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FUGITIVE DUST CONTROL

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What is Fugitive Dust Control?

Fugitive Dust is "particulate matter" (PM) pollution from small solid (sometimes liquid) particles floating in the air. Most of us are familiar with naturally occurring "dust" caused by weather conditions, winds, and soil erosion. However, it is the fugitive dust often occurring on work sites that can create occupational health and industrial hazards.

Particles less that 10 microns in diameter (approximately 1/7th the size of the thickness of human hair) are categorized as PM10. PM10 can consist of mainly soil materials but may include smoke, soot, pollen, tire particles, acids, metals and salt. When "released" into the environment due to a physical or chemical change during construction, manufacturing, farming operations or landscaping processes, this type of fugitive dust changes air quality significantly.

According to the State of California Air Resources Board, fugitive dust and PM10 emissions can cause increased respiratory disease, lung damage, cancer, premature death, reduced visibility, and surface soiling.

In addition, there is a risk of "dust explosion and/or fire" in industrial settings when particulate matter has accumulated.

Based upon ongoing research and assessments, managing fugitive dust emissions is imperative to ensuring employee safety and equipment protection.

Prevention and Compliance

Most States have set regulations and programs to reduce the release of dust and emissions.

Standard outdoor dust control recommendations include wetting, creating wind erosion controls or ground covers, or applying industrial controls such as a hard chemical seal.

Indoor solutions include enclosing storage and handling areas, implementing "water or foam" spray bars above and below conveyor belts, as well as implementing mist or fog systems to "trap and disperse" particulate matter.

By koolfog.com

Assessing Different Water Based Dust Suppressant Solutions

Water Sprays

- Generally, seen in focused areas of use to contain dust such as on an assembly conveyor belt
- Use low water pressure systems
- Often use compressed air to atomize water
- Nozzle tips have "wider" openings and cannot capture smaller dust particles
- Flow rates are not as easily regulated

Wetting

- Generally, effective for outdoor containment such as roadside construction dust management
- Temporary solution as the wet "dirt" will dry and become dust again
- Wetting does not regulate water flow or manage runoff
- Can cause dampness, wet floors, or wet materials that can spoil (i.e. wood and paper product manufacturers wish to avoid soggy product that can clog their equipment resulting in production down-time and huge clean up costs)

Fog/Mist

- High pressure concentrated fog application will capture the dust without adding moisture or "wetting" the surrounding area
- Temperature controls can account for humidity levels
- Nozzle sizes are designed to create droplets that have an average diameter in the 10-micron range
- Most effective in semi-enclosed areas with minimal wind and humidity

Sources of Fugitive Dust that respond to Fog/Mist suppressant system

- Sand, gravel, and rock crushing
- Farming Operations i.e. soil mixing
- Food and Agriculture Processing (grain dryers, mills, animal feed)
- Manufacturing (cereal, wood & paper products that produce dust wood chips, etc.)
- Mining and Mineral Processing