feedback to the area in the workplace that the individual belongs to. This feedback is given in group context and no individuals are identified at all. Comparisons of overall results of groups of workers and of work areas whether it be small, specialised group of workers or larger work areas, are given in the form of comparisons of overall trends and results obtained per group. This feedback is both given to workers themselves and their

immediate line management. The same information is given, but with a slight difference in emphasis: groups of employees are informed not only because they have the legal and moral right to know but also to impress upon them the importance of adhering to work procedures, policies and protocols. Their immediate line management should use the same information and be made aware of the importance of correct supervision and correct management which includes the presence and practice of correct work procedures and work methods.

7.6.1.3 Feedback to executive management

The next step in the feedback procedure is to provide information concerning health trends in departments, divisions or other large groupings of workers to the relevant member of top management under whose authority these areas fall and also to top management as a group. Full information is provided to top management, while not identifying individual employees in the process. Health trends in both smaller as well as large groupings of workers are pointed out. Steps taken to determine remedial actions are pointed out and the state of implementation of such remedial actions are mentioned. The purpose of reporting health trends to top management is to allow them to use this information for strategic information and to examine possibilities of long-term measures to prevent recurrences. Depending on company structure and available opportunities, giving feedback to top management, whether it be to a board or an individual member thereof, may be done at the same time as providing feedback to the workplace.

7.6.2 Communication within SHE

Safety, occupational health and environmental management are three separate and independent fields of study. They function **independently** but not **isolated** from each other. In fact extensive and constant integration between the three fields is essential for each of the individual fields. In the case of occupational health **integration** has particular value in the process of compiling an **individualised risk profile**, determining the cause of **trends**, suggesting and executing **remedial actions** and in **research.** It is therefore essential that active and open channels of communication should exist between these three fields of study in a company – not only as far as each individual division thereof is concerned, but also from a **central point** in the company. **Corporate governance** of SHE matters plays a pivotal role towards standardisation of **standards**, **process**, **systems**, and **procedures** (Botha, 2001). Good communication within SHE serves both to bring about the standardisation and good standard referred to and to introduce the process of **continual improvement** into the system. By constantly communicating about both the individual fields as well as the combined effect of and approach to these fields, best practices both from within and outside the company can be ascertained, discussed and if beneficial, implemented into the company's way of looking at this aspect.

A specific system is necessary whereby communication within a safety, health and environmental management department is established. **Informal** contact between practitioners of these fields should at all times be encouraged within a company but a system consisting out of regular and more formalised **work sessions, seminars and meetings** whereby matters pertaining to these fields are discussed, should be in existence and should be well co-ordinated. Again, this co-ordination works best from a central point in the company.

7.6.3 Communication to the workplace

This system refers to direct and regular communication to the workplace on matters other than feedback of surveillance results.

There is a need for communication from occupational health to employees in the workplace on a variety of subjects that crop up from time to time and are difficult to list or predict beforehand. Possible topics for communication might be implementation of **new policies** pertaining to occupational health, **general information** on health matters like cholera outbreaks or malaria, effects of **incidents** on the environment and on the workforce (like a release of effluent into the environment) or information on general health matters. Communication to the workplace should be **frequent** and **diverse**. Occupational health must become a part of everyday life, and management at all levels must look upon occupational health as part of the **core** issues of a company, as part of business **leverage** options and not as something which is remote from the basic processes. It does not deliver a service that is foreign to core processes, but is part of it.

Specific systems towards achieving this goal must be established. This includes availability of electronic communication systems by means of **e-mail** facilities to all who have access to it, a high profile in company **news letters** and **newspapers** where applicable and frequent participation in forums where oral presentation to employees to a company are made. Open access to these communication methods must be organised and ensured so as to establish specific communication systems that can be utilised by occupational health and are actively used.

7.6.4 Public relations to service providers

Public relations is extremely important for occupational health. The effectiveness thereof will ultimately determine the **perception** of people and instances who deal with it, concerning its accessibility, authority, efficiency, value-adding and specific importance of the role that it plays within its environment. The process of public relations should be utilised to establish an effective system of **networking**, to create a pleasant work environment and to promote occupational health. It is often difficult to allocate this very important function to a specific individual or group of individuals within occupational health and effective execution of this function is very often a reflection of the **general approach** and climate that exists in an occupational health department as such. In so far as it involves dissipation of information into its immediate environment, this study advocates that the primary function and the accountability of this activity should be grouped under the **teaching and training** main systems. It is, however, not a well defined and clearly demarcated function and although it is primarily grouped under teaching and training, will out of necessity involve the whole occupational health department.

7.6.4.1 Service providers

The term service providers refers to doctors and instances like laboratories, hospitals, instances and companies that regularly provide a service to occupational health. Requests for their services are often associated with considerable and specific paperwork, for instance in the case of treatment of severe injuries, paperwork as described by the Compensation Commissioner. Good working relations with service providers often ensure that essential treatment and services to employees can continue in the absence of correct bureaucratic

processes. This can only take place if there is a good measure of **trust** between such service providers and the company itself. Frequent and personal **contact** should be established with all service providers and these occasions should be used to cement good relations between the parties. Continual assurances of a company's willingness to co-operate with service provider in an effective and pleasant way must be issued. Service providers must be invited to mention areas of **concern** or possible friction and a company must prove its good intentions by the timeliness as well as **quality** of its follow-up actions after such areas have been identified. Public relations is often regarded as a "soft-issue" that falls slightly outside the scope of a department like an occupational health one. This is incorrect and although the establishment of good public relations requires a good set of skills and possibly people with specific character traits, this aspect is tremendously important for **marketing** an occupational health department, if not for anything else.

7.6.4.2 Public relations to other companies

Sharing of best practices between occupational health departments of different companies will not happen if there isn't a good measure of **goodwill** and a friendly working relationship between them. This situation will not come about by its own but has to be specifically established and earned by reciprocating exchange of information, sharing of best practices, and in general, a tangible way in which a department or a company desires to interact in a positive way is exhibited. This requires that other companies must be identified and actively approached so as to ensure and establish the opportunity for future co-operation. In order to establish this system, it is normally only necessary to institute very basic actions namely to approach identified companies directly and to voice one's intention outright.

Backing up this communicated intention with appropriate actions and keeping constant contact with such companies will normally create a system, which will function well over the longer term.

7.6.4.3 Public relations to the community

A company can meet a major part of its moral and ethic obligations towards the community that its workers come from as well as to the broader community by actively pursuing good public relations with such communities. These actions can either form part of a general SHE-approach to the community or it can play an individual role by establishing direct public relations with the communities referred to. At the same time good marketing of occupational health as well as of the company as a whole can be achieved. Specific people and instances that represent communities must be identified and communicated with. Regional Councils, municipalities, emergency services departments, sports clubs, churches, schools and clubs of various natures are examples of instances in a community that can be used to convey a message of goodwill to the whole community. Prominent people from a community that play a leading role of virtue of their position and connection to instances and specific community matters can and should likewise be identified and open channels of communication should be established with them.

7.6.4.4 Public relations within a company

“Charity begins at home” is a saying that is valid also within this specific context. An occupational health department must be marketed inside a company as actively and with as much care and attention as it is done outside the company. Neglect of this very important aspect can lead to an amazing degree of ignorance inside a

company as to the real purpose and scope of activities of occupational health. Especially in an environment where the idea is actively entertained that occupational health should not seen as a service providing unit that stands removed from the core processes from a company but rather as part of a companies core procedures and processes, the chance to market occupational health to the rest of the companies concern, is too good an opportunity to miss (Irwin 1998:466-471). The company in which an occupational health department functions needs to be brought under the impression of two aspects:

- the **scope of activities** of occupational health and the possibilities of incorporating some or all of it into its core processes; and

- the actual **value** that occupational health could or can add towards the company's business processes, and their willingness to be involved.

It is thus both the **factual possibilities** as well as an **attitude of willingness** from occupational health's side that has to be conveyed to the rest of the company. Ultimately, the position of **prominence** or **neglect** that an occupational health department fulfils within company and business structures will be determined by **itself**. Its role in **change management** is a good case in point. If occupational health does not insist on being part of the planning of change management as far as personnel issues and establishment of new plants and extensions to business processes are concerned, the chance to have a say in, for instance, ergonomics and lighting, will be lost.

As in any other system the system that promotes public relations within a company must fulfil basic requirements by having specific

people allocated to be responsible and accountable for the actions mentioned. The system must have specific goals.

7.6.5 Communication to company management

This system refers to the establishment of channels of communication to **various levels of management** and involves contemporary topics as well as advice, exchange of ideas and sharing of concerns on occupational health matters. The link between specialised knowledge and general business processes should be established that allows for a certain amount of frankness. **Expectations** that the company, at all levels, have of occupational health and vice versa, should be clearly communicated and should be received positively and openly. The objective of a communication system between occupational health and company management is to establish mutual trust and understanding. Occupational health must feel that they are being recognised as an independent, specialised field, not **tolerated** but **necessary.** The magnitude of the possibility for value adding that it carries with it must be appreciated. In order to provide for and support aspects like **research,** management has to not only be up to date about the activities of occupational health but must also, to a fair degree, share the field of study's **philosophy** and **approach**. Access to informal information sessions, to formal company meetings and to individual members of top management must be established. It is important to allow a bilateral flow of information during these occasions.

