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DUST MANAGEMENT FACT SHEET

Historical Information

- Konimeter sampling used to determine dust concentrations (parts of dust per ml of air) from ± mid 1950's to late 1980's.
- Information was used on a daily basis to monitor workplace dust concentrations (e.g. stopes, development ends, etc) and efficiency of engineering controls (e.g. dust filter installations).
- Gravimetirc dust sampling (Personal dust monitoring method) was introduced from late 1980's / early 1990's to date.
- Environmental Engineering Department Personnel was kept informed on latest best practices through societies such as "The Mine Ventilation Society of South Africa", attending conferences and by attending meetings such as the "Group Environmental Engineers Meeting" and other Chamber of Mines forums.
- Anglogold also complied with all Guidelines as issued and audited by the DME.

AngloGold Background

- During 1998 Anglogold identified that the DME enforced Gravimetric dust sampling methodology underestimated employees exposure to respirable silica dust, as illustrated in Appendix A.
- Anglogold developed the "Anglogold Underground Dust Modus Operandi" (approved by OPSCO during February 1999) and implemented this methodology to manage its dust exposures. The methodology consisted of 3 phases, namely:
  - The determination of respirable dust concentrations for geographical areas and activities, within each Mine.
  - The identification of "critical occupations and activities"
  - The development of dust management tools (e.g. IRMS, Hygiene Register, new personal dust monitoring system, etc)
- During 2001 Anglogold established a Dust Steering Committee responsible for strategic issues regarding Dust Management within Anglogold South African Region.
- During February 2002 STRATCO reviewed the 2001 safety and health thrusts. Dust was identified as one of the four strategic thrust areas.
- The dust steering committee's vision was defined as to achieve a quantum reduction in dust exposure in Anglogold, thereby achieving significant employee health improvements.
- To achieve its vision the Dust Steering Committee has adopted the "Effective Dust Management Program" philosophy (Appendix B).

"Effective Dust Management Program" philosophy

(Issues that has been implemented or that are currently under investigation)

- Management Systems:
  - New Personal Dust Monitoring System implemented (October 2001)
  - Specific key dust result areas identified and being monitored as from first quarter 2002.
  - System to monitor controls and track dust exposure trends at operational level (IRMS) implemented since mid 2002.
  - Dust Management Audit programme implemented (2002 completed, 2003 currently being conducted). The following issues are being audited: Measuring equipment, statistical analysis of Homogeneous Exposure Groups (HEG's), sampling

methodology, IRMS dust and hygiene modules, exposure reporting, remedial action and Technology & Innovation.

- Quality Management:
  A Dust Technology and Innovation Supporting Team has been established (during 2002) and is responsible for the evaluation of best practices. This team meets on a monthly basis and information and practices from all levels within the organisation and industry is be shared, evaluated and (if required) adopted for implementation by AngloGold.

- Legal and Moral Obligations:
  - The IRMS Dust Module was created to deal with all aspects as required by The Department of Minerals and Energy's "Mandatory Guideline for the Compilation of a Code of Practice" for airborne pollutants. First DME reports will be submitted at the end of October 2003.
  - A generic Airborne Pollutant Code of Practice was compiled and issued to all Business Units.
  - Two task teams (surface and underground) were established to identify and evaluate the risks of the pollutants encountered at Business Units.

- Resources:
  A Technology and Innovation Supporting Team (consisting of Section 12 Appointees from Business Units) was established to resource the program and to assist the Dust Steering Committee to achieve its vision.

