NOTICE 1395 OF *2006*

Safety in Mines Research Advisory Committee (SIMRAC) on behalf of the Mine Health and Safety Council (the Council)

Invitation to submit project proposals

SIMRAC, a permanent committee of the Mine Health and Safety Council, was established in terms of the Mine Health and Safety Act (29/1996) to conduct research and surveys regarding, and for the promotion of, health and safety in the South African mining industry. Suitably qualified agencies and/or persons are invited to submit proposals in response to the project specifications in this Notice. In soliciting research projects for the 2006/2007-research programme, the Council has the following goals:

- to indicate the current research needs for research to commence in the 2006/2007 cycle;
- to invite research proposals in response to these defined priority areas of research; and
- to invite applications for postgraduate funding for research which will promote health and safety within the South African mining industry.

A consultative process has resulted in the Council formulating a co-ordinated, long-term health and safety research programme and identifying priority areas for research to commence in the 2006/2007 cycle. Researchers and agencies are invited to submit research proposals for the research projects indicated. Proposed research must be well designed with a detailed methods section, be ethical ***and*** must have the potential to add to existing knowledge, practice or technology, involve the end users and implement/transfer outputs. Research teams must have the specified skills.

Submission of Proposals

1. Proposals must be submitted in accordance with the prescribed format. Contact Cecile Gomes at telephone 011 358 9180, fax 011 403 1821, e-mail cgomes@mhsc.org.za or visit the SIMRAC website www.simrac.co.za to download the submission template. PLEASE NOTE THAT THE NEW FORMAT NEEDS TO BE USED.

2. Queries regarding the aims and objectives of the thrusts listed in this notice can contact the following persons:
   Rock Engineering: Dragan Amidzic at damidzic@mhsc.org.za (011 358 9193)
   Occupational Health: Audrey Banyini at abanyini@mhsc.org.za (011 358 9183)
   SIMRAC Chairperson: Tabo Gazi at thabo.gazi@dme.gov.za (012 317 8461)
   Proposal Submission: Cecile Gomes at cgomes@mhsc.org.za (011 358 9190)

3. Proposers are requested to take note of past work in the different thrust areas. (Details are available on website www.simrac.co.za).

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[1] Guidelines for the Council postgraduate research and Ethics Guidelines are obtainable from nwoods@mhsc.org. za

4. The closing time and date for the receipt of the proposals is **12:00 on Thursday 19 October 2006.** Late entries will not be considered.

5. Two copies of each proposal, in a sealed envelope, in a form suitable for photocopying **plus** a disk or CD with the proposal in MS Word, should be deposited in the repository labeled *"Proposals"* at the Council's offices[2].

6. The Council may at its sole discretion, decide to recommend the acceptance, rejection or amendment of any proposal and to commission the team to develop the proposal on the basis of which the contract is awarded. The Council shall not furnish any reasons for its decisions regarding proposals.

7. Every proposal accepted by the Council would be subject to *a* set of Terms and Conditions, which on acceptance of the final detailed proposal will form part of the contract applicable to the project. All prospective proposers should peruse a set of the standard terms and conditions prior to submitting a proposal. A copy of the draft standard terms and conditions is available on the SIMRAC website www.simrac.co.za.

8. Charge-out rates have to be in accordance with the rates specified by the Science Council, ACSA and SACNAPS

9. In compiling proposals, prospective proposers should provide details of methods, identifiable outputs and estimated costs as indicated.

10. The Council will endeavour to solicit the services of South African organisations to undertake projects, but will consider proposals from overseas-based organisations if expertise, cost considerations and local capacity building components compare favourably.

11. The Council requires full disclosure regarding all subcontracts included in the proposal.

12. The proposer and any of its affiliates shall be disqualified from providing other goods, works, or services under the project if, in the Council's judgment, such activities constitute a conflict of interest with the services provided under the assignment/project.

13. Where an output includes a device, mechanism, procedure, or system capable of being applied in the mining environment, a prospective proposer shall include in the proposal an output which suggests how the outputs in question might best be applied in practice. In drafting proposals, all prospective proposers should bear in mind the potential for technology transfer and phasing the project as indicated.