7.6.6 Communication to workers' unions

A definite system of communication about the workings and activities of occupational health to the unions must be established. This study is, however, hesitant to suggest that it should be maintained at all cost. The purpose of communication to unions is not to **report** to them, to obtain

permission for anything or to seek **approval** of whatever kind about any matter whatsoever. It should be an action that is embarked upon because unions are recognised as representative of the workforce and as such, a useful body to utilise as link between an occupational health department and a large workforce. The objectives of this system must be very clearly communicated to all involved parties. There is nothing to stop occupational health from setting up a communication channel between themselves and the unions only. However, due to the complexity of most of the topics to be discussed and the fact that most topics will originate out of and require remedial action that is the combined product of safety, health, environmental management and company management, it is better to involve all possible interested parties. The concept of involvement of a tripartite partnership namely between the **SHE department** as a unit, the **workers** with the unions being their representatives and **company top management** comes into play. Representatives from each of these fields should routinely be present on the forums whereby the system is conducted.

The climate between a company and the relevant workers' unions will play a large role in the design and implementation of this system. If a company is or has been involved in serious differences with the unions representing its workforce, the chances of creating a forum which has a different climate and purpose than the traditional (they against us) type of approach, is unfortunately slender. Careful consideration must in such cases be made as to whether a communication system between these parties is possible. As it is, most of the topics discussed during communication sessions with the unions involved will revolve around issues that need some remedial action or that have the potential of being detrimental to the workforce. If unions cannot accept communication about problems to them in a positive light, this system must be abolished.

7.6.7 Communication internal to occupational health

Communication within the occupational health department forms part of general business management. Especially in departments that perform duties on a 24-hour basis it may be difficult to get the whole staff component together in order to make specific announcements or in order to discuss specific matters. In cases like that, alternative measures and methods of communication have to be established as a matter of necessity rather than choice. There are, however, occasions where the presence of a full staff component is essential and this method must not be excluded.

Full communication about staff matters and about the way in which occupational health is structured and particularly, the way in which it is **heading** must be conveyed fully and with full participation of all staff members. Work procedures, charters containing the goals and future of a occupational health department and similar documents about aspects that affect staff members can be drawn up by the management component in *pro forma* format but must be submitted to the rest of the staff for approval.

A lot has been said about the value and dangers of informal communication systems, commonly referred to as the “grapevine”. Management of a business unit can use this type of information system to its benefit. The good of the business unit and company should remain the ultimate guide and use of the “grapevine” should be with great care because of the possibility of detrimental distortion of information travelling along it.

Personnel meetings remain possibly the most important source of getting information across and receiving feedback from the workforce. This specific form of communication loses some of its effectiveness if it has to be repeated two or three times because of the fact that staff work shifts and that it has to be repeated for the sake of those members of the staff that could not attend the previous meeting. However, the fact that personal contact on a person-

to-person basis is established during these occasions is extremely valuable and it remains the preferred method of communication.

It is also necessary to establish a general communication system within a department that allows for suggestions and remarks that can be made without identifying the source thereof. The reason for this is to remove to possibility of retribution and to allow for members of the staff who, for whatever reason, prefer to make comments and recommendations whilst remaining in incognito. A suggestions box or any other system whereby written suggestions can be submitted must be established. **Internal newsletters** to which any member of the staff can contribute and in which important matters, from whatever perspective, can be conveyed to member of the staff serve a good purpose. This caters for both formal and informal communication between all members of occupational health and provides an opportunity for everybody to voice his or her opinion. Newsletters are easy to distribute and need not be expensive because it can be compiled and distributed using a normal equipment and infrastructure of occupational health.

A system whereby individualised information concerning specific members of the staff is conveyed must also be installed. This communication takes the form of **work discussions** and is between a member of staff and the person that he or she reports to.

7.7 INTERNAL HEALTH AND SAFETY SYSTEM

As in the case of any other business unit within a company, an occupational health department has to conform to the **audit** system that a company subscribes to. Regardless of the health standard and policy that an occupational health department sets for it company, it also has to conform to the requirements of the company's audit system as far as safety and health

measures are concerned. It cannot be stressed enough that neither legal requirements nor the health requirements of a general health system are valid guidelines to use in determining a company's specific health policy and standard. The criteria used to determine a company's health standard, should be what the company **needs** and the objectives of such a system should be to establish standards and policies of health that are applicable to the specific circumstances and working environment found within a company. Subscribing and conforming to the health and safety regulations and procedures that a general audit system prescribes is a separate matter: the main reason for conformance thereto is to avoid occupational health **embarrassing** the company at large. It is, however, not impossible, for an occupational health department to adhere to the requirements to the companies audit system if that audit system is also the one adopted by the occupational health department. The audit system most commonly supported by companies in South Africa, the National Occupational Safety Association (NOSA), has, up to 2001, only contained a rudimentary occupational health module and adherence thereto has not guaranteed any kind of acceptable health standard. The occupational health module that comes into operation in 2001 is much expanded and does require a much higher standard of occupational health. This study therefore still suggests that the standard at which occupational health should be conducted within a particular company, should be compiled by its occupational health department, taking in consideration the specific work environment, health requirements and general company policy towards these matters. Conforming to the company's audit system still remains a matter of not causing the company to lose audit points rather than using the system as a **manual** for conducting occupational health.

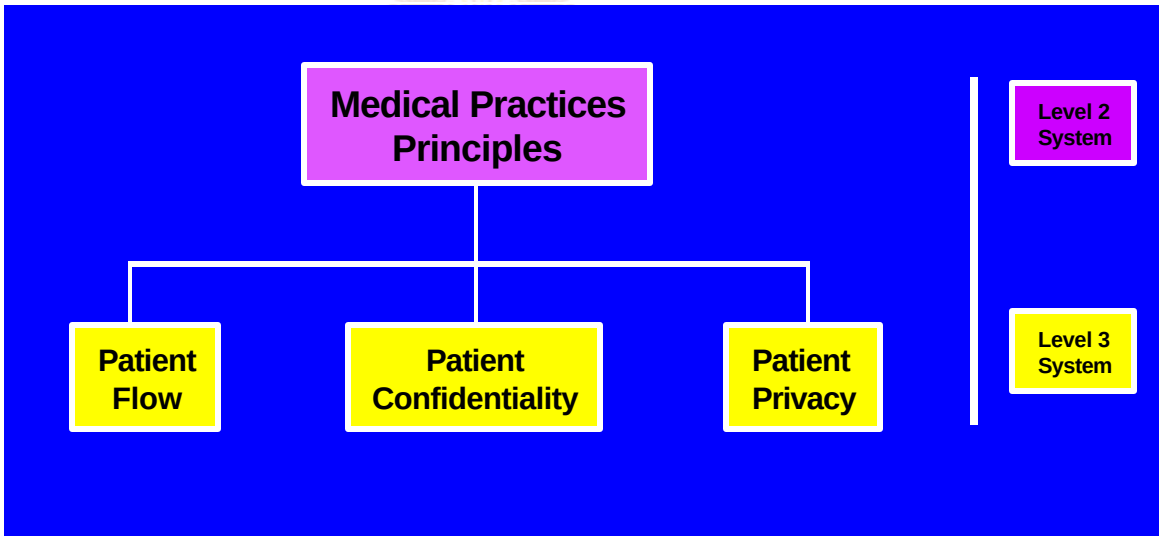
7.8 MEDICAL PRACTICE PRINCIPLES

The medical practice principles system together with its lower level systems is aimed at a two-fold objective:

- to ensure an orderly and practical flow of physical movement of people through the premises within which occupational health is practised; and

- to ensure basic patient rights and the maintenance of practical ethics as far as health practice is concerned.

Figure 40 : Medical Practice Principles



7.8.1 Patient flow

This aspect is largely, if not totally influenced by the outlay of the premises within which occupational health is practised. The ideal situation is where a flow of people through the premises is achieved that fulfils to requirements:

- patients and health staff do not share, or share as little as possible **common areas** that they move in;

- occupational health staff shares the **central area** of premises and patients revolve around the central area on the periphery of the premises. This brings about that all equipment, records and other paperwork, medicines and utensils used by the staff is kept out of the way and out reach of patients, leaving the area that is left for patients to move in, unobstructed. Patients move in an area where their personal belongings, articles of clothing, shoes and articles that they may carry with them, is kept away from the area in which occupational health staff work;

- patient flow is such that patients start from one point in the premises namely the waiting area and from there move in one direction only to various stations in the premises where tests are performed on them to either leave the building in the opposite end of the entry area or to move in a circular way through the premises without ever moving back into the direction where they came from or crossing a line of movement of patients, to ultimately reach the waiting room again and to exit the building through the same door as the entrance. The latter is preferable because control can then be exhibited over people who both leave and exit the building from one central location.

- However, it is seldom possible for an occupational health department to dictate the layout of its premises and in that case workstations within the building as well as the general outlay must be effected such that as little sharing of movement areas of staff and patients is arrived at. In addition to controlling the main stream of movement of people, whether it be staff of patients, specific rules and regulations must exist and be enforced that no patients, members of staff or visitors to the premises to occupational health are allowed to move in the building in a haphazard way. Upon

entering the premises, everybody should report to a reception area, which must be adjacent to a waiting area. It is essential to have a receptionist and the main duties of this person is to receive people at the premises and to then direct everybody to the specific area that they need to go to. In the case of patients or employees who need to undergo procedures, they are directed to a waiting area and their names listed chronologically for members of the staff to attend to them in the same order as that in which they arrive at the premises.

The reason for a specific system and strict rules concerning the movement and flow of people through an occupational health department building is two-fold:

- it ensures good order and enhances productivity by eliminating periods in which people wander around in the building without purpose or looking for a particular person;

- it prevents patient- and occupational health records as well as variety of medicines and medical equipment like syringes and needles becoming accessible to people who move around unattended.

