MINING TESTING AND TRAINING

Air and Dust laboratory key in efforts to eliminate silicosis in mining industry

The Air and Dust Laboratory located in Pretoria is equipped with sophisticated instruments, operated by highly competent technicians in the field. This laboratory is a centre of excellence for the measurement of respirable dust, diesel particulate matter, fall-out-dust, particle-size distribution and metals such as chromium in stack emissions.

OFFERINGS

In conjunction with the Mine Health and Safety Council, the laboratory plays a significant role in supporting the efforts of government to eliminate silicosis in the mining industry. Silicosis is caused by the inhalation of dust containing silica.

The Air and Dust Laboratory is a member of the International Standards Organisation working group that develops new international methods on the measurement of silica in workplace air and actively contributes to the information that is compiled in these international methods.

In addition to supporting the Departments of Mineral Resources and Energy, Environmental Affairs, and Employment and Labour to monitor compliance to specified limits, the lab provides mining clients with analyses and related services on pollutants that are harmful to employees, surrounding communities and the natural environment.

FAST FACTS

Experience: The laboratory has a sound track record in airborne dust analysis in mines. This includes environmental air, as well as occupational hygiene filters for mine employees.

International Standards: The laboratory is accredited to measure diesel particulate matter according to the international method NIOSH 5040 and was the first laboratory to obtain South African National Accreditation System (SANAS) accreditation for the NIOSH 5040 method and the direct-on-filter analysis using X-ray powder diffraction according to international methods MDHS 101.

FOCUS

The Air and Dust Laboratory is key in efforts to eliminate silicosis in the mining industry.

FAST FACTS

Accuracy: The laboratory participates in national and international proficiency testing schemes to optimise quality control and analytical performance. All the methods and measurements are traceable to international standards.

Accreditation: To assure the quality of analytical processes, procedures and results, the laboratory adheres to the standards set by the International Standards Organization (ISO), which details that the quality policies and procedures require accredited laboratories. Our laboratory is accredited by the SANAS, which is aligned to the ISO 17025 standard.

Contact: Vusi Mahlangu | T: 012 841 2610 | E: VMahlangu@csir.co.za

MINING TESTING AND TRAINING

Confidentiality: As an independent laboratory, clients are provided with unbiased, high-precision and analytical data. All information and test results are secure and confidential.

Airborne pollutants in the workplace and the natural environment of mining operations must be managed in line with the regulations of the Department of Mineral Resources and Energy.

Unique service and capabilities

The Air and Dust Lab was the first laboratory to be accredited for the analysis of diesel particulate matter in Africa (NIOSH 5040). Other services offered are particle, size analysis, elemental analysis (iron, chromium, copper, manganese, calcium and sodium) and Fourier-Transform Infrared (for dust, liquids and filters).

Environmental tests in accordance with environmental regulations

Analyses conducted on environmental pollutants are in accordance with the standards of the Department of Environmental Affairs.

Areas covered include:

- Particle size distribution analysis using laser light-scattering (ASTM C1070 accredited).
- Elemental analysis (such as total chrome) of airborne dust using atomic absorption.
- Qualitative analysis of bulk respirable dust fraction including silica using X-ray diffraction.
- Determination of fall-out dust by gravimetric method.
- Quantitative silica analysis using XRD
- Diesel particulate matter (DPM) analysis
- Airborne pollutants research
- Powder/Dust screening using XRD

The Air and Dust Laboratory works closely with other CSIR laboratories, which enables it to offer the following services:

- Water analysis according to national standards;
- Micro-organism testing according to national standards;
- Organic analysis for volatile and semi-volatile compounds, polycyclic aromatic hydrocarbons;
- Inorganic analysis for regulated elements such as lead, in soil, sediments, fallout dust, vegetation;
- Specification in certain environmental pollutants such as hexavalent chromium; and
- Scanning electron microscopy for ultra-fine, nano or fibrous particles.

Contact: Vusi Mahlangu | T: 012 841 2610 | E: VMahlangu@csir.co.za