

RISK ASSESSMENT AT RIETSPRUIT MINE SERVICES (PTY) LTD
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1. INTRODUCTION

The promulgation of the Mine Health and Safety Act, Act 29 of 1996, as amended, witnessed the introduction of one of the most significant pieces of legislation to the South African mining industry in its history.

Management prerogative with regard to health and safety has effectively been negated through the principle of joint decision making as manifested in the provision for employee participation in such matters through health and safety representatives and health and safety committees at mines.

At Rietspruit Mine, however, the contention of the people is that participation through representation is, at best, participation at arm's length. It is believed that the spirit of the Act demands inclusively as much as it does representivity.

Each person has the right to be included in decisions, which may affect his or her well-being. Providing forums for participation, therefore, is not good enough. Each Person should be empowered through development and training to ensure understanding of the issues at hand and the making available of such information as may be required to ensure effective participation in decision making.

Morally the obligation is one of avoiding situations of mere employee attendance at participative forums where, more often than not, non participation is construed as silent consent to, or confirmation of, a decision, which may very well be ill-informed.

Risk Assessment in terms of section 11 of the Act provides a most suitable means to give effect to the Rietspruit philosophy of participation whilst complying with the provisions and spirit of the legislation.

This paper outlines the development of a risk management system at the mine and the implementation thereof, leading into a brief discussion on risk assessment as a subset of the process and touches on lessons learnt even during these early stages of the process of risk assessment.

2. RISK ASSESSMENT AND THE ACT

2.1 In terms of section 10(1), 10(2) and 10(3) every employer must, in as far as reasonably practicable:

- 2.1.1 Provide employees with any information, instruction, training or supervision that is necessary to enable them to perform their work safely and without risk to health; and
- 2.1.2 Ensure that every employee becomes familiar with work-related hazards and risks and the measures that must be taken to eliminate control and minimise those hazards and risks.
- 2.1.3 Ensure that every employee is properly trained to deal with every risk to the employees' health or safety which is associated with any work the employee is required to perform and/or has been recorded in terms of section 11 of the Act, and
- 2.1.4 Ensure that in respect of every employee the provisions of (2.1.3) are complied with before the employee starts work, at intervals determined by the employer after consultation with the health and safety committee, before significant changes are made to procedures, mining and ventilation layouts, mining methods, plant or equipment and material and the nature of the employee's occupation or work.

2.2 Clearly, compliance with section 10 infers compliance with section 11, which decrees that every employer, must

- 2.2.1 Identify the hazards to health or safety to which employees may be exposed whilst they are at work.
- 2.2.2 Assess the risks to health or safety to which employees may be exposed whilst they are at work.
- 2.2.3 Record the significant hazards identified and risks assessed.
- 2.2.4 Make those records available for inspection by employees.
- 2.2.5 After consultation with the health and safety committee determine all measures including changing the organisation of work and the design of safe systems of work necessary to eliminate any recorded risk, control the risk at source, minimise the risk and in as far as the risk remains provide for personal protective equipment and institute a programme to monitor the risk to which employees may be exposed, and
- 2.2.6 Periodically review the hazards identified and the risks assessed, including the results of occupational hygiene measurements and medical surveillance to determine whether further elimination, control and minimisation of risk is possible and consult with the health and safety committee on the review.

2.3 Even the most superficial of analyses of the requirements of the Act reveals a daunting task, one, which almost certainly requires a systems approach to its effective implementation.

3 RISK MANAGEMENT AT RIETSPRUIT

3.1 NEED

Analyses of the provisions of Sections 10 and 11 of the Act with due regard to the stated philosophy of participation, taking cognisance of the demands for continued business efficiency, yielded the following determination of the need for risk management:

- 3.1.1 Compliance with the provisions of the Act.
- 3.1.2 Compliance with the Ingwe health and safety corporate business plan, Ingwe Coal Corporation Limited being the managing partner at the mine.
- 3.1.3 Creation of a healthy and safe working environment to ensure the well being of all the mine's people and the communities within which the mine operates; and
- 3.1.4 Preservation and optimised utilisation of the mine's assets.

3.2 PURPOSE

The purpose of risk management was therefore identified as:

- 3.2.1 Providing management and employees with a more comprehensive understanding of the hazards faced, the risks they are exposed to and the effectiveness of the existing controls in order to manage such risks and meet stated objectives; and
- 3.2.2 Ensuring that the business thrives and prospers and, most importantly, enjoys stakeholder confidence through effective implementation.