7.8.2 Patient confidentiality

Medical ethics as well as legislation protecting individual personal rights dictate continual care to ensure these aspects. Physical files, documents containing patient information and physical laboratory reports belong to the company by virtue by the company having paid for these items. All information that makes it possible to identify a specific individual, contained in these items, and pertaining to that specific individual, is confidential. Specific ownership of such information is a mute point. It can be argued that ownership rests with the company by virtue of the company having requested

the information and having paid for it. However, distribution of that information is subject to the individual's consent and the individual therefore has control over it. This implies ownership of the information by the individual albeit not explicitly so. Confidentiality of patient information is not negotiable by virtue of both legislation and ethics. Company needs, rules, regulations and policies cannot overrule this basic principle at all. Medical information about patients cannot be divulged to anybody except with the expressed, informed and explicit knowledge and permission from the relative individual. The only exception is that patient information may be shared between medical and nursing personnel without the patient's knowledge and/or consent. This exception, however, has an important proviso: such exchange of information must be for the sole reason of, and specifically be in the direct interests of the patients. No other exceptions to the rule that the patient must give informed and written permission to have his information divulged to a third-party, exists, and this specifically includes providing information for legal purposes.

Occupational health departments are often put under pressure from other parts of the company, like the safety department, for information in order to report injuries to the Department of Labour and for its own internal incident investigations. In these cases, the nature of the injuries which basically amounts to the diagnosis thereof, is made available from the medical files but no further information is provided without the patient's consent. Under no circumstances must medical records be handled by anybody but a member of occupational health. People who have an automatic right to patients' medical records are:

- the patient himself or herself;
- doctors in employment of the company;

- nursing personnel, employed by the company, who are involved in the patients treatment;

- administrative personnel of the company who are involved in statutory reporting procedures concerning the patient; and

- medical specialists and therapists to whom patients are referred as integral part of treatment of the patient's condition.

People or instance who particularly do **not** automatic access to patients records without those patients conceding to their records being made available in writing and after informed and written consent, are:

- members of the legal profession;
- companies' safety departments;
- security departments;
- occupational hygiene departments;
- company management from whatever level;
- human resources departments, any other department of a company not mentioned above;
- any Government department;
- members of the SA Police Department; and
- the courts.

Patient information contained in confidential files may be obtained by the Police as well as the courts, but a specific process is followed before it becomes possible.

If personal medical information about an employee is to be made available the specific individual is fully informed of the fact in his or her own language in terms that he or she understands thoroughly, and the individual provides

written consent thereto in the presence of a member of occupational health. It is the obligation of that member of occupational health to ensure that all requirements are met before any information is given.

Staff members of occupational health may be put under pressure by employees from other departments in a company to release confidential patient information. It is therefore important that the patient confidentiality system be clearly developed, well documented and that everybody must be fully familiar with the details of it.

7.8.3 Patient Privacy

A specific system that has patient privacy as its goal ensures that no employee that visits an occupational health department for treatment of an injury or condition, or has to undergo medical surveillance, is embarrassed by having his or her privacy intruded upon. The *only* information requested from a visitor to the occupational health premises is whether he or she requires medical attention, is there to undergo medical surveillance or for some alternative reason. In the case of a person who is there for a medical reason, any further information is only requested from the patient once a member of the nursing staff has accompanied the patient to a private treatment room. Particular care must be taken at all times not to discuss patients' conditions or treatment in public areas.

All treatment areas must be comfortable as far as ergonomic outlay, temperature and available space is concerned. The construction and layout of all treatment areas, including X-ray facilities, decontamination areas and in particular areas where casualties are treated should be of such construction and layout that patients who find themselves in these areas are sheltered off from the presence and line of vision of other people who may be in the building, whether they be patients or staff members of occupational health.

Under no circumstances should half-clad patients be allowed to move from one service point in the building to another or to cross either treatment or public areas in the building. Patient privacy should also extend to clothing and possessions of patients and adequate facilities should exists to keep patients clothes and belongings while they are being examined and while they undergo procedures. Particular attention should be paid to sound containment and patients should not be expected to provide medical histories and information about conditions in areas that are shared with other people who will be able to hear what's being said. Particular interest should be paid to treatment cubicles that are divided from each other only by means of curtains. Solid partitioning between treatment areas may be less practical as far as movement of people between these areas and cleaning thereof is concern but offers superior privacy and should be promoted.

7.9 OCCUPATIONAL HEALTH PERSONNEL

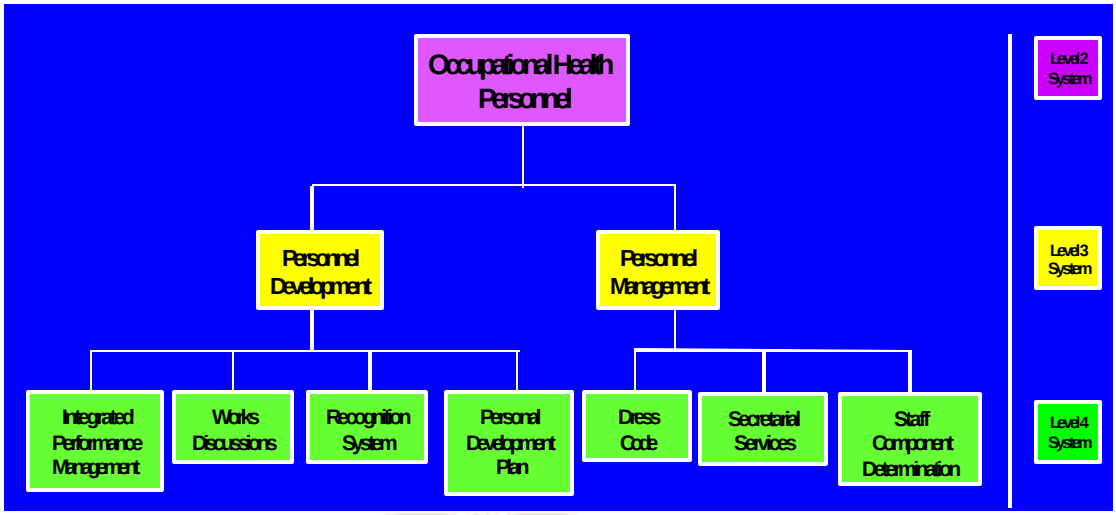
It is difficult to get an Occupational Health System to work effectively. The part of it that deals with personnel management can be designed, implemented and conducted along ordinary and existing business principles. The other parts of it that is grouped under a separate lower level system namely that of personnel development is, however, a difficult system. It needs to be highly individualised to suit each member of the staff of occupational health and it also has to deal with several abstract issues.

7.9.1 Personnel Development

Personnel development differs from personnel management in that the latter is prescriptive and has a disciplinary undertone whereas development refers to the process whereby personnel is continually exposed to evaluation. Areas

are identified both in individuals as well as in groups, where further development is necessary in order to achieve or maintain a set standard.

Figure 41: Occupational health Personnel



7.9.1.1 Integrated performance management

The underlying idea behind this system is to measure an employee's performance on personal level, in group context as part of a team and thirdly in a more overall context concerning the employees adaptation and alignment to greater company goals and requirements. These various aspects of performance are allocated specific weights. The different criteria by which an employee is evaluated are considered separately and the employee accessed individually according to the criteria set for each separate aspect. The results of this evaluation is then integrated in order to be able to arrive at a single figure which reflex the employees total or integrated performance as measured over the period of evaluation. Normally performance is measured over a period of one year. The idea is to point out to the individual employee as well as to line management of that employee where his

or her strong or weak points are. Career planning that will build on the strong points and remedy the weak points can then be agreed upon with the employee. The goal is to achieve a situation where each worker is evaluated fairly and accurately, on various aspects so as to end up with a result that provides a clear indication to both employee and management as to his or her performance. The employee's own perception of his or her performance over the evaluation period and that of his of her colleagues as well as that of his or her line management is taken into consideration (Theron, 2000). All three parties in this evaluation process are requested to submit opinions on a grading for the employee's specific work output, ability to function within a team, ability to fit in with and to support company goals and culture and each is asked to suggest areas of particular abilities as well areas of further development is necessary. All efforts should be made to ensure fair and objective evaluation of an employee. Although the final result of integrated performance management will be coupled to an employee's salary, great caution must be taken with this issue: the direct influence that the results of an integrated performance management system has on somebody's total remuneration package should be small. If this is not the case, the system becomes open to manipulation and to employees who "play for the pavilion". The system fails and in fact becomes detrimental to the company as such the moment when and employee starts to do and say the "right" things that suit the system and that are aimed at giving him or her high evaluation marks. Employees should not be provided with a big enough incentive to start doing and saying things that are artificially founded. Instead of cultivating "pavilion players", a company should aim at a workforce that not only shares but actually forms its culture in an environment where constructive criticism is accepted and considered and used to the company's benefit.

7.9.1.2 Works discussions

Works discussions at intervals that should not exceed one month are pretty important because it provides an opportunity for an employee to vent his or her opinions, concerns and suggestions concerning his or her personal circumstances as well as that of matters in the workplace, to his or her line management. The atmosphere in which this takes place is of critical importance: during these occasions the superior:subordinate relationship must be abolished and open and free discussion must take place which should be allowed to venture onto the aspect on criticism on management, of whatever kind. This particular aspect may require a considerable amount of tolerance and maturity from management's side. If the right atmosphere exists a works discussion may be an eye-opening occasion for both the employee as well as the person that he or she reports to. It also has the added advantage that it invites system and management review from within the system. Works discussion should handle and include all topics related to an employees work. If handled correctly and if the atmospheres during these discussions are correct, frustrations and objections that employees have, for whatever reason, will be voiced and management can use this knowledge strategically to great benefit, because staff matters can then be attended to before it becomes big problems. Although these matters are handled in separate systems, employees' performance up to that stage in the period of evaluation as well as their development should form part of works discussions.