14. The period for which the proposals should be held valid is 150 days.

15. During this period the proposal must undertake to maintain, without change, the proposed key staff, and must hold to both the rates and total price proposed; in case of extension of the proposal validity period, it is the right of the proposer not to maintain their proposal.

16. The anticipated commencement date of the projects *is* 1 December 2006.

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[2], 2nd Floor, Braamfontein Centre, 23 Jorissen Street, Cnr. Bertha Street, Braamfontein

17. Each proposer have to submit a TAX Clearance Certificate with the proposal

18. A BEE Questionnaire has to be completed by each proposer. The questionnaire can be obtained from Cecile Gomes at cgomes@mhsc.org.za

19. Each successful proposer may, during the contract period or shortly after its completion, be required to provide:

- A competent spokesperson with appropriate materials to make not more than two separate presentations, on an annual basis for the duration of the project, and
- A technical paper on the project for publication and/or a poster presentation, without additional remuneration or reimbursement of costs.

These activities must be detailed and costed within the project.

14. Where relevant, proposers may obtain copies of earlier project reports and other information from the website address or from contacts listed (See paragraph 1 and 2).

15. Proposers are advised that all Council projects should be submitted to language editing and may be subjected to technical and financial audits. Funding for editing and audits should be included in the proposal budget.

16. Proposers should substantiate and cost separately, all proposed travel outside the borders of South Africa in connection with the project, and provide details of all expenses such as travelling and subsistence.

17. All proposed project costs must be expressed in South African Rands and the total price must be VAT inclusive. Fluctuations in the exchange rate and purchase of forward cover should be considered when costing the proposal.

18. The Council will take all reasonable steps to ensure that confidentiality of proposals is maintained during the adjudication process. If a proposal is not accepted within the programme, the Council may invite additional proposals on the topic.

19. No unsolicited proposals will be included in the programme for 2006/7.

20. The following three-stage evaluation procedure will be followed:

a. A technical evaluation of the proposal that will consist of the following items and weight allocations:

1.	**Capability and capacity of the project team**	
1.1	Relevant formal qualifications	5
1.2	Knowledge of relevant OHS issues in mining industry	5
1.3	Experience in conducting research in this area	**5**
1.4	Balance of team composition and competencies	5
1.5	Resources and facilities available	5

1.6	Track record: quality, on-time and within budget	5
2.	**Research design and methods**	
2.1	Appropriate study design and proptocol	5
2.2	Representivity, sample, strategy and size	5
2.2	Technical methods (tests etc)	5
2.4	Intended analysis of results	5
2.5	Ethics, risks and limitations	5
3.	**Research outputs**	
3.1	Appropriate format	5
3.2	Usefulness	5
3.3	Potential impact	5
3.4	Technology transfer	5
	Total Score – Technical	***75***

b. A price evaluation that will be calculated as follows:

Ps = (Pmin/Pt) * Ap

Where

Ps = % scored for price by proposal being evaluated

Pmin = price of lowest bidder

Pt = price of proposal being evaluated

Ap = % allocated for price aspect of proposal (15%)

c. A preferential procurement purposes using *the* following criteria and weightings:

- The proposals will each be given a score out of 100 that will be converted to a score out of 10 for the SIMRAC evaluation process
- Commercial Entities will be evaluated against the following criteria and weightings:
  - Ownership - 20%
  - Management - 10%
  - Employment Equity & Skills development – 30%
  - Preferential Procurement – 30%
  - SMME Status – 10%
- National Institutions and Public Entities will be evaluated against the following criteria and weightings:
  - Ownership - 0%
  - Management - 30%
  - Employment Equity & Skills development – 40%
  - Preferential Procurement – 30%

The **objectives** of the Council in commissioning health and safety research, for both general and commodity-based projects, are to:

