

HEALTH 709: Identification of health hazards relating to toxic substances in silicon smelters

- E Zinsser

Dr Willie van Niekerk (Infotox) presented results of the SIMRAC HEALTH project 709, at a launch held on 11 July 2001 in the CSIR Miningtek Carlow Road Conference Facility.

The State, Labor, mining houses and societies, research agencies and the Medical Bureau for Occupational Diseases were represented.

Delegates heard that despite compliance with occupational exposure limits values, pneumoconiosis continues to occur in the silicon industry on a worldwide basis in silicon smelters. Measuring airborne levels of crystalline silica does not appear to provide all the clues that are necessary to explain the cause-effect relationship between levels of exposure to crystalline silica and silicosis.

The survey considered all airborne toxic substances as possible causative agents of lung disease, as well as processing steps and operations in plants, sources of chemical hazards, descriptive toxicology, sampling guidelines, chemical analysis for exposure

assessment, and a framework for health risk management.

Discussion covered potential underlying causes of silicosis, when exposure to crystalline silica is believed to be below the occupational threshold level.

Prof. Neil White (UCT) informed delegates of the symptoms, development and consequence of silicosis and gave input on the role of exposure to ultrafine particles in the development of lung disease.

*Readers interested in the risks of exposure in mineral processing plants are urged to read **Health 603**, newly added to the health report section of the SIMRAC Website <http://www.SIMRAC.co.za>*

*Feedback is also needed on the report on heavy metals in mineral processing plants (e.g. omissions; alternative processes being used) for **Health 804**, that will address all chemical exposures in the mineral processing industry and include any amendments to Health 603. Please contact Dr Willie van Niekerk infotox@icon.co.za to send comments and suggestions or for further details about the project.*

For further information contact Dr Mary Ross by email mross@simpross.co.za

Mary Ross at the launch of Health 709



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CALENDAR OF EVENTS

MEETINGS*

SIMRAC: none

SIMCOM: 20 Nov. 2001

SIMGAP: 21 Nov. 2001

SIMHEALTH: 12 Sep. 2001; 17 Oct 2001; 14 Nov. 2001

SIMENG: 7 Nov. 2001

SIMROCK: 6 Nov. 2001

LAUNCHES

The following project launches are planned:

Engineering

GAP 702 Percussion drilling (Sep 2001)

GAP 704 Locomotive design (Oct 2001)

Contact Alec Gumbie at
agumbie@simpross.co.za

Rock Engineering

GAP 605 Seismicity (Dec 2001)

GAP 602 Stope gullies (Nov 2001)

COL 606 Coal Handbook (Oct 2001)

OTH 602 'Other' Handbook (Nov 2001)

GEN 703 Highwalls safety (Sep 2001)

Contact Duncan Adams at
dadams@simpross.co.za

Limitation of Exposure to Noise Project COL 714 – Stefan Heyns

Research results from SIMRAC Project COL 714 (Pretoria University), lead to the conclusion that only innovative engineering control has the highest potential of reducing the risk of hearing impairment associated with continuous miner and similar operations.

The lowest noise exposure value at which hearing impairment is likely to result in the average human being is 85 dBA. This is the statutory noise threshold level in South Africa.

The table below indicates the maximum duration per day and per week that a person may be exposed to a sound level which will result in an equivalent noise exposure or a noise dose of 85 dBA.

Any working area, in which the sound level is likely to exceed 85 dBA, is normally classed as a noise zone and employers mandate the wearing of hearing protection in these zones. Not all types of hearing protection, coupled to classically poor adherence to the wearing of PPE, will guarantee that noise exposure is below 85 dBA in such zones.

Practical Application

When people work with machinery under conditions where the sound level is measured above 88 dBA, administrative control is usually no longer viable as a measure to avoid over-exposure to noise.

For example: A two-hourly rotation between operators might be considered as a practicable means of reducing the noise exposure of continuous miner operators in coal mines to below the threshold value. It will certainly reduce

the noise dose, but not sufficiently, especially if the operator then reverts to cable handling or working in another noisy area, assuming that the average working time is 8 hours per shift.

The apparent contradiction in terms i.e. "continuous miners always operate intermittently", makes little difference to the equation. Estimating that each cutting cycle takes 2 minutes to fill a shuttle car with coal and allowing for a noise rest period of 2 minutes between cuts, each operator could work for half an hour to about two hours in every 24 hours, without wearing hearing protection.