3.3 STRATEGY

3.3.1 At a corporate level the risk management strategy was defined as the creation of a healthy and safe working environment through:

- 3.3.1.1 Development and effective implementation of scientific risk based management principles; and

3.3.1.2 Ensuring the adequacy of systems and controls to minimise, reduce, eliminate or manage residual risk with continual review.

3.3.2 This is supported at the functional and specific levels by strategies such as:

3.3.2.1 Effective and open communication with all stakeholders on matters of health, safety and the environment.

3.3.2.2 Training of all employees to ensure competency for responsibility.

3.3.2.3 Real and meaningful employee participation in all matters relating to health, safety and the environment, ensuring transparency at all times.

3.3.2.4 Identification of hazards and assessment and elimination or control of associated risks.

3.3.2.5 Contribution to, and participation in, all relevant initiatives which will improve health and safety performance, and

3.3.2.6 Implementation of effective and recognised quality assurance programmes.

3.4 APPROACH

3.4.1 Taking into consideration the aforementioned, it is clear that risk management is a complex and onerous intervention and should be considered as:

3.4.1.1 A process requiring continuous intervention rather than a singular event.

3.4.1.2 Being applicable to all activities at all levels in the organisation across all disciplines; and

3.4.1.3 Involving organisational hardware (strategy, structure and systems) and software (hygiene and maintenance factors).

3.4.2 Based on these principles risk management is better defined as a generic term describing an integrated health and safety management system based on sound risk management principles and backed up by a recognised and sustainable quality assurance programme.

3.4.3 Based on this definition an integrated health and safety management model was developed for Rietspruit as is detailed in Figure 1.

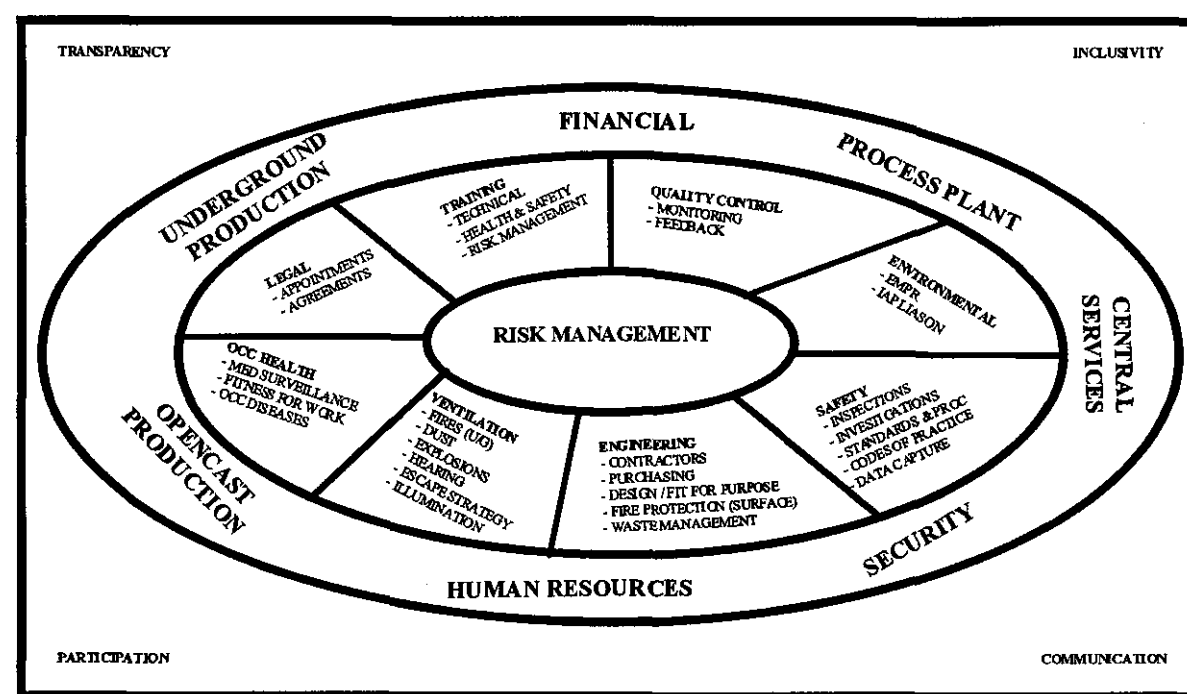


Figure 1 - Integrated health and safety management model

3.5 STRUCTURE AND ORGANISATION

Implementation of the integrated approach to health and safety at the mine necessitated organisational redesign with the appointment of a Risk Manager at the level of departmental head. In addition to departmental Safety Officers, Risk Officers at departmental level were appointed. Risk Officers have assumed the responsibility of facilitator for the risk assessment process in particular and trainers in health and safety in general. A Contracts Manager was appointed responsible for the contractor management system and the Standards Base Assessment process with two standard writers responsible for developing the mine specific standards and procedures and assessment reference document in terms of the requirements of the specific Unit Standard.