- Obtain and evaluate information to establish evidencebased risk assessment, standard setting and health and safety performance measurement;
- Develop techniques or guidelines to prevent, reduce, control or eliminate risks;
- Develop and pilot innovative ideas and procedures, where appropriate, to eliminate, reduce or control risk;
- Obtain information on the extent of work-related ill health;
- Identify, develop and improve sampling and measurement techniques to detect environmental hazards and assess personal exposure;
- Understand the aetiology and identify and evaluate best-practice screening, diagnostic and treatment interventions to reduce the impact of occupational disease;
- Evaluate the effectiveness of control interventions;
- Understand risk perception, attitudes and behaviour related to health and safety and promote best practices in hazard recognition and procedural conformance;
- Empower its statutory committees to formulate policy, expedite research aimed at improving the health and safety in the South African mining industry; and
- Collaborate with national and international initiatives and research to promote health and safety in the mining industry.

The **criteria** by which proposals will be evaluated include:

- **Added value and impact –** the Council supports research which can contribute significantly to the improvement in the health and safety of South African miners;
- **Value for money –** the Council supports cost-effective research;
- **Innovation –** the Council welcomes new approaches or new areas of focus for research leading to technologies or best practices to improve health and safety;
- **Excellence –** the Council demands excellence, particularly in the methods employed to conduct research, be it quantitative or qualitative, and hence will consider the track record of the proposer/s for expertise and delivery (quality, time and to budget);
- **Use and development of research skills –** the Council requires research teams to possess the skills relevant to the success of the project and also favours projects which assist in developing research capacity, particularly in previously disadvantaged groups;
- **Collaboration -** the Council places a high priority on collaboration between researchers and the "teams of excellence" approach. Thus, the means *of* soliciting research proposals is intended to stimulate collaboration between centres of excellence and individual experts in order to optimise the use of the Council funding and the research outcomes.
- **Development of key indicators –** the Council recognises the challenge in assessing performance and improvement in health, as opposed to safety, in the mining industry. There is a lack of suitable occupational health (OH) indicators and baseline data. Thus innovative and robust research to develop relevant OH indicators and baseline values will be favourably considered.

The Council's research and implementation programme consists of occupational health and safety, addresses occupational medicine and hygiene, rock engineering, engineering and machinery, behavioural issues and technology transfer processes.

Each proposal must:

- Address only the research topic advertised and this must be specified;
- Be in the format indicated and the template specified using Word format; and
- Be phased as indicated in the project scope.

SIM 06 02 01 - Track A

Thrust - 2

Rockfalls

Problem Statement / Research Question

An unacceptably high number of deaths and serious injuries occur on underground mines due to rockfalls. Rock probably has precursory indicators before major failure, most likely in terms of small localized movements and/or longer term regional closure trends.
The research question is, is it possible by monitoring and measuring with instrumentation, to collect data that gives sufficient indications in terms of time and space of an impending rockfall that may result in losses?

***GAP* Analysis (Statistics/ Previous Research/Best Practice / Benchmarking)**

During 2005, 52 people were killed due to rockfalls and 757 people were seriously injured due to this cause. The safety data from the SAMRASS data base to the end of July 2006, indicate that 46 out of 114 deaths were rock related. In the gold sector rock related deaths represents 56% of the total, while in platinum 38 % are the total deaths are specifically rockfall related.
Previous work has been undertaken by the MHSC regarding closure on gold mines. Project GAP 852 examined limited continuous closure data and determined that this was a good indicator of face-bursting or rockfall conditions. The data was collected at isolated sites in stopes and the usefulness of the information was limited to the immediate area around the measuring point rather than for an entire stope.
Further work was carried out in Project SIM 04 02 07 Closure profiles in Bushveld mines (Merensky Reef). This again involved some continuous closure at a limited number of points in stopes. The work has proved successful in predicting the early onset of rockfalls in a number of cases. A current project SIM 06 02 02 Closure monitoring on UG2 Bushveld Complex mines is yielding some very useful data around this horizons behaviour. All of the previous work provides a limited view of closure and a full 3D view of a stope's complete behaviour, not just closure, would be more informative.