The goal of the system is to create specific forums during which an individual employee can voice his or her opinions, concerns, suggestions, wants, needs, and demands about any aspect of the work, however remotely connected to it, to his or line manager.

Effective line management will in turn take heat of these topics and act upon those issues necessary.

7.9.1.3 Recognition system

As a matter of balance, any system that has a disciplinary code of system as a part of it should also have a recognition system. Recognition should be given for any action, activity or idea that originates from an employee or is performed by an employee and which is outside the scope of that employee's condition of employment. Recognition should be given freely but not unnecessarily. Duties and tasks which form part of an employees ordinary obligations as set out in his or her terms of employment with the company, does not warrant specific recognition. The employee gets compensated for that by the remuneration that he or she receives from the company. It is, in fact, expected of an employee to always render services at the best of his or her abilities and at a level of competence. Recognition is meant for any task or activity or attitude or idea that is beyond the normal expectation that an employer can reasonably expect from its employee. Things that require specific recognition are, for instance, new ideas, suggestions or ways of performing tasks that improves the workplace, has a financial benefit for the company, improves the companies image or in any way that is original works towards the company's advantage. It is a widely accepted fact that employees don't only work for money. A recognition system should be used to express the company's appreciation for originality, loyalty, innovation and positive attitude towards it in a tangible and public way. Although the physical size of the reward given in recognition should be relevant to the benefit that the company derives from it the basic idea that the fact of recognition should remain the most important part of the process rather than the specific physical

benefits that an employees derives, should be maintained. The recognition system should convey a message of appreciation from a company rather than that of a market which will buy good ideas and actions in a financial form (Kennedy & Londen, 2001).

7.9.1.4 Personal development plan

The integrated performance management system caters for each individual employee to have a future path of both personal and professional nature within the company. The development must be in line with the company's core values, culture and long term goals and plans. It must also fit in with the same aspects of the occupational health department. Development to better professional skills, personality traits which will help him or her in the work situation or teaching of new skills and expertise unrelated to his or her career, like general business skills, thereby increasing the total competency of the workforce in general, is considered. A commitment must be obtained from the employee to follow the path of development that is being agreed upon, especially where it happens at the cost of the company and close tabs should be kept on the progress of such development. Personal development normally requires some forms of formal teaching or training. The company pays for such development and derives the benefit of having a more skilled worker on completion thereof. It is, however, fair to recover the costs of abandoned development plans like failed courses and programmes, from the employee.

7.9.2 Personnel management

The personnel management system differs from that of the personnel development one in that it is prescriptive. It lays down rules, regulations,

protocols and procedures that ensures orderly business and practical as well as productive execution of daily tasks.

7.9.2.1 Dress code

A dress code is both for applicability as well as identification to a particular discipline or group. Both these aspects are major considerations in connection with occupational health nursing staff. A company is not obliged to, but this study does suggest, as a gesture of goodwill, that nursing uniforms that provide a uniform appearance to all members of the nursing personnel be provided. A dress code should lay down general rules for all members of staff, like administration staff. It should stipulate minimum requirements that will ensure a standard and degree that befits company image. It should also reach beyond the specific work environment and specify the degree of formality of clothing during company functions and other occasion where people may be identify as employees of a specific company.

7.9.2.2 Secretarial services

This system states the obvious to a large degree but also ensures uniformity and establishes a specific standard for duties, tasks and procedures that it addresses. It should cover specific aspects of secretarial work such as confidentiality of information. Most leaks of information that puts companies in a bad light or in an embarrassing situation, can be traced back to having its origin from secretarial staff. Apart from clear and strict rules about confidentiality, clear guidelines should be provided to secretarial staff about everyday issues. One particular area of note is message taking and delivering. It is essential that this activity be done totally correctly. Clarity and completeness of

the content of messages is of paramount importance. Wrong conveyance of messages is often cause of not only frustration but also potential conflict. It is advisable to design a system of message transfer that involves taking down of a message in writing. The message must be read back to the person who wishes to convey it for confirmation of correctness. The message is then read back or given in written form to the person that it is intended for. If this system is to be followed, it is to be actively implemented and made to be part of everyday work habits.

Any sizeable occupational health department should have a person who is a dedicated receptionist. Visitors to an occupational health facility form permanent perceptions from first impressions and the role of a receptionist who forms the first line of communication with people visiting the department, cannot be over stressed. This post calls for a person with a specific disposition, of which patience, friendliness and approachability is of core importance. An effective receptionist both creates a pleasant and relaxed climate and improves general orderliness and efficiency by optimising the flow of people through the premises.

Telephone protocol is and important image building aspect. A specific telephone protocol has to be adopted and established by actively impressing upon all personnel how this activity should be done. The system should cover all aspects of telephone protocol from the way in which a telephone is answered and the member of staff identifies himself or herself to the way in which information is provided. An important part of this system is to limit private use of telephones and whereby the costs of such use can be recovered from members of staff.

A system should also exists whereby specific rules and regulations are determined whereby visits to staff from friends and members of family is determined and regulated.

Some of the suggestions mentioned in this system may appear superfluous but are matters that contain the potential to create a very poor image and to interrupt production substantially.

7.9.2.3 Staff component determination

The biggest portion of an occupational health departments budget is spent on staff salaries. This makes it imperative, from a business point of view, that no excess staff should be carried and that staff should be utilised optimally. Determining the correct staff component in an occupational health department is a task that is multi-faceted and which should be performed systematically. The first step is to determine the number of staff members necessary to perform the physical day-to-day activities. In order to determine this, an accurate analysis should be made of available resources and the skills of members of staff and any deficiencies in these fields should be repaired first. The average time taken to perform a specific task, for instance to take an X-ray, is determined and considered in relation to the total number of people visiting the occupational health premises as well as with the work pressure during busy times. The flow of people through the premises, the order in which tests are done and the amount as well as type of administration associated with these actions must be considered. In cases where a 24-hour service is provided serious consideration should be given to providing a full services over the whole 24-hour period. This would necessarily impact on training and in particularly multi-skilling of personnel members. The capacity of existing equipment should be established accurately and if

necessary more, better and or faster equipment should be attained. Care should be taken with this: more and better equipment will not necessarily guarantee or enhance productivity and service rendering. The attitude, dexterity, degree to which they have been trained on and no equipment the general organisation and ergonomically layout of the workplace and, especially, the inherent capability for productivity from members of the staff will generally play a much bigger role in higher production than any factor associated with equipment.

Benchmarking of this aspect with other companies is a valuable measuring tool but again caution should be taken to benchmark with companies who have the same challenges, type of surveillance and which practices occupational health at the same standard as the benchmarking company. Seemingly unimportant aspects of everyday work activities often form a disproportionately large factor that impacts on productivity. This should be born in mind and particularly addressed. Examples are:

- the time spend by staff communicating, usually by telephone, with friends of members of family, doing small private tasks at work, taking time off for smoking or drinking coffee and tea outside normal breaks for that purpose, arriving a few minutes late and leaving a few minutes early and stretching coffee and tea times as well as lunch breaks a little bit. However insignificant it appears these aspects should be particularly addressed and remedied where necessary. An excess of this type of activity is normally indicative of too large a staff component.

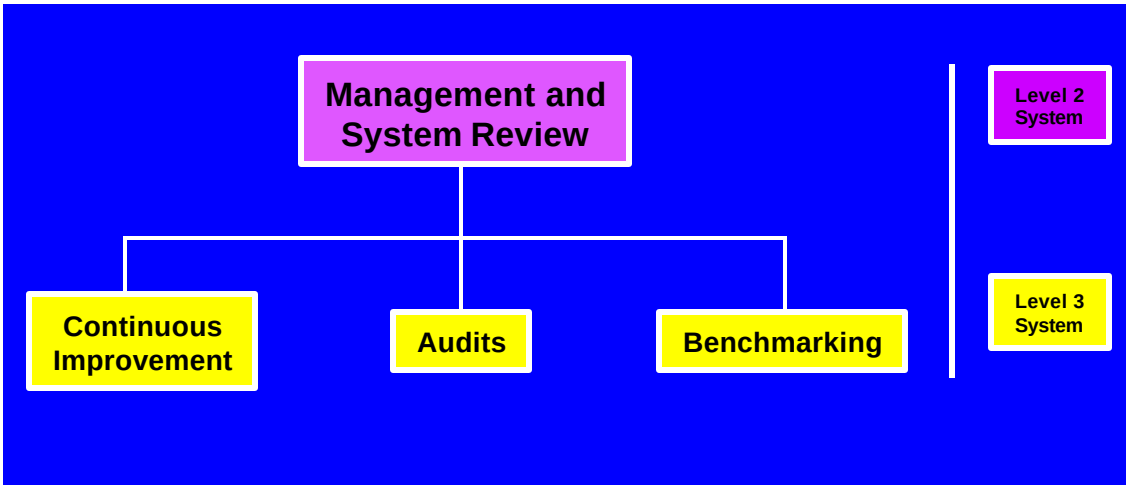
  Much more difficult aspects of determining correct staff component is to determine how many members of staff should be kept on site as well as on call but off-site in case of incidents that could happen.

In this regard, a balance must be sought between keeping enough personnel for a worst case scenario and keeping skeleton staff. This study has no specific solution or does not suggest a specific formula by which it can be calculated and this aspect ultimately has to be addressed by the management of occupational health, based on experience and an educated guess.

