

ConstructionWeek

WEEKLY NEWS, FEATURES, TENDERS AND JOBS FOR THE CONSTRUCTION INDUSTRY IN THE MIDDLE EAST


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TALL TESTOSTERONE

Who is in the battle to build the world's next tallest tower in Dubai?

THE PINNACLE: A VISIT TO ONE OF THE TALLEST TOWERS IN DUBAI MARINA

Keep the dust down

Max Grafftey-Smith and Christiaan Pieterse of Green Sense Environment Solutions propose one environmentally friendly method of managing airborne dust on-site.

It is quite apparent that the UAE has substantial problems when it comes to airborne dust. Three days is all it takes for your brand new, shiny car to look like it's been washed with sand and dirt.

Dust is distinguished by the minute size of its particles. Typically any particle ranging from 0.1µ (micron) up to 100µ can be defined as dust. Within this scale inhalable dust ranges from 0.1µ up to 7µ.

Inhalable dust requires special attention and can be very difficult to control due to the very small particle sizes. These micro-particles drift everywhere and can be a significant health hazard if the problem goes unchecked. The absence of visible dust does not mean there is none there. Dust can be generated and liberated by any mechanical action or process. This fugitive dust must be controlled and managed in the best possible manner.

Where to start

Construction sites are undoubtedly a major cause of airborne dust. With hardly any regulations in place to control airborne dust it is left to the developer or contractor to address the problem, should they be so inclined. This is likely to change in the future with the forthcoming green building regulations, and companies would be well advised to be pro-active in establishing a suitable dust control programme.

Dust inhalation poses a health



Max Grafftey-Smith and Christiaan Pieterse of Green Sense Environment Solutions.

hazard, and, when it obscures visibility, becomes a prominent safety risk. Coupled with environmental concerns regarding plant life and air quality, dust is a challenge that needs to be adequately and sustainably dealt with. Implementing a plan to control dust can have many benefits. Apart from ensuring the long-term respiratory health of staff and the public, it can reduce maintenance costs on machinery and further improve safety on site.

The way forward

Other than storms, untarred or unpaved roads are possibly the greatest source of dust. Heavy construction vehicles leave trails of dust as far as they go, polluting the entire surrounding area and many miles downwind. Day in day out, they trample the same surface into a fine powder, compounding the problem. The most obvious solution is to spray temporary roads with a good dose

of water, which is cheap, quick and easy to apply. This is an effective solution; however, the suppressing effect can sometimes be short-lived. To add to the problem it is not clear how many water trucks are on the road in relation to building sites, nor their availability or how frequently they are able to visit any particular site. Factors such as soil characteristics, ambient temperature, slope and wind also influence the suppressing effect of water.

A key factor that can be more easily manipulated is the surface tension of water. Surface tension results in spherical drops of water, as water minimises its surface area. The phenomenon is attributed to cohesion – the attractive force that acts between the molecules of water. It is the surface tension of water that prevents deep penetration into soil and causes water to puddle without spreading evenly. However, it is possible to break the surface

tension of water and in so doing, enhance its specific qualities. Water in effect becomes more "watery."

Treated water will perform better and can be achieved successfully by mixing an environment friendly additive such as Dust Down into the water. Benefits that can be derived from treated water include the following.

Reduced water application frequencies; a longer lasting effect because of greater soil penetration; the same amount of water will cover greater surface area; roads can be trafficked sooner; the rate of compaction using the same equipment and routine may be improved by up to 30%; a direct cost benefit is realised from higher efficiencies such as less water, less diesel, less man hours, reduced wear and tear on equipment; and the most precious of them all – a saving on time.

The dosage

The liquid concentrate doesn't require any special handling or precautions and is typically added directly to any standard water truck at a rate of 0.03% to the volume of water. For greater penetration during any compaction process, the dosage may be increased anywhere from 0.05% to 0.1%. A gradual increase is advised, so as to use just the right amount to achieve the desired effect.

If you would like to write for *Construction Week* in this column, please email rob.wagner@itp.com