Expected Impact on OHS / Value Added

The loss of 52 lives and 757 serious injuries in the South African mining industry during 2005 due to rockfalls *is a* major concern. Early warning of possible rockfalls will assist in removing people from the danger areas. Apart from the loss of a life, to which it is impossible to put a value, the monetary value of a loss of a life to the industry is conservatively about R3m. Every life spared by proactive identification of potential rockfalls will have positive repercussions for the industry, morally and monetarily. The industry safety targets and milestones, set by the industry, will be achievable only as the rockfall problem is aggressively addressed.

Project title

Elimination of Rockfalls - Measuring and monitoring to reduce the rockfall risk – SIM 06 02 01 Track A

Motivation

The nature of tabular ore bodies means that their actual condition is hard to see and assess. Even in loco inspections of a tabular stope allow the viewer very limited perspective, given the geometry and poor lighting. It is difficult to see many of the discontinuities in the rock that are critical in causing instability or potential failures in the rock. Any rockfall is preceded by some precursory movement, however small, and the detection and interpretation of these movements may be crucial for identifying and warning of impending rockfalls that are so prevalent and

responsible for losses in underground workings, particularly stopes. There is a need to collect geotechnical data from mine sites that can be used in interpreting the rock fall mechanisms that occur on mines.

Primary outputs

1. Measurement of precursory indications of rockfalls. This will entail extensive field measurements.
2. Interpret the predominant and critical rock fall mechanisms involved in rock falls
3. Identification of critical parameters that will assist in signaling an alarm before a rockfall
4. Design algorithm/s that are able to combine critical parameters in order to activate an alarm
5. Design instrumentation that will allow practical collection of critical data.
6. Comprehensive field testing of the technique/s
7. Identify new approaches that will stop or ameliorate the effects of rockfalls that are identified as likely.
8. Final report of the work covered and the main findings

Scope

The project should involve the identification of critical parameters that are involved in early movements of rocks before they detach from the rockmass and fall. This should be considered in all sectors of the mining industry including the small mining sector. The identification of rock fall mechanisms and the collection of geotechnical data necessary to interpret such mechanisms is required. The project should determine what parameter/s should be considered as early indicators of failure of the rock. Instrumentation should be developed necessary for measuring the parameters and guidance given as to where and when to carry out measurements. The techniques should be tested in the industry in all tabular mining situations and on a wide selection of the different reefs mined. The technique should also be applied to tunnels to assess the applicability of early warning in these excavations. The objective of the project should be to contribute meaningfully in new ways to the management of stopes and tunnels for rockfall elimination. This will involve devising procedures for when it is safe to work in an underground opening or not, and how and when to evacuate a stope or tunnel should measurements indicate the risk has risen. The whole area of communication of critical information to whom and when and how, will have to be explored and answers given by the project. There should be an attempt to look at new and innovative ways of collecting and interpreting data, and of applying the knowledge to address rock falls. There may be ideas developed in the project to provide some innovative ways of providing some protection in areas that are identified as high risk for rockfalls.

Estimated duration

3 years

Typical recipients of the Report/Main Outputs

Rock engineers, Mine overseers, Shift Supervisors and Strata Control Officers

Requirement for technology transfer

Hardware and software for measuring identified indicators that will be useful for incorporating into algorithms for predicting rock failure and ultimately rockfalls.

Special skills and facilities required by project team

Strata Control knowledge, Rock mechanics, Underground measurement and monitoring experience

SIM 06 02 01 - Track B

Thrust - 2

Rockfalls

Problem Statement / Research Question

There is resistance to making "expensive" mining decisions on mines that will later reduce the probability of poor safety. There are no current, easy-to-use tools to evaluate the long term benefit in terms of safety and therefore profitability and sustainability that such decisions and spending will bring.
The research question is: How is the industry made aware of the value of appropriate but sometimes expensive mining decisions in a project that will negate later safety problems and what tools should be developed to inform the industry?