7.10 MANAGEMENT AND SYSTEM REVIEW

Both the management of an occupational health department as well as the systems that they conduct must be evaluated on pre-determined and regular intervals. This evaluation must be done by themselves, by peers and by formal auditing institutions. It is essential that outside opinions of both the way of management as well as the specific system is not only obtained but also actively and open-mindedly considered (Wicht, 2000:20-23).

Figure 42: Management and System Review



7.10.1 Continuous Improvement

> Continuous improvement, by definition, is not a system. It cannot be practised as a field of study. No key performance indicators of definition of victory can be determined for it. It is an ideology: an approach to matters. It must be accepted as a concept and, as such, incorporated into everything that is done, planned, implemented and conducted. The goal or the ideology of continuous improvement is to, on a continual basis, critically looked at all business aspects and processes and to identify areas that need improvement or where improvement is possible by virtue of implementing better, quicker, more effective systems or processes. This ideology also involves management processes and the people who manage. Likewise, it also involves the people who drive and are accountable and responsible for processes. No aspect of business is exempted from scrutiny under the principle of continuous improvement.

Although it is not a system and as such, no singular individual can be made accountable and responsible for the execution of continuous improvement in a business unit, it nevertheless needs to be accepted and conducted in a conscious way. Continuous improvement ensures that no system is ever finalised: there is always likely to be room for improvement in the way that things are done. This aspect is greatly enhanced by the fact that new technology continually offers new possibilities of approaching matters and conducting business processes. All possibilities to improve processes and systems and all suggestions to that effect should be considered and, if found to be value adding to the basic business, implemented. It is only when continuous improvement is fully embedded into business systems and constant renewal of a system takes place, that total quality management can be achieved.

7.10.2 Audits

Audits, in both informal and formal format, are essential in the process of reviewing management and the system that one adopts. Audits can assume one of three forms:

- internal audits. This is a system of continual internal checks and balances to ensure that the systems adopted by a business unit are being followed. This can happen either on a continual or periodic basis and forms part of everyday management;

- audits taking the form or peer-review. These are friendly evaluations of a department or business by a similar unit from another company. It would, for instance, take the form of a company's occupational health department auditing a sister company's facilities with that company reciprocating, at determined intervals of between one and three years;

- formal audits by institution and bodies that specialise in the evaluation of Occupational Health Systems. Audit systems have been discussed in and are therefore not discussed again.

7.10.3 Benchmarking

Benchmarking is an invaluable business tool if done correctly. It should be clearly distinguished from **industrial tourism** and **surveying**. Industrial tourism is a process of visiting other companies to see "what they have", without concentrating on any specific pre-determined aspects or fields and with the objective of obtaining a general idea of the way in which things are done. In the case of occupational health, this would amount to visiting a company in order to get an idea of their general approach to their field of

study and to be able to form a general impression of the extend and standard at which they conduct occupational health. This process is quick and easy, is a one-time event and has as its aim the copying of processes (Spendolini, 1992:31-37).

A survey amounts to an action that is more in-depth. It remains a unilateral activity because there is no exchange of information or comparisons between two companies. It amounts to, for instance, visiting a company and taking specific note of particular areas of occupational health and the way, extent and standard at which specific aspects of the field of study is being conducted at. Surveys are often used to narrow the list of potential benchmark partners (Spendolini, 1992:159-160).

Benchmarking is, by definition, an exchange of information and ideas between two companies on clearly defined, predetermined, and prearranged topics and fields of study. It involves a willingness to share systems and information between two companies, and will, in general, not involve the whole field of study of occupational health. An example would be to benchmark the process of medical surveillance between occupational health departments from different companies. Specific ways of performing surveillance as far as various aspects thereof are concerned as well as the results obtained by each department are shared, compared and analysed. At the end of the exercise, each occupational health department would have in-dept insight and information about all aspects of surveillance as conducted by the other company. It would be in a position to determine for itself, best practices identified and be able to make a decision as to whether such practices should be implemented in its own system (Spendolini,1992:1-37; Van Schalkwyk, 2000; Bouwer, 2000).

7.11 SUMMARY

This chapter deals with the normal general management processes that every business unit has to implement in order to function effectively. It concerns both purely mechanical and process activities as well as aspects of personnel management, applicable to the specific needs and environment of occupational health.

CHAPTER 8: AN OCCUPATIONAL HEALTH SYSTEM – TRAINING

8.1 INTRODUCTION

Systematic, well-organised training is essential to any system. The emphasis of the role that it plays shifts according to the stage of development and implementation of the overall system within which it functions.

- In the development stages of a system, it is used to **"sell"** the idea of the to-be–implemented system to the people who will eventually conduct it as well as to the population that will be involved and affected by it. The contents of the material that it imparts are largely **propaganda** and the goal is to obtain support.

- During implementation of a system, training is used to **introduce** and **familiarise** stakeholders to the processes, procedures and techniques that the system requires. The main method by which it is done is that of **instruction.**

- Once the system is imbedded into existing business processes training plays an invaluable role in ensuring the upkeep of the desired **standard** by means of ongoing, in-service tuition and evaluation of the existing processes.

- The training system must have a strong **academic** element and approach. As such it must keep up to date with new developments in occupational health. These developments, together with improvements identified as

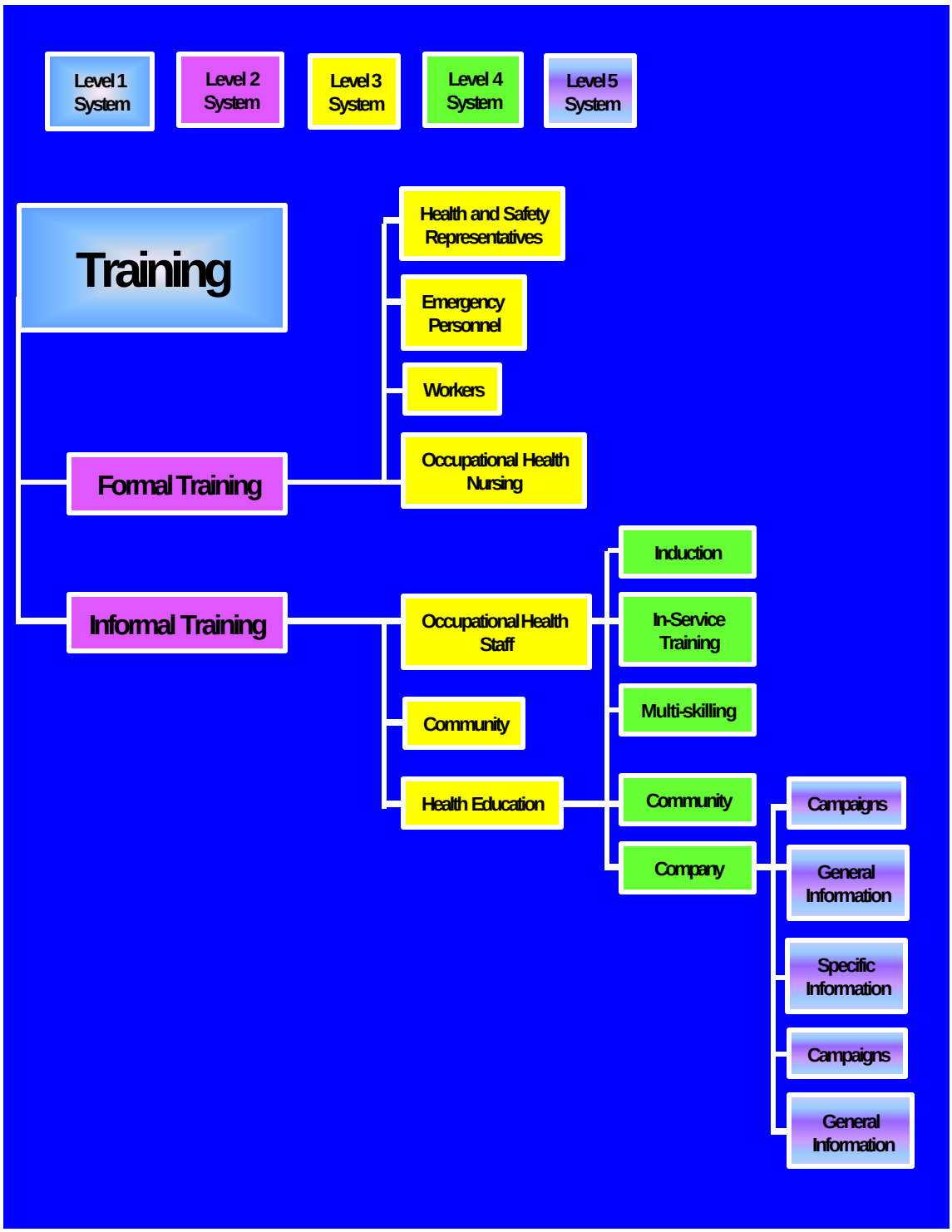
part of the process of continuous improvement, must be **incorporated** into the business process by means of training.

Training may extend into non-company areas such as the community, as part of a company's social commitment, and may happen on two fronts:

- as a gesture of **goodwill** to the community at large; and
- for **commercial** purposes if it can be identified as one of the company's core competencies.

The aspect of **integration** is very important in training: poor integration will result in several centres within the same company providing parts of or the same training thereby detrimentally effecting the standard of such training because it is fragmented and given from different perspectives.

Figure 43: Training Systems



8.2 FORMAL TRAINING

Formal training is provided as clearly defined courses that have set **curriculae** and require a specific **level** of competence. It is established by means of participants having to write tests and examinations. The courses are **recognised** by a body or institution outside the company.