- Controls:

  The following control initiatives have been implemented to reduce the risks associated with dust exposure at identified high-risk dust areas, occupations and tasks:
  - Footwall treatment programs had been implemented at all SA Region Operations. R 110 000 spend on initial investigation of controls option efficiency. 91 linear km being treated (201 km treated YTD for 2003).
  - Initial R 462 000 spend on designing new and improved dust filtration plants. Four types of dust filtration plants has been developed for different dust loads, namely:
    - Improved Rabson dust filtrations bags
    - Dynavane dust filtration system (Photo 1)
    - Scorpion dust filtration unit (Photo 2)
    - Improved cartridge dust filters
  - Kopanang Mine currently placed orders for the installation of 9 Scorpion dust filtration plants at a cost of R 700 000.
  - Initial R 60 000 spend on identifying appropriate Respiratory Protection Devices. Trail was conducted to identify HPD that comply with SABS standards and employees personal preferences were also taken into account. A directive was issued on 1 February 2003 stipulating the type of HPD that are available on standard stock.
  - Initial R 162 000 spend on identifying appropriate dust control mechanisms at ore passes. Tau Lekoa Mine is currently returning 80 m3/s of air directly to their return airway as a result of this project, resulting in improved dust concentration as shaft stations and intake airways.
  - Initial R 100 000 spend on identifying appropriate dust control mechanisms with regard to ore transport (hoppers). Tau Lekoa project hopper equiped with low friction material to ensure that payload is emptied correctly, thus reducing dust concentrations in the intake airway (liberated from dirty hoppers travelling in the intake airway). Photo 3.
  - All vertical shaft cleaned and maintenance programs implemented.
  - Dust training video manufactured to ensure training of all employees with regard to dust management and personal protection issues.

The following control initiatives are being investigated for possible implemented to reduce the risks associated with dust exposure at identified high-risk dust areas, occupations and tasks:

- In stope water blast system (R 200 000)
- Blowing over & Socket cleaning (R 100 000)
- Intake airway (including side wall) treatment (R 70 000)
- PIMEX Real-time dust exposure monitoring instrument

EFFECT OF IMPLEMENTATION OF DUST MANAGEMENT PROGRAM

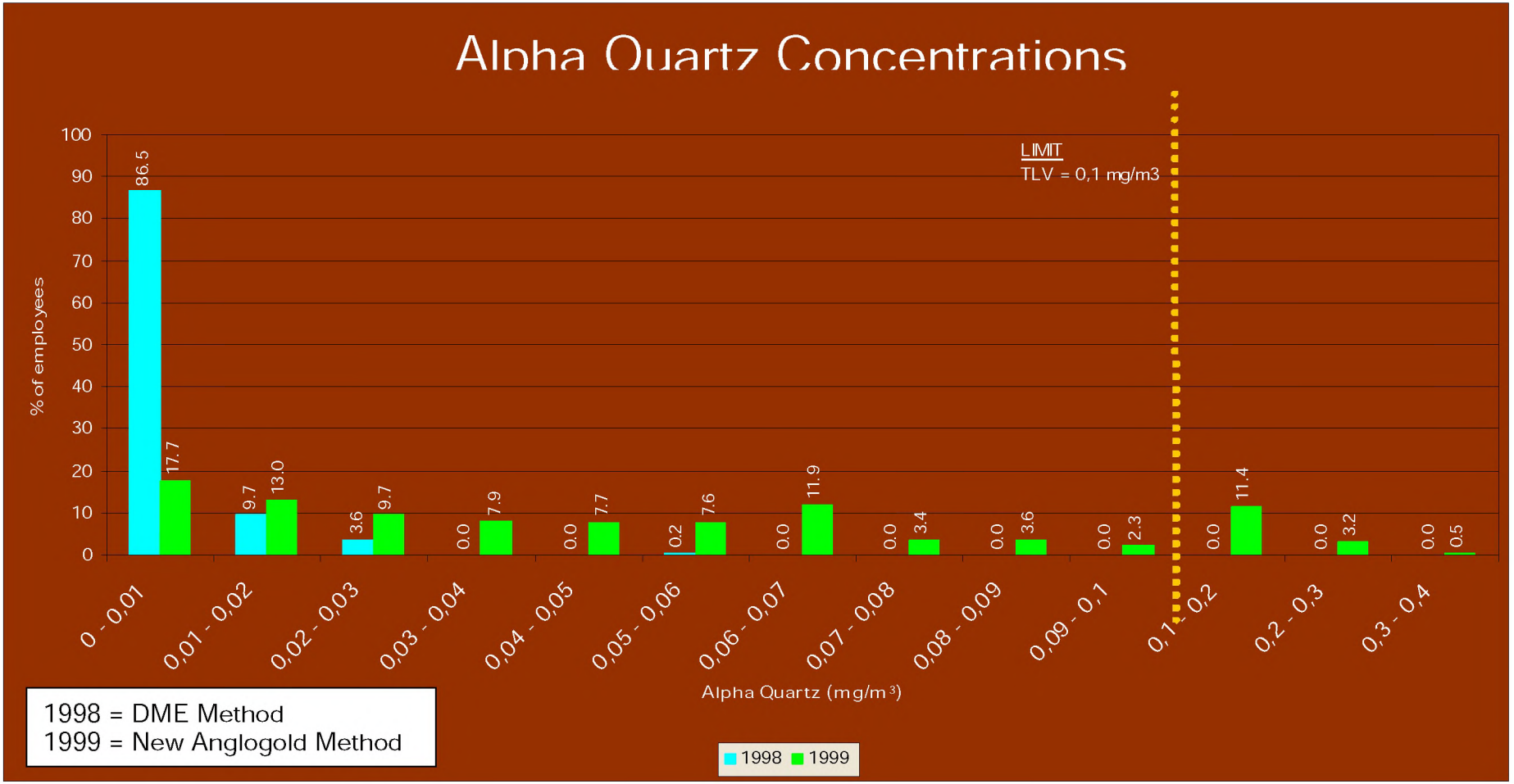
The number of employees exposed to dust concentrations > 1mg/m^3 remained at 0 for the quarter ending September 2003 (4th quarter in a row) and the number of Homogeneous Exposure Groups (HEG's) exposed to dust concentrations > 0.05 mg/m^3 remained at 0 (2nd quarter in a row). See Appendix C. The increase in % of employees > 1mg/m^3 (from 0% in 2001 to 2.4% in 2002) is mainly due to the increase in regulated sampling flow rate (from 1.9 l/min to 2.2 l/min).