***GAP* Analysis (Statistics/ Previous Research/Best Practice / Benchmarking**

There has been no specific work carried out by MHSC in research projects to evaluate the benefit of early spending on proactive initiatives on the safety and sustainability of the industry. Phrases such as a safe mine is a profitable mine are often used but there is limited quantitative evidence to support such a statement. Some figures that are given for the cost of the loss of a life to the industry range from R3m to > R6m. However, this is only part of the cost and much greater loss is incurred through the loss of a life, poor moral and reputation of the mine and industry.

Exeected Impact on OHS / Value Added

The benefit of spending on safety issues will be encouraged before problems emerge because there will be a tool in place to assess the long term value to a mine or the industry. Therefore it is expected that before a safety issue causes losses the correct approach will have been implemented. This will result in the safety of mines related to mining decisions improving. Safety spending early in projects will ensure less spending overall and will contribute significantly to the industry achieving its milestones and targets.

Project title

Elimination of Rockfalls – Managing the rockfall risk and the value of safety spending – **SIM *06*** 02 01 Track **B**

Motivation

There is usually a cost to improving safety on mines and there is enormous spending on safety in the South African mines. Addressing the rockfall issue is no exception. However, what is often ignored, probably through ignorance, is the benefit that is usually added through improved safety. Often there are a number of alternatives to address improved safety. However, there are no tools to evaluate the cost benefit in the long term of implementing different alternatives for improving safety. The idea of an acceptable risk needs to be balanced against the cost that will be incurred for reducing the risk further.

Primary outputs

1. A rockfall risk model

2. ***A*** computer based programme that is able to determine the cost benefit of different safety alternatives against possible consequent cost of not implementing that initiative.
   - The alternatives could be changes in support type or an instrumentation programme with measuring and interpretation.

3. Booklet that documents a few clear cases of safety interventions that have yielded greater benefits in the long term than would have otherwise occurred.
4. Roadshows to senior executives in industry to show the benefit of safety spending for greater mine sustainability

Scope

The project should cover all sectors of the South African mining industry. The approaches taken to reduce rockfalls should be documented for the different sectors and best practice identified for the whole industry and each sector. Any successes where safety spending resulted in greater safety as well as greater productivity and/or sustainability of a mine should be documented in case studies. The project will develop a computer based programme to evaluate different alternatives that may be introduced for safety, against the residual risk after applying the intervention, as well as the long term consequences that the introduction of a safety measure may have on productivity and extending the mine life by opening up additional ore body. The project should also look at spending that did not result in any benefit. The reasons for no benefit will be investigated and documented. The project will have to look at the ethical aspects of residual risk and will need to embark on a communications roadshow at the end of the project.

Estimated duration

3 years

Typical recipients of the Report/Main Outputs

Rock enaineerina practitioners. middle manaaement production staff and safetv officers

Requirement for technology transfer

A user friendly software package that can be loaded on PCs or mine servers for use by technical staff. An interesting, readable booklet that discusses benefits of safety spending, giving real examples from the South African mining industry.

Special skills and facilities required by project team

Understanding of HIRA as it applies to mining and particularly to rockfalls. Strata control understanding. Programming skills to write software for use **on** mines by rock engineering practitioners and safety officers and management. Some knowledge of quantity surveying and cost accountina.

SIM 06 02 01 - Track C

Thrust - 2

Rockfalls

The rock related safety record suggests that although there is a vast accumulation of knowledge in this area, there is often a lack of ability or will to comply. Guidelines for compiling mandatory codes of practice and the actual codes of practice to combat rockfalls and rockbursts have had some success but the annual number of rock related fatalities and injuries is unacceptably high.

Expected Impact on OHS / Value Added

There is sufficient knowledge in the industry to improve rockfall safety significantly. However, compliance with what is known or even regulated is not always good. By putting in place best practice in term of auditing and introducing self auditing, the rock related safety of the industry is expected to improve.