8.2.1 Health and safety representatives

The Occupational Health and Safety Act (85/1993) with its Regulations determine that any employer who has more than 20 employees in his employment at any workplace has to appoint health and safety representatives for that workplace in writing and for a specific period. Their function is mainly to review the **effectiveness** of health and safety measures, to **identify** potential hazards, to examine the **causes** of incidents at the workplace and to investigate **complaints** relating to that employees health and safety at work.

In order to be able to be able to this, it is obvious that such representatives must undergo appropriate **training** in order for them to play a meaningful role. All to often, the occupational health training of these representatives falls seriously short in practice, so that they, in effect, become **safety** representatives only. In order to avoid this, occupational health should play an active role in the training of these people into health matters. **Refresher** courses must be available and control over the **standard** at which they function should be exhibited by keeping close contact with them and submitting them to **evaluation** at regular intervals.

8.2.2 Emergency personnel

Emergency personnel includes all employees who may have to perform emergency medical care as part of their job description. Most commonly, this includes **firemen** and members of reaction or **rescue teams.** They often move into unstable or dangerous areas and have to provide emergency care to fellow employees under difficult conditions and with emergency equipment only. Such treatment is **temporary** in nature and only meant to be administered in the period between encountering injured or affected employees and the moment that these treated persons are handed over to medical personnel. Therefore, specific aspects for emergency care are particularly important to emergency personnel, like:

- accurate **initial assessment** of patients;
- immediate **recognition** of possible life threatening injuries and conditions and the skills to render appropriate and effective **treatment** for that;
- **evacuation** procedures;
- **decontamination** procedures;
- basic **triage** principles;
- recognition and initial treatment of **shock.**

These aspects should be **emphasised** during emergency care training although not at the expense of other aspects of emergency care. Emergency personnel should be trained both in **theoretical** as well as **practical** aspects of emergency care and should undergo refresher courses at regular intervals. **Assessment** of practical emergency care skills as well as continual exposure thereto by means of regular trial emergencies and exercises is extremely important. The level to which emergency personnel must be trained in emergency care depends on the circumstances of each company but this study suggests that everybody must be trained up to at least a level 5 (Basic

Ambulance Assistant) level with specific emphasis on conditions unique to a specific business.

8.2.3 Workers

Occupational health's involvement with training is usually limited to either first aid, emergency care or other medically related training. Whatever the specific nature or extent of such training may be, the principle and objective that this system must cater for is that no training which effects the occupational health field should be administered to workers without the approval and involvement of occupational health. This system must therefore ensure two aspects:

- it must ensure that medically-related training given to workers is delivered; and
- it must ensure that it has control over all types of training of this nature given to workers.

8.2.4 Occupational Health Staff

Training to occupational health staff should form the **core** activity and prime **priority** of the training centre. It is only when occupational health staff functions at the **correct** standard and level of efficiency, that the emphasis can be shifted to training outside of occupational health. Training to occupational health staff in two separate ways namely as **induction** to new members of occupational health staff and secondly as part as **professional** training to existing staff.

8.2.5 Induction training

Induction training to new member of the occupational health department. It is essential to bring new members of occupational health staff up to the necessary standard of the field of study, if necessary, and to familiarise them fully with procedures, policies and protocols specific to an individual company as soon as possible for productivity sake (Intellectual Partnerships Consulting, 2001). Specific topics covered during induction training will depend on every individual company but new employees should be familiarised with at least with the following topics during an induction-training course:

- company background which includes company values and background;
- general rules and regulations;
- occupational health department organisational structure as well as the organisation structure of fields related to occupational health like occupational safety, environmental management, emergency response, security, human resources, social services departments and or any other department or project run and co-ordinated from elsewhere in the company that deals with employee well-being as well as with community health;
- departmental rules concerning general staff matters like punctuality, dress code, telephone protocol, modes of address between professional people;
- the specific image that an occupational health department wishes to portray;

- the companies disciplinary procedure and the department interpretation and practice thereof;
- leadership style of senior personnel of occupational health;
- dealing and procedure and complaints from areas that a services if provided to;
- statutory requirements from occupational health as a field of study;
- specific administrative rules and regulations including format of documents and records;
- the recognition system;
- the performance appraisal system;
- ideologies and theories that the department adheres to like continuous improvement and responsible care;
- emergency procedures;
- the specific Occupational Health System that is followed as a operational system; and
- names and particulars of all service providers to an occupational health department.

8.2.6 Professional training

Professional training can be divided into training to multi-skilling within an occupational health department as well as general in-service training. The objective with multi-skilling training is to ultimately equip each shift of employees with the necessary skills between the members of that shifts to provide that full occupational health service (Commissioner for Workplace Agreements, Government of Western Australia, 2000). It therefore implies that at least one member of a shift should be able to perform specialised tasks like doing lung functions on computerised equipment, performing audiometry testing and to perform vision tests like testing for night blindness as well as depth perception. This often involves members of the staff having to go on specific courses in order to be accredited for certain tasks for example audiometry and taking of hearing test.

In addition to multi-skilling training, members of occupational health staff should receive on-going in-service training. This is an extremely important branch of professional training because it both ensures that all members of the staff are at the desired standard of academic and practical requirements and that they remain at that level. This is also the vehicle by with new developments and procedures in the medical, nursing and administrative fields that pertain to occupational health, is brought under the intention of occupational health staff and in which they are kept at world best practice standards. This type of training can either take the form of informal transfer of knowledge or preferably by providing structural courses to members of the staff. Such structured courses should be compiled and presented to them by involving tertiary training institutions. Ideally such structured courses should be modular in nature and presented along set lines of the institutions that is used for co-ordinating an monitoring both the standards as well as the contents of the course. The possibility should be examined and persuade to present in-service training staff in such a way that they get credit for specific modules that they have completed and passed theoretical and practical tests

with the eventual objective allocating a formal tertiary qualification under written by the relevant institution.

8.2.7 Training to community

Occupational health training to the community is either offered to that community as part of a company's commitment towards social responsibility or is offered to the community as a commercial venture, at a specific fee. The type of training involved is mostly medically related like first aid training, emergency care training and general nursing care training to families of patients with debilitating diseases. Community training also involves training of members in the community who in their own part become trainers. "Train the trainer" specifically in the field of AIDS where so-called "Peer Educators" are trained to provide further detailed information to community at large concerning AIDS.

8.2.8 Health education

Health Education is in line with a company's commitment and general approach with preventiveness towards not only occupational health but also the well fare of both employees and the community from which it come. The health education system is divided into two lesser systems namely, health education to the community and to the company.

8.2.9 Health education to the community

This is presented both in the form of campaigns as well as in the form of general information. The basic difference is that general information on health matters is provided on an *ad-hoc* basis, often following enquiries of the community. An example would be concerns from the surrounding community considering the effects of visible air pollution from a factory. The system has

to direct an enquiry to the correct department. Integration between departments that may be involved is important so that an answer can be given that is complete in nature and factually as well as legally correct. Superfluous information is not conveyed – it fuels further enquiries. The total amount of information is just enough to answer the enquiry, nothing more.

The second part of health education to the community is in the form of campaigns which are either held primarily in the community or else spills over into the community from a primarily company focussed-campaigned. It is suggested that one campaign, namely an anti-AIDS campaign, be run constantly. As for other campaigns the topic will be determined by prevailing circumstances and conditions at the time. Topics may be contemporary issues like the prevention of cholera after an outbreak thereof or general in nature like anti-smoking campaigns, campaigns against woman or children abuse, or against family violence.

The objective of health education to the community from which employees come is to improve both specific and general conditions in such an community and is in line with the companies holistic view of its employees..

8.2.10 Health education to the company

This type of health education takes two forms, each providing a specific system to cater for the needs thereof:

- Specific health information.

  The system conveys information to the employees regarding specific and general risks in their workplace. It meets the statutory requirements contained in the Occupational Safety and Health Act, Act 85/1993, Article 7 and 8. This requirement should be met with some enthusiasm by the

company and should be expanded upon. It is only when employees fully understand what the risks are that they can safeguard themselves. The system must fulfil two specific requirements:

- the occupational hygiene assessment schedule must be comprehensive. It must provide full and relevant information concerning individual as well as combined risks and must also be complete on the specific aspect of avoidance measures. Work procedures, which includes personal protective equipment, must be covered in detail. In order to do this correctly, good integration is necessary between occupational health staff who provide this information and line management so that correct procedures can be effected. Information about effects of the risks that they are exposed to, including early physical symptoms, must be provided; and

- there must be good integration between scheduling of three systems namely the one whereby specific information is provided to the employee, the medical surveillance system and the feedback system. The objective is that an employee be informed, in chronological order:

  - that his work area is going to be subjected to occupational hygiene assessment in order to be able to assess hazards and risks accurately;

  - about the work environment's risks;

  - about the need for, as well as statutory requirement of, medical surveillance and what exactly the process will entail, including what specific procedures that he or she will be subjected to;

  - at what date he or she is scheduled for medical surveillance; and

- after medical surveillance, what the results were.

- A general information system whereby enquiries from employees concerning health matters are answered. This deals with general information like possible dangers of the use of cellphones and details about malaria. A very important part of the system is what could be considered as to be propaganda for the medical surveillance system. Employees are informed about the principles behind and philosophy of a medical surveillance system in depth, so that they fully understand the benefits. It is important that all employees be in possession of all information regarding the reasons why they are submitted to a medical surveillance program and the benefits thereof in order for them to be able to support this system fully.

8.3 SUMMARY

The aspect of training is discussed in this chapter. For the purposes of this study the term training is used in an encompassing context to include teaching and information dissipation. Various forms of handling with information as applicable in the occupational health environment is thus contemplated.