EXTERNAL COMMUNICATION

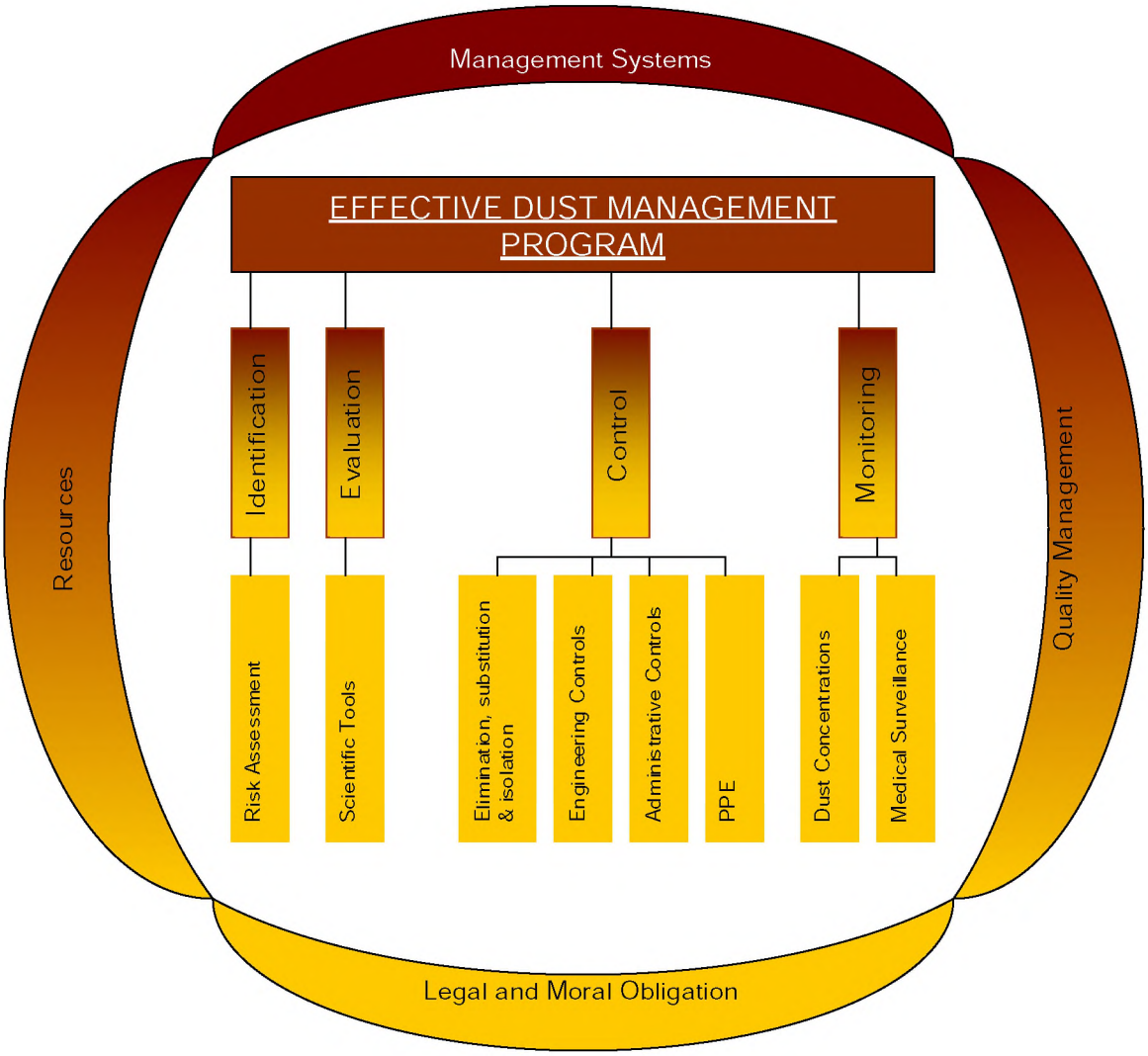
Periodic feedback to the Mining Industry (on the findings of the Anglogold Dust Management System) was given during the following conferences:

- SAIMM and MVS COLLOQUIUM. "Mining Methods and Occupational Hygiene for the New Millennium"." …. FROM DUST TO DUST …." By Des Wrigley. 2001.
- THE MINE VENTILATION SOCIETY OF SA. "MANAGING THE BASICS". A HOLISTIC APPROACH TO MANAGING DUST IN UNDERGROUND GOLD MINES. By Kobus Dekker. 2003.
- ISSA / CHAMBER OF MINES CONFERENCE. "Mines and Quarries: Prevention of Occupational Injury and Disease". 19 – 21 May 2003. Respirable Dust Management in Deep Level South African Gold Mines. By Des Wrigley and Kobus Dekker (AngloGold)

APPENDIX A


Alpha Quartz Concentrations
LIMIT
TLV = 0,1 mg/m3
% of employees
100
90
80
70
60
50
40
30
20
10
0
86.5
17.7
9.7
13.0
3.6
9.7
0.0
7.9
0.0
7.7
0.2
7.6
0.0
11.9
0.0
3.4
0.0
3.6
0.0
2.3
0.0
11.4
0.0
3.2
0.0
0.5
0 - 0,01
0,01 - 0,02
0,02 - 0,03
0,03 - 0,04
0,04 - 0,05
0,05 - 0,06
0,06 - 0,07
0,07 - 0,08
0,08 - 0,09
0,09 - 0,1
0,1 - 0,2
0,2 - 0,3
0,3 - 0,4
Alpha Quartz (mg/m3)
1998 = DME Method
1999 = New Anglogold Method
1998
1999

APPENDIX B


Management Systems
EFFECTIVE DUST MANAGEMENT PROGRAM
Identification
Evaluation
Control
Monitoring
Risk Assessment
Scientific Tools
Elimination, substitution & isolation
Engineering Controls
Administrative Controls
PPE
Dust Concentrations
Medical Surveillance
Resources
Quality Management
Legal and Moral Obligation

