Dust suppression solutions to help achieve ‘Zero Harm’ status

***29 October, 2015***. Government, mining houses and trade unions are working together to eliminate industry fatalities by 2020, following amendments to Chapter 16 of the Mine Health and Safety Act Regulations agreed to by all parties in late-2014 at the Mine Health and Safety Tripartite Summit. All parties that attended the Summit have prioritised the health and safety of workers, as well as the mining sector’s moral obligation to do all that is possible to achieve ‘Zero Harm’ status.

Bearing this in mind, numerous safety aspects are under critical review, including the minimisation of dust exposure through enhanced suppression solutions. I-CAT Environmental Solutions non-executive director Professor **Jan du Plessis** states that both underground and open-cast mining operations are proactively seeking new methods of ensuring that they not only maximise worker and community wellbeing, but also minimise pollution levels.

“Poor dust control negatively affects the health and safety of all employees and the quality of life for surrounding communities. It also negatively affects production and operating costs of all onsite vehicles and machinery, thereby impacting on the bottom line of the operation in the long-run. Using water only as a control measure is not only a waste of this precious resource, but over-wetting of inclines and haulage roads also raises safety risks with regards to vehicle control,” he comments.

I-CAT operations director **Anton van der Merwe** indicates that by using a dust palliative such as RDC 20, GreenGripand GreenBit, the frequency of applications can be dramatically reduced, in addition to the service intervals of the ventilation systems and associated equipment. RDC 20 is a water soluble anionic polyelectrolyte polymer that is exclusively developed by I-CAT for use on temporary roads.

It is an innovative formulation of blended emulsified co-polymers and ionic modifiers. When sprayed onto the road surface, RDC 20 forms a durable cross linked matrix. The matrix binds fine soil particles into larger heavier particles, which are less prone to become airborne. RDC 20 is used on temporary roads, as it is a cost efficient means to improve road and dust conditions exponentially.

Van der Merwe adds that GreenGrip is a natural polymer based gravel road sealant. “It is an environmentally safe alternative to chemically based products for semi-permanent gravel roads on mines and residential areas. The solution produces a durable, smooth and dust free surface with fewer maintenance intervals. For permanent dust roads, I-CAT offers a bitumen-based dust suppression solution called GreenBit,” he elaborates.

**Misting systems**

I-CAT’s locally engineered and manufactured Dust Monster (DM 40, DM 70 and DM 110) mist cannons are ideally-suited for dust suppression in open pit areas where loading and off-loading of aggregate occurs. It is also suitable for use on stockpiles and any large dust generated areas. Van der Merwe explains that the Dust Monster range of machinery minimises the effects of dust by creating an ultra-fine mist that attracts dust and encapsulates the airborne particles, before driving them to the ground.

“The units are fully automated, easily adaptable and portable. With a 30 kW motor and user-definable 359 degree oscillation, the DM 110 boasts a throw of over 110 m – ensuring that its dust trapping atomised mist has a coverage area of 2,9 hA. This is achieved due to the highly-efficient jet fan design, manufactured by world-leading jet fan manufacturer, MechChaL. What’s more, our I-VAP range of mist cannons are used for evaporation and management of acid mine drainage and associated polluted water. The largest unit can evaporate 1 000 m3 of contaminated water per day,” he notes.

I-CAT also imports the internationally-recognised SCRUBmist dry mist dust suppression system, which removes respirable and inhalable dust particles from the air with minimal water usage, and no collateral damage to property. It works by atomising water into minute droplets 5 micron (µm) to 15 µm in size, which are electrostatically attracted to dust particles and form agglomerations that subsequently fall out of the air.

Conventional sprinkler systems produce far larger droplets of between 80 µm and 100 µm. These collide with far less particles, as the air-stream present around them deflects dust outwards and away. Wind and high temperatures are also factors that negatively impact the dispersal of droplets produced by conventional systems, which have low kinetic energy and are easily neutralised.

“By injecting water between layers of air moving at supersonic speed, the dry mist system is able to produce droplets with high kinetic energy that remain unaffected in the harshest conditions. As a result, SCRUBmist utilises as little as 200 ml per minute, compared to sprinkler systems that spray multiple litres of water per nozzle per minute,” states van der Merwe.

**Tailings solutions**

For dust suppression and dust management on active or inactive tailing storage facilities, I-CAT offers the TDS 2005 tailing dam seal solution – a matrix blend of a patented anionic surfactant and other environmentally-friendly binding products.

The unique properties of this liquid gel allow it to penetrate the surface of the dump and open soil areas, creating a durable bond that binds loose aggregate by forming a porous crust that allows water to penetrate the surface, without being being washed away under heavy precipitation.

According to van der Merwe, a considerable amount of mines nationwide have already benefited from the I-CAT range of dust suppression solutions, with monthly monitoring of dust fallout and sampling to confirm the effectiveness of products in creating a positive difference in the everyday health, safety and quality of life of all employees and communities surrounding the mines.

“With the voluntary and agreed upon Chapter 16 amendments, the mining industry as a whole continues to place even greater focus on health and safety, and I am confident that, through its comprehensive range of environmentally-friendly solutions, I-CAT will add measurable value to all parties working to achieve their health and safety objectives,” he concludes.

***Ends***

**Notes to the editor**  
There are numerous photographs specific to this press release. Please visit <http://media.ngage.co.za> and click the I-CAT link.

**About I-CAT**  
I-CAT is a leading environmental solutions company with a primary focus on supplying products and services that assist industrial clients in various aspects of environmental compliance. The company is well positioned to assist all its clients’ needs in environmental management regarding; dust suppression solutions, water solutions, environmental management services, carbon solutions, agro-forestry products and fire solutions.

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**I-CAT Contact**  
Anton van der Merwe  
Operations Director  
Phone: (012) 349 1441  
Email: [reception@i-cat.co.za](mailto:reception@i-cat.co.za)   
Web: [www.i-cat.co.za](http://www.i-cat.co.za)

**Media Contact**  
Nomvelo Buthelezi  
NGAGE Public Relations  
Phone: (011) 867-7763  
Fax: 086 512 3352  
Cell: 083 4088 911  
Email: [nomvelo@ngage.co.za](mailto:nomvelo@ngage.co.za)   
Web: [www.ngage.co.za](http://www.ngage.co.za)

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