CHAPTER 9: STRATEGIC BENEFITS OF OCCUPATIONAL HEALTH TO BUSINESS

9.1 INTRODUCTION

Occupational health faces new and exciting, but difficult, challenges. Some of the challenges and the reasons for them were contemplated in paragraphs 1.1 and 1.2. Factors leading to more pressure and presenting new challenges can broadly be summarised as the result of a growing awareness and demands from the world at large, from both inside and outside of industry.

It involves the fragility of our environment, the limits to natural resources and the realisation that the actions of industry should keep the **sustainability** of its actions as far as the impact that they have on resources, including **human** resources, in mind at all times. The Responsible Care ideology supports this principle. The greater awareness of the role that human resources play in modern industry, in this context primarily the **worker**, necessitates a new **interaction** between **industry** and the field of study that involves itself with the well-being of the worker, namely **occupational health.**

Occupational health must rise to the occasion and meet the challenges facing it **systematically** and **effectively** – see paragraphs 1.2 and 1.3, Chapter 2. It must address the issues and concerns that exist – see Chapter 3 – and perform **relevantly** and **applicably** to its immediate business environment – see Chapter 4. Towards achieving this, occupational health must promote itself and actively seek to establish a **new type of partnership with business** (Labuschagne, 2001).

Business and occupational health **together** must examine the **current** as well as the **desired** positioning of the two fields against each other. Traditionally,

occupational health provided a **service** to the business environment that it functioned within. As such, it was never considered to be part of **core activities** or **core competencies** of a company, and therefore **not wealth producing.** It was accepted that occupational health was **wealth-consuming** instead and that it derived its **right of existence** from the fact that:

- **legislation** demanded some kind of work environment and worker health monitoring, albeit not very stringently; and

- the business **audit system** that a company adhered to demanded that certain actions which fall in the scope of occupational health be done.

These reasons are patently insufficient to ensure any kind of acceptable standard of occupational health and are indeed **invalid** and **irrelevant** because they do not **primarily** address the basic goal of occupational health, namely **employee well-being.**

In order for occupational health as an independent field to come to its right and for business to extract optimum benefits from its association partner with it, a close **partnership** must be established and a combined, different, **approach** must be agreed upon between both parties. The **main element** of the new approach must be that occupational health should permanently **move away** from the concept of providing a **service** from a position that is removed from the main stream of activities of business. From that basis, it will always remain a wealth-consuming operation and the **limited amount of benefits** that business derives from it will not make it worthwhile. At the same time, occupational health will not progress.

A paradigm shift is necessary. Occupational health must become a part of core business by becoming part of a company's core competencies and by presenting itself in such a format that it can be used as an integral part of

planning and conducting business. It must become yet another **method** or **tool** that business can use to its benefit. It must become, and actively be used as, a **leverage operation.** Ultimately, it must contribute towards a company's **profits**, as seen from the perspective of the **triple bottom line**, namely profits from **financial, sociological and ecological** viewpoints.

In order to effectively address the challenges as set out above, it is imperative that occupational health be conducted:

- with the necessary **knowledge**, **insight** and **vision;** and
- **systematically.**

9.2 STRATEGIC BENEFITS OF AN OCCUPATIONAL HEALTH SYSTEM

A well designed and correctly implemented and conducted Occupational Health System enables deliverables that have considerable **strategic value to business.**

- **It provides information about the well-being of the workforce:**

  - the immediate and short term (historically) state of well-being is important for planning of short term projects that are human resource intensive and/or that may have a high impact on the workforce. It reflects both the **quantity** of available resources as well as the **quality** thereof. Both factors have a direct and significant influence on strategic planning;

  - **health trends** can be determined on information providing medium- and long term indications of the state of well-being of a company's workforce. **Deterioration** over a period in the absence of an external health risk suggests that there is a detrimental factor in the workplace

that has not been contained. In the presence of an effective Occupational Health System it is to be expected that the overall health status will **improve** for reasons discussed in the next paragraph.

It is important to distinguish between a health index and a disabling injuries index when an indicator of workforce health is utilised – see paragraph 3.8.

- **It improves the general well-being of the work force.** This is accomplished by treating all conditions and diseases identified during both the routine preventive (medical surveillance) and the curative processes, either through referral to other medical service providers or treatment by the company medical personnel. A large part of identified conditions and diseases are in an early, reversible stage where the employee him-or herself is still unaware of the presence thereof. The direct result of an improvement in workforce well-being is the possibility of higher production.

- **It cuts down on sick leave** both by treating developing conditions and diseases at an early stage, on site, and by identifying impending or developing conditions and diseases at an early stage and arresting further development thereof. This results in higher production, less business interruption and a saving for the company's medical aid fund.

- **Post medical specifications** derived from a central database as described in paragraph 2.2.4 have a number of strategic benefits:

  - **correct initial as well as subsequent placement** of an employee as far as physical compatibility to any post can be done, thereby avoiding incompatibility at a later stage;

- **impending physical compatibility** to any post can be determined by considering the results obtained from medical surveillance and comparing them with requirements of the post. Early detection of future incompatibility allows for changes in career planning of an employee;

- once incompatibility to an existing post occurs due to the onset of a condition or disease or as the result of injury, **placement elsewhere** in the company in a similar position but without the specific work hazards that constitute incompatibility in the employee's current post, can be made. Without proper specifications to serve as guidelines, guided alternative placement cannot take place, often resulting in termination of the employee's service, to the detriment of all parties concerned;

- an accurate **assessment** of an employee's health with regard to the risks and hazards that a post involves and thus possible consequences thereof can be made **at the time of an employee vacating the post.** This safeguards the company against later claims; and

- it **safeguards the company against irrelevant health claims** by virtue of the fact that all hazards and risks as well as the possible consequences thereof are known and documented. Claims based on the assumption that the work environment of a specific post caused disease can be evaluated against information recorded over years regarding exposure in that particular workplace. The possibility of that exposure having caused the specific disease can then be considered.

- **Health problems can be addressed in a focused more cost effective way** due to the fact that adverse health trends can be ascertained at an early stage, in specific areas and in specific groups of workers. Their exposure to stressors will be known and the likely cause thus easier

determined. Focused and therefore cheaper and more cost effective remedial actions can be executed.

- An Occupational Health System that functions effectively and visibly contains a large amount of **public relations** value both within and outside a company. It demonstrates a company's **commitment** towards its **employees** and the **community** in a tangible way.

- It provides **compliance** to relevant legislation and to the **management** and/or **audit** system that a company adheres to.

- It aligns a company with **international trends and requirements** in the field of occupational health. For companies that operate globally this aspect is of significant importance and the possibility of participating in specific markets may depend on this aspect.

- A general **preventative** rather than **curative** philosophy bears numerous advantages and an effective Occupational Health System embraces and enhances this philosophy. **Prevention is cheaper than cure** from the triple bottom line perspective of profit namely from a sociological, financial and ecological viewpoint. Even the curative and emergency response parts of occupational health contains a measure of prevention because it is aimed at **damage containment.** The correct treatment and handling of injuries and conditions is essential in order to pursue a broad philosophy of prevention - systematic treatment and rehabilitation of injuries help to get workers back to work quicker, even if not in the exact same job.

- Often the fact that a production or manufacturing area gets more dangerous, as indicated by the presence of an **adverse health trend,** is an indication that the **integrity of the work environment** is diminishing.

Remedial actions aimed primarily at restoring adverse health conditions then have a dual purpose: they prevent and repair damage to **human resources** but they also repair **system problems.**

- **Training** about hazards and risks in the workplace serves to **educate** the workforce and make them more knowledgeable about the nature and specifics of the processes that they manage. This enables them to identify **process deviations** earlier and more accurately, because they fully understand what the tasks and procedures that they control and perform entail. This has a favourable financial implication. It also helps them to **associate** with their jobs more closely.

- Research into health matters, as indicated by occupational health results, addresses problems in the immediate work environment and at the same time contributes towards solving problems that may be common to **industry** rather than only the company. In this way it contributes towards the well being of **workers** in general and brings about **progress** and **development** in the field of study.

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In Chapters 5, 6, 7, 8 and 9 the Occupational Health System that this study proposes is described. It has been developed, implemented and conducted at Sasol Synthetic Fuels as a pilot study for the past two years, according to plan – see paragraph 1.4.5.

At the beginning of the project, in July 1997, an audit using the Det Norske Veritas medical audit system was performed on the systems and standard of occupational health at Sasol Synthetic Fuels. An independent company performed it and a result of **56%** was achieved. We decided then that an authority outside Sasol, using the same audit system in order to obtain directly comparable results, would do a **repeat** audit, once the pilot study was completed. Our definition of victory stated that a result of **80%** would be used

as criterion and that we would consider the pilot study and thus the system as a success if that result could be achieved. A second audit was done in February 2000 and a total result of **84%** was allocated. This is a particularly good result, the highest that a South African company ever achieved and it puts the Sasol Synthetic Fuels Occupational Health department in the company of the best facilities of this nature in the world. We therefore consider the system to be one of the best in the world.

The scope of this study does not cover the specific problems that were encountered in implemented and conducting the system, neither does it cover the results and the impact of such results on the bigger business environment in which it functions. It adopts a strategic approach but does not cover the strategic impact that results had on the company at large. The growth of occupational health within Sasol Synthetic Fuels from a service rendering department to one that is considered to be a leverage operation is, indeed, remarkable and is in no small way due to this system. Unforeseen problems were encountered from unexpected sources. By far the biggest disappointment was the inability of the operational staff of the occupational health department to rise to the occasion and to achieve any kind of standard comparable to that of the results obtained from the rest of the system. Likewise, unexpectedly positive responses were experienced from the majority of employees. The wisdom of hindsight would allow us to implement the system differently, more cost-effectively and in a shorter period if we had to do it all over.