Figure 2 depicts the revised health and safety structure for Rietspruit.

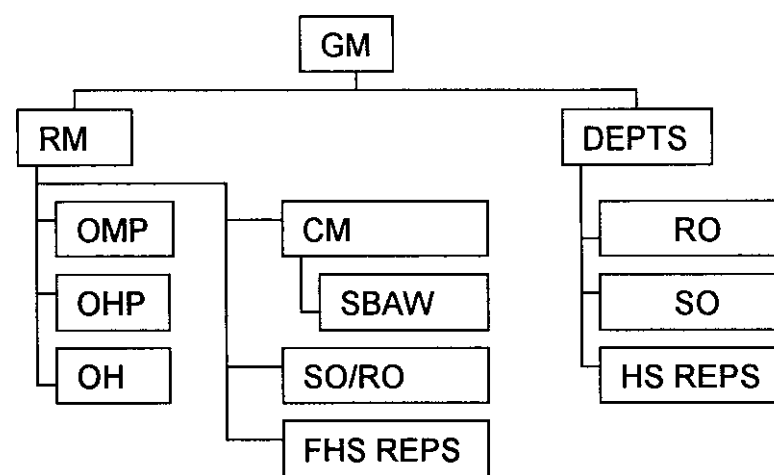


Figure 2 - Health and safety structure

GM	-	General Manager
RM	-	Risk Manager
CM	-	Contracts Manager
OMP	-	Occupational Medical Practitioner
OHP	-	Occupational Health Practitioner
OH	-	Occupational Hygienist
SBAW	-	Standards Based Assessment Writers
SO	-	Safety Officer
RO	-	Risk Officer
HS	-	Health and Safety Representative

Underpinning the structure depicted in Figure 2 are the health and safety committees established in terms of the Act. These committees operate both on a mine wide and departmental basis where each department, including services which consist of Finance, Human Resources, Risk Management, Clinic, Security and Central Services, has established a committee with all the rights and powers afforded to such a body by the Act.

3.6 TRAINING

A need for a standardised approach to risk management, and in particular risk assessment, with regard to health and safety prompted Ingwe to appoint International Mining Consultants Limited (IMCL), a British firm, to train all senior personnel in the subject.

Rietspruit subscribed to the view of standardisation and in addition decided that all employees should be equipped with a working knowledge of the process. IMCL were placed on retainer and all supervisors, from Shift Overseer / Foreman level upwards, all training personnel and Risk Management personnel were trained in the basic principles of risk management with the aid of a programme specifically developed for the mine.

In addition, all other employees are trained in the basic principles of hazard identification and hazard awareness.

Whilst manufacturers and suppliers are required to comply with provisions of the Act, Section 21, Rietspruit requires contracting companies and their employees to participate in the risk assessment process of the mine. Where such companies and / or their employees are not au-fait with the principles, training is provided.

Special designed programmes are utilised for the development and training of health and safety representatives.

The Occupational Medical Practitioner and Occupational Health Practitioners were exposed to programmes presented by the University of Bloemfontein and the University of Natal respectively.

4. RISK ASSESSMENT AT RIETSPRUIT

4.1 Process

The risk process at Rietspruit Mine has three legs:

- 4.1.1 The first leg is based on the development of managing modules for each Supervisor's area of responsibility in terms of all significant hazards.
- 4.1.2 The second leg is based on the development of managing modules for each occupation in terms of all significant hazards and the unit standards applicable to that occupation
- 4.1.3 The third leg is what is called a pre-emptive risk assessment, which facilitates the pro-active identification of hazards ensuring that, where reasonably practicable, no hazards are built into either new equipment or changed working practices or processes.

4.2 Method

Rietspruit developed over the last two years a unique risk assessment method. It is our view point that most of the hazards that could cause injury or harm are already identified by systems such as the SAMRASS system of the Department of Minerals and Energy.

4.2.1 Hazard Identification

The above identified hazards are transferred onto a working document called the Generic Hazard Identification Sheet. When conducting a risk assessment this document is utilised by identifying the hazards applicable to a specific activity or piece of equipment.