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APPENDIX C

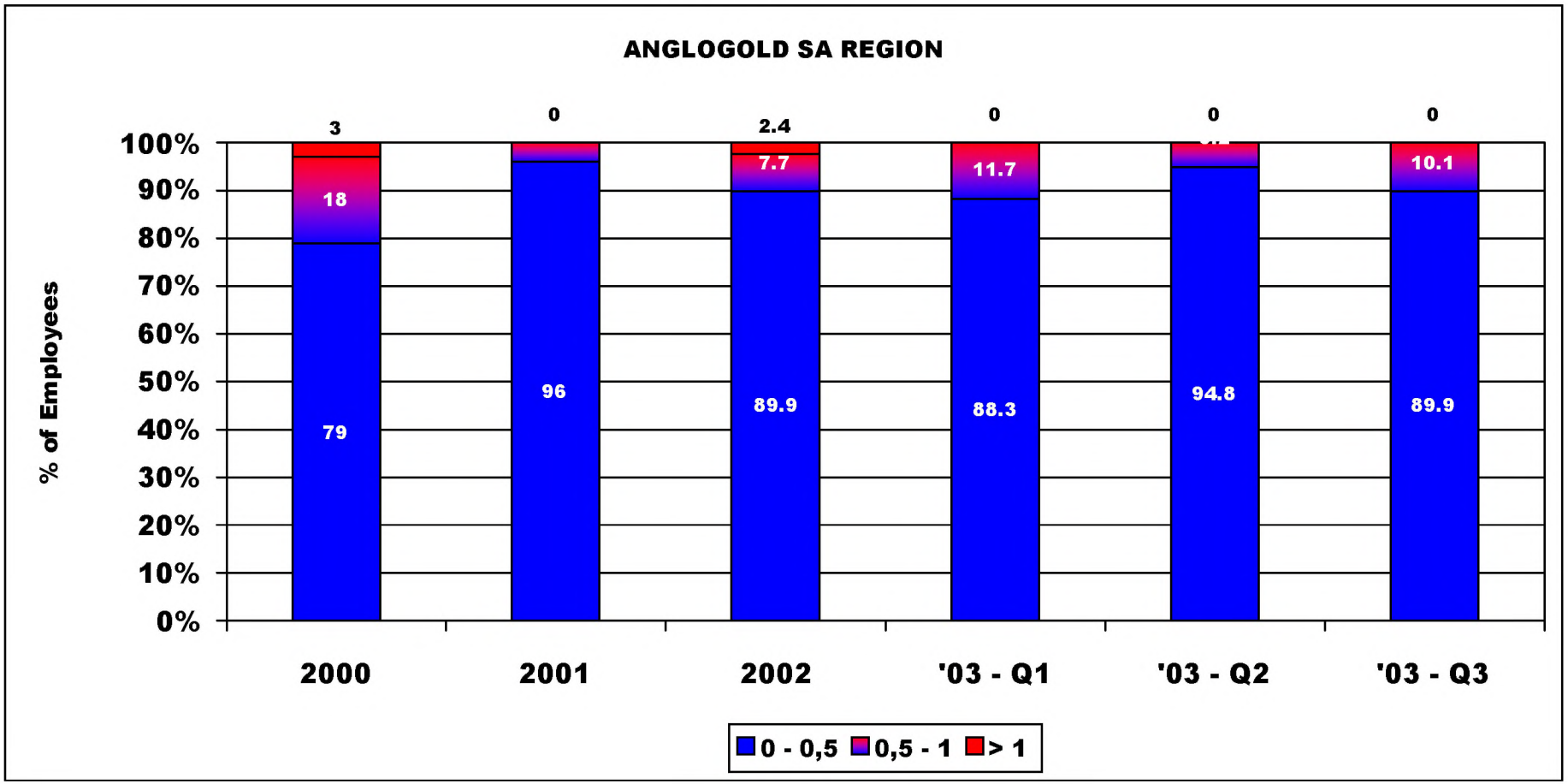

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Photo 1

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Photo 2