These aspects necessitate and justify the need for a follow-up study to this.

9.3 SUMMARY

This chapter touched, very briefly, upon the nature of the main challenges that occupational health is likely to face in future. It emphasises the fact that a different approach to the field of study is necessary from both within occupational health as well as the business world that it functions within. It goes on to list some strategic values that occupational health provides to business.

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ANNEXURE A:

OBJECTIVES

OCCUPATIONAL HEALTH

Concept planning to establish SSF Occupational Health as the leading authority in this field in South Africa.

APPROACH

The main objective as set out in this document is ambitious and falls outside the division's current scope of tasks. However, objectives must be ambitious to distinguish them from an activity roster. The main objective is achievable under two main conditions:

- The personnel of Occupational Health must embrace the main objective must persue it in a motivated and definite fashion;
- the process must be co-ordinated by somebody with a clear vision both on what the optimum result should be and as well as how to achieve the result.

TIME FRAME

Three years from January 1997.

OPPORTUNITY

Occupational Health is a young and underdeveloped field of study. Particularly in South Africa, it is not conducted in a structured manner and according to clear guidelines. There is uncertainty about the general approach to the field of study and no guidelines exist which address the matter of combining a humanitarian and business approach. The extend of and boundaries of the field of study are not clearly described. There are no clear guidelines on methods that should be followed.

METHOD

SSF Occupational Health can become the leader in the field by:

- Having a clear vision on what the field of study should entail and what the culture of Occupational Health should be:

- What precisely “Responsible Care” and “Occupational Health” means and includes;
- how the employer as human being and business as represented by the company are positioned towards each other;
- what specific result is desired;
- where exactly the boundaries of Occupational Health are located;
- accurately determining where specialist functions, both within and outside of occupational health should integrate and to what extend it should do so;
- by integrating the divisions where in such functions are located functionally;
- determining specific work methods concerning:

    - treatment protocols;
    - monitoring schedules in Occupational Hygiene and Occupational Medicine with the emphasis on prevention.

- By setting specific criteria:

    - individualised pre-employment standards (post medical specifications);
    - in-service standards.

- Formulating policies.

- Practising specific medical practice principles concerning:

    - medicine control;
    - patient flow;
    - documentation flow;
    - statutory reporting;
    - accounts;
    - statistics;
    - continual training.

- Becoming involved in community matters

and

by submitting the mentioned methods with the results achieved by utilising these methods

- evaluation against international standards

- compilation in a centralised and computerised information system

- presentation to industry and the field of study as the standard.

Specific objectives to support the main objective are:

1 MEDICINE CONTROL

Implementation of a system whereby correct control over medication will be ensured. This includes training of personnel and the implementation of a computer system. Target date for full implementation 02/09/1996.

2 TREATMENT PROTOCOLS

Identification of most frequently treated conditions, work related conditions, conditions of which treatment is controversial or of which treatment methods are critical and conditions that are seldom seen and of which treating personnel may not be familiar with. The compilation of standardised treatment protocols by which everybody at Occupational Health would treat these conditions, according to the agreed upon, correct and cost effective way, training of treating personnel according to these protocols and continued training of nursing personnel. Target dates: Project initiation 02/07/1996, complete implementation and commencement of treatment according to treatment protocols, 14/02/1997.

3 HEALTH COUNSELLING

Statutory counselling of workers about risk factors that they are exposed to, the reasons for biological monitoring and value of biological monitoring. Linking to SHER Support group from where campaigns and community projects will be initiated. Appointment of a person to perform this function on a fulltime basis. Target date for appointment for such a person with the necessary training, 30/03/1997.

4 MEDICAL PRACTICE PRINCIPLES

Establishment of works procedures and rules, correct patient flow, optimal use of personnel and facilities, alterations of facilities and upgrading of equipment where necessary, establishment of standard ethical rules with familiarisation of personnel with such rules, correct patient handling, integration with medicine control and treatment protocols, establishment of cost consciousness amongst personnel, correct collaboration with outside instances (referral protocols, handling of enquiries).

5 UNITS

Implementation of systems whereby both incoming and outgoing accounts will be handled correctly, in accordance with procedures and rules of the financial policies of SSF. Submission of accounts to the Workmen's Compensation Commissioner and to contractors for services rendered to them by us. Target date for completion of project: 29/08/1996. A specific objective which is coupled to this objective is a recovery of a R164 000,00 per year or R13 700,00 per month from services rendered starting on 01/09/1996. A total recovery of R137 000,00 for the remaining current financial year.

6 BIOLOGICAL MONITORING

This is a long-term (3-year) project. It entails the development and implementation of a system whereby 7 000+ workers will be monitored yearly for detrimental health effects caused by 870+ identified risk factors that they are exposed to. This process will take into consideration each person's specific occupation, the nature of his or her work inside his or her occupation, his or her existing medical condition, his or her work area and the cumulative as well as synergistic effect of the risk factors inside and out of his or her immediate working area. This will be used to determine compatibility between workers and their work environment and the specific test as well as frequency thereof that each worker must be subjected to will be determined. It also includes the development of a system whereby workers will be scheduled in an orderly and effective way to visit the medical station in order to be monitored. Furthermore, it includes the design and implementation of a system whereby analysis of data can be done in order to obtain information that can be used for strategic management of the business. Each step in the development of this objective will be validated on a statistically representative way. Target date 02/01/1997 and the provisionally for completion 31/12/1999.

7 SAVINGS ON PURCHASE OF MEDICINE

Our target is a total saving of R80 000,00 on the amount of R195 995,00 which is budgeted for the purchase of medicine in the current financial year. This amounts to a saving of R6 666,00 per month. Our progress with this objective will be traced as part of the "Benefits Tracking process".

8 STATUTORY REPORTING: OCCUPATIONAL DISEASES AND OCCUPATIONAL INJURIES

Implementation of the system whereby noticeable job-related conditions can be handled quickly and efficiently and according to statutory requirements. This should facilitate consecutive steps of accounts submission and finalisation of the admin process. The administrative process regarding these two matters, which, in June 1996 is two plus years behind schedule, must be brought up to date. The organisation and optimisation of work processes and personnel involved in this process as well as specific agreements with the Workmen's Compensation Commissioner concerning work processes, conclusion of a specific service level agreement and computerisation of the process between the commissioner and Occupational Health in general, form part of this objective. Target date: Commencement date 02/07/1996, completion 01/09/1996.

9 EMERGENCY RESPONSE

Determination and implementation of standardised procedures whereby Occupational Health will integrate with the process of responding to emergency cases: conformation with and establishment of permanent communication methods and procedures both in internally in Occupational Health as well as with divisions who have specific interest herewith, like Fire Brigade, integration with and conformation of availability of resources from outside instances like the Mine Hospital, Regional Council, as well as hospitals, doctors and Fire Brigade departments of the surrounding geographic area. Evaluation of our facilities and emergency equipment, upgrading if indicated and basic triage training to nursing personnel. Continuous communication with the SHER Emergency Response group during the design and implementation phase of this objective. Commencement dates: 15/01/1997 completion: 30/05/1997.

10 POST MEDICAL SPECIFICATIONS

Accurate establishment of and verification of existing risk factors per work area. Determination of interaction between medical conditions and work environmental factors. Establishment of a database individualised in respect of his or her personal medical and environmental risk factors, and work tasks are identified. Determination of individualised risk profiling from this. Determination of minimal physical requirements in order to bring about compatibility with work environment. Design of systems to accommodate mentioned data and to process such data so that post-medical specifications can be drawn for each specific post. Commencement date: 25/11/1996 completion date 30/06/1998.

11 COMPUTERISED OCCUPATIONAL HEALTH SYSTEM

Establishment of a comprehensive, integrated Occupational Health System fully computerised. It must be comprehensive in the sense that it should contain all the above mentioned objectives and that it presents the general approach as well as specific objectives in a practically workable format. It should integrate (like personnel and production data systems) so that seamless integration with these systems is possible. Integration also includes internal integration in other words integration of different parts of the Occupational Health System itself. Although computerisation of the planned system only represents the establishment of a vehicle whereby the Occupational Health System will be conducted, this aspect plays a cardinal role in the development and establishment of such a system. Contrary to the rest of the envisaged Occupational Health System and major as well as supporting goals as set out in this document, Occupational Health as a division will largely be dependant on the actions of the information management divisions of SSF for completion of the process of computerisation. Target date: 02/01/1997 completion date end 1999.

TIME SCHEDULES (SUMMARY)

	End 1997	Completion
Medicine control	100 %	02/09/1996
Treatment protocols	100 %	30/01/1997
Counselling	Continuos	Continuos
Medical practice principles	100 %	30/12/1996
Micro-organisations (Personnel)	100 %	31/01/1997
Accounts	100 %	29/08/1996
Biological monitoring	100 %	31/12/1998
Computerisation	50 %	31/12/1998
Post medical specifications	50 %	30/06/1998
Emergency response	75 %	30/05/1997
Reporting: Occupational diseases and injuries	100 %	01/09/1996
Saving: Medicine purchases	100 %	30/06/1997
Determination of work flow	100 %	01/10/1996
Smoking policy	100 %	01/02/1997
AIDS policy	100 %	01/06/1997
Alteration to premises	100 %	01/11/1996
Saving: Medicine purchases	R80 000 (96 – 97) 100 %	30/06/1997
Recovery: WCC and contractors	100 %	30/06/1997

ANNEXURE B: SYSTEM ORGANOGRAM

See attached organogram from following page.