The employees of the work area conduct the assessment under the supervision of the specific supervisor assisted by a risk officer acting as a convenor, trainer and facilitator

4.2.2 Evaluation

Each risk is evaluated on the basis of the extent to which it is eliminated, minimised or controlled to a level which is as low as reasonably practicable by current measures such as operating procedures, codes of practice, engineering design, personal protective equipment and the like.

In as much as a particular risk is considered not to be adequately controlled, due to shortcomings in current control measures and/or actual practice, it is prioritised for corrective measures. This prioritisation, based on the likelihood and the severity of harm, which may flow from the hazard, is simplified by using the matrix reproduced as figure 3

Accident Severity					Health
Injury	1	2	4	7	Irritant
Disabling	3	5	8	11	Temporary
Permanent	5	9	12	14	Permanent
Fatalities	10	13	15	16	Death
Likelihood	Once a Year	Once a Quarter	Once a Month	Once a Day	

Figure 3 - Subjective Risk Prioritising Matrix

4.2.3 Implementation

Measures to address such shortcomings as identified are determined by the assessment team following investigation and analysis.

An action plan for implementation of the developed control measures known as the generic hazard controls is drawn up. Together with the generic hazard identification sheet and the significant hazard identification sheet it is presented to the responsible head of department and or general manager who, in turn, will use the output for consultation with the relevant health and safety committee.

After approval by the different stakeholders this information is fed into a database and the information is utilised by the Standards Based Assessment writers to develop a reference assessment document for the job in question.

4.2.4 Recording

4.2.4.1 Generic Hazard Identification Sheet

Recording during the initial stages of identification and evaluation is done in a standardised format, an example of which is provided in Figure 4.

RMS RISK ASSESSMENT GENERIC HAZARD IDENTIFICATION MINC 003 - CONVEY COAL USING A CONVEYOR BELT SYSTEM								
HAZARDS		Envi- mental Health Hazards	NOISE	DUST	Weather Condi- tions	Parts of Machi- nery	NIP POINTS	OPERATOR PROTECTION
EQUIPMENT / ACT I V I T Y								
1	EXAMINATION OF WORKPLACE	*	*	*	*	*		
1.1)	INSPECTIONS OF WORK AREA							
2	START UP PROCEDURE	*	*	*				
2.1)	LOCKOUT PROCEDURE							

Figure 4 - Generic Hazard Identification Sheet

4.2.4.2 Prioritising of Significant Hazards

Recording and prioritising of the significant hazards is done in a standardised format.

4.2.4.3 Generic Hazard Control Sheet and Action Plan

The management of the significant hazards are recorded on the hazard Control Sheet.

4.2.5 Quality Control

Monitoring and quality control is done through internal and external audits respectively. A firm of international repute, so as to retain a high degree of integrity of and confidence in the system, will preferably conduct quality control.

4.2.6 Review

Executing the risk assessment process as defined provides for a system of continual review.

LESSONS LEARNT

Following are some of the more pertinent lessons learnt even during the early stages of implementation at Rietspruit.

- 5.1 Effective hazard identification and risk assessment is only possible if all stakeholders of a particular process or system are involved and are equipped to participate in a meaningful fashion. Of crucial importance is the participation by the people at risk.
- 5.2 Continuous training and re-training at all levels is of utmost importance
- 5.3 Coaching, facilitation, providing of information and much practice are imperatives for success.
- 5.4 Quality assurance mechanisms and controls have to be reviewed on a regular basis for conformity and effectiveness
- 5.5 It is crucial that the Standards Based Assessment process is linked to, and runs in parallel with the Risk Assessment programme.
- 5.6 Natural tendency is to remain within one's comfort zone. Evaluation of risk is often inadequate as current operating procedures, standards and the like are cited as effective control. Most of these current controls were developed by mine management at the exclusion of the real stakeholders and users. Actual practice, i.e. what is really happening is often not taken into consideration despite the fact that it may be for more efficient, healthier and safer than the official procedure.
- 5.7 Whilst compliance with the provisions of the Act in respect of risk assessment is receiving a high degree of priority care should be taken not to unduly rush the process purely for the sake of compliance. A far greater level of efficiency and effectiveness will be attained if the process is made a way of life of all the stakeholders in the industry. Compliance for the sake of compliance will ensure only that the requirements of the Act are met and will not achieve embodiment of the spirit of the legislation.