



## **Mechanism of Dust Control**

Airborne particles affect everyone every day. In most cases it affects our person whereby dust, smoke or gasses could cause adverse health issues. Impaired visibility in the workplace could also increase the risk of safe operation of machinery. This is particularly true in the mining industry where personnel might be subjected to dense airborne dust particles during ore conveying or processing.

Dust particles also have a negative effect on the lifespan of machinery, causing premature failures of components and entire systems. Amenities and the environment is also affected and the cost of housekeeping increases with the level of emissions.

Benmarc, a company that has focused on airborne particle mitigation for well over 40 years, offer proven solutions for the mining industry and have successfully installed and operated chemical mitigation systems in South Africa for more than 20 years.

The primary mechanism of wet dust suppression is gravity that should prevent dust from becoming airborne. Small dust particles are too light to be influenced by this force, and the addition of weight in the form of water is the only viable solution. However, water in its natural form is not suitable for this due to something called "surface tension". This prevents water droplets from binding with dust particles and therefore the particles become or remain airborne.

The use of so-called "misting" or "fogging" dust suppression systems fail in that the droplets presented to the material stream are too light and the force of the application too low. Coupled with the natural surface tension of water and the air stream around the material flow, the mist or fog would not bind but be carried away with the dust.

A combination of fully bio-degradable and environmentally friendly chemical additives and advanced application methods have been developed by Benmarc and is constantly researched and improved over two continents. The altering of the characteristics of water to force a bond on dust particles also reduces the consumption of water in that the same droplet in its treated form can spread further and over more surfaces due to the reduces surface tension. Some variants of the proprietary Benmarc chemicals also use the water as a vehicle for binding agents that reduce dusting of treated dry material.

Although Benmarc already treat most minerals in SA, the material of each new potential customer is laboratory tested and matched with suitable chemicals and plant-specific methods of application. As an environmentally aware company, Benmarc also drives the development of clean renewable energy systems.

### **Benmarc Environmental (Pty) Ltd - Dust Management Experts**

Unit 3, The Gables Office Estate, Cnr. J.G.Strydom & Tennis Road, Weltevreden Park, 1715

Tel: +27 11 679 3051 Fax: +27 11 679 3871 Reg No:1999/018592/07 VAT No: 496018670

Mail: [annelise@benmarc.co.za](mailto:annelise@benmarc.co.za)

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