(See yellow/shaded band zone of typical noise levels at continuous miners and double the allowed exposure times for a 50/50 rest/work regimen). In practice there is usually background noise that will reduce the useful working time further.

For more information contact Prof. Stefan Heyns at telephone 012 420 2432 or email sheyns@postino.up.ac.za

Timed exposure equivalent to an 85 dBA 8-hour noise shift

(dBA)	Max exposure per day (hours)	Maximum exposure per week (hours)
85	8	40
88	4	20
91	2	10
94	1	5
97	0,5	2,5
100	15 minutes	75 minutes

Strategic, structural and operational changes for SIMRAC envisaged

- E Zinsser

At a meeting held by the specially established SIMRAC Strategic Task Group on 8 June 2001, the current SIMRAC structure, and its research and operational strategies have come under the spotlight. Representatives from all tripartite groups, as well as interest groups, mining houses and associations attended the meeting.

SIMRAC was acknowledged for successfully managing its research function and the dissemination of information. It was however, conceded that the next phase be adopted to complete the full research and development cycle in terms of industry's needs and end-user participation.

The following issues were reviewed:

- the SIMRAC **structure and operational procedures**;
- revisiting and redefining the SIMRAC **research focus** and needs analyses;
- altering the tendering, **contracting** and solicitation processes;
- streamlining **budgeting and funding** mechanisms for balanced long-term programmes;
- seeking an innovative and proactive involvement by end-users from **inception to implementation**, by means of initiating and maintaining the buy-in from committed stakeholders through collaborative efforts, for example, champion mines;
- managing a dynamic **technology transfer** to ensure the implementation of achievable results, through training programmes and training workshops, in order to fill knowledge gaps;
- enhancing **communication** to end-users, ensuring the dissemination of information, and improving liaison and promotion; and
- reviewing SIMRAC's **constitutional** limitations in terms of the Mine Health and Safety Act.

A follow-up Meeting was held on 20 July 2001.

Immediate plans of action include:

- ❖ Mandating senior representatives from special interest groups to advise the SIMRAC Task Group on determining and implementing innovative policies in the areas of
 - long-term research programmes,
 - an annual research budget according to risks,
 - the SIMRAC structure and possibly appointing a technology transfer manager
 - establishing 5-year 'consortium contracts'.
- ❖ Establish specific champion mines and user groups with incentives to implement new technologies
- ❖ Enhance communication with the Mine health and Safety Council, and
- ❖ Establish buy-in mechanisms with stakeholders and professional organizations.

Interested to provide input into this process?

Please contact Paul van der Heever at 011 358 9100 or pvdheever@simpross.co.za

Occupational Health Information

- The WHO and ILO are jointly committed to addressing the urgent occupational health and safety needs of workers in Africa. A planning meeting was held in Harare on 7 and 8 March 2001 where it was agreed that collaboration was needed in 4 areas, namely:
 - **human resource development focused on capacity building;**
 - **assistance with national policies programmes and legislation;**
 - **information, research and awareness training;**
 - **promotion of occupational health and safety in particular hazardous occupations, vulnerable groups (including informal sector workers and children) and in newly transferred technologies**

A practical approach will be taken in Year One (June 2001 – June 2002) to put partnerships and successful activities in place. An outcome on the effort is expected by March 2002.

SIMRAC will be a partner in the WHO/ILO Joint Effort by providing information on occupational safety and health research in South Africa.



Code of Practice available on HIV/AIDS and the World of Work

- **New!** This 50-page code is aimed at preventing the spread and mitigating the impact of HIV/AIDS. It is the product of collaboration between the ILO and its tripartite constituents, as well as co-operation with its international partners. It provides invaluable practical guidance to policy-makers, employers' and workers' organisations and other social partners for formulating and implementing appropriate workplace policy, prevention and care programmes, and for establishing strategies to address workers in the informal sector.

The PDF version is available in English. Download it from the ILO Website at <http://www.ilo.org/public/english/protection/trav/aids/>



- The Occupational Health Handbook for SIMRAC Project HEALTH 612 is currently in its editing phase. It is expected to be published end 2001 (ISBN 1-919853-02). From left to right: Rodney Ehrlich, John Johnstone, Mary Ross and Guild Haggis



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Contributions are very welcome.

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New Appointments at SIMPROSS

Remember Moraba (left) has been appointed as IT Administrator and Rajin Sanjay has been appointed as Financial Administrator for Simpross.