Project title

Elimination of Rockfalls – Review of current practice to address rockfalls – **SIM** 06 02 01 Track C

Motivation

There is a large repository of knowledge pertaining to causes and prevention of rockfalls in the South African mining industry. Codes of practice and regulations are in place to assist in addressing this and other safety related issues. However, **just** how effective these regulations and codes of practice are at contributing to the improvements in rock related safety is unclear. Yearly, still over 50 people lose their lives due to rockfall accidents. It is clear that although there **is** a great amount known about rockmass behaviour and support performance, there is a disconnection between knowledge and practice. It is necessary to discover where the shortcomings are between these two components and to recommend ways of bridging the gap. This will involve studying the law and regulations, understanding the competencies of mine personnel including the issues around "license to practice" and behavioural safety issues around rockfalls particularly, the currency of qualifications for rock mechanics personnel and ways of ensuring that these are up to date. The issuing of CPD points for approved courses may be one way of keeping rock mechanics personnel abreast of developments in this field but this needs to be formally investigated.

One mechanism to assess the state of practice in rock engineering *on* the mines may be to conduct audits in production stopes and tunnels to assess compliance with mine codes of practice and best practice in the industry. A standard approach to conducting audits needs to be developed so that operations can conduct setf audits and compare themselves to one another and to best practice. The role of the DME as the regulator needs to be considered so that maximum benefit may be derived from their interactions with mines.

Primary outputs

1. Critical review of the law, regulations and codes of practice guidelines that pertain to rockfalls
2. A document detailing the strengths and weaknesses of the issues around license to practice
3, A review of all levels of strata control, rock engineering and rock mechanics to deliver assistance to mines to address rockfalls. This will be accompanied by recommendations to keep all personnel up to date at their respective levels of competency.
4. Detailed recommendations to conduct rock engineering audits. This will be backed-up by extensive examples of actual audits and best practice to measure against. The practice of self audits will be introduced as a method. Aspects of behavioural safety peculiar to rockfalls will be identified and reported on.
5. A review of the role of the regulator and international benchmarks for best practice.

Scope

The project will review the widest possible cross-section of the South African mining industry in terms of commodities. It will also require that the MHS Act is scrutinized and the mining regulations are understood. There will have to be extensive interactions with the DME and mines which will involve employers and employees. Researchers will have to be familiar or become familiar with MQA and the license to practice framework. There will need to be reference to best practice internationally and to identify the best practice locally in terms of auditing. This will need to be applied particularly to rockfalls to ensure that the rockfall problem is eliminated in South Africa mines. The research will attempt to identify behavioural safety issues that may be unique to rockfalls.

Estimated duration

2 years

Typical recipients of the Report/Main Outputs

MHSI of DME, Rock Engineers, Mine Safety Officers and Production Personnel

Requirement for technology transfer

Simple guide to conducting rock related audits Guidelines to proceed if audits reveal unsatisfactory results

Special skills and facilities required by project team

Knowledge of mining law and regulations pertaining to rock related issues.

SIM 03 08 02 - Phase 2

Thrust - 8

Occupational diseases

Project title

Development of sensitive tools for active case finding of tuberculosis Phase 2

Motivation

- **Problem statement**

TB rates amongst gold miners in SA continue to rise despite well implemented TB control programmes. TB case rates have risen progressively during 1990 to 2003 to levels of over 3,000 per 100,000 per year (Gap 524, Health 701 and 705). The HIV and the silicosis problems triplicate the problem.

SIM 03 08 06 also found high prevalence of TB among platinum deceased miners (43/131), although this appeared not to be related to previous gold mining exposure.

In deceased miners, with most exposure in gold mining, the prevalence of silicosis has increased from 250 per thousand in 2000 to 295 per thousand in 2005 and the rate of Pulmonary Tuberculosis in black gold miners from 341/1000 in 2004 to 348/1000 in 2005 (NIOH Pathology Division Suirvellance Report 2/2006.

It is therefore vital to be able to ACTIVELY find TB prior to disease onset for monitoring and early intervention and optimum cure.

- **Additional information**

The mining industry radiological screening programs (RSP) to screen for mycobacterial diseases and pneumoconiosis' for decades, though the prevalence of TB detection through (RSP) **was** not significantly different between the intervention and control arms at the time of the final annual screening radiograph. Skin tests have not been found to be useful for screening active disease, and though sputum has potential for diagnosing TB, the negative results may not necessarily mean no disease

- **Gap analysis**

Previous SIMRAC studies also concluded that mass screening of TB. The current MOHAC guidance note is an Adhoc document, and that different organisations within the industry may have robust audit tools for TB OR these may not exist in some. Where these are present at an organisational level, they tend be protected from the public domain.

Outside the mining industry, the Department of Health has also an ad hoc facilities and generic client survey audits. There are planned new that releases by CDC, however, these may be available late to the public late or complex. No audit tool in the public domain that could be found (WHO and IUATLD)

- **Impact and or added value**

The outcome document could be developed by MOHAC into best practice included in the COP

Primary outputs

A comprehensive, but simple and robust standardized TB code of practice audit tool to be **used** in the South African mining industry. The final document to be refined by MOHAC

Scope

- Review of past SIMRAC work done
- Critically Review of all existing TB audit tools local and international
- Prepare a document for presentation to a expert panel/workshop including MHSC committee structures and expert including organization of this workshop
- Collate the outcome of the workshop and document the tool (s) and present to MHSC
- Pilot the tool in any mine to ensure practicability, cost effectiveness and efficiency
- Provide a final document to the MHSC

Estimated duration

9 months

Typical recipients of the Report/Main Outputs

MHSC stakeholders

Requirement for technology transfer

A document to inform on best practice TB audit tool in the SA mining industry

Special skills and facilities required by project team

- A team of occupational medicine/ health with extensive knowledge of reviewing literature, writing skills and project management

SIM *06 06 02*

Thrust - 6

Airborne Pollutants 1

Project title

Explore the standardization on the use of Digital chest x-ray for the early detection during medical surveillance and classification of pneumoconiosis in the mining industry and as a tool for compensation.

Motivation

- **Problem statement**

Chest radiography is currently in use in the South African mining industry for monitoring the health of workers exposed to airborne dust. Though this is secondary back up for primary prevention of dust control, it has tremendous proven benefits. In monitoring programs, it is important to weigh the cost of failing to detect true disease against the cost of falsely identifying disease resulting in unnecessary social cost to worker and financial cost of follow up. Digital chest radiography has in a large sector of the **SA** mining industry replaced analogue films. This technology also provides easy storage and comparison of chest x-rays for individual miners compared to analogue films. However, there are no existing standards locally or internationally to grade pneumoconiosis to grade pneumoconioses with digital x-rays.

- **Additional information**

Internationally, NIOSH is also looking at standardizing digital chest x-ray in an occupational setting, however this is still at an early stage and hampered by the limited number of workers with possible dust related abnormalities. The ILO have standardised their ILO films; but have taken no steps to develop standard digital X-Rays.

- **Gap analysis**

The recent report by NIOH, has shown from post rnortem results that there still a high prevalence of silicosis in South Africa. In line with MHSC the silicosis and the base lining of the noise and dust programmes, the digital x-ray standards will improve on the medical surveillance. There are no standardised digital X-Rays available.

- **Impact and or added value**

Standardized industry radiographythat improves medical surveillance.

Primary outputs

A detailed report that will enable SIMRAC to scope a long term project to assist in digital x-rays standardization.

Scope

Initial desk top review of local and international of literature on digital and analogue chest x-rays as a tool for either, and or medical surveillance, diagnosis and compensation for dust related medical conditions including the advantages and disadvantages. Review the involvement of **ILO** during the phase 2. Organization of local workshop that will include international experts that will help scope phase 2.

Estimated duration

Phase **1** – 9 months

Typical recipients of the Report/Main Outputs

The MHSC

Requirement for technology transfer

Exploratory document to scope phase 2 of the project	1

Special skills and facilities required by project team

- A team of occupational medicine/ health, radiologist(s), pathologists with amongst others Familiarity with occupational legislations, Extensive knowledge of reviewing literature and Extensive writing skills
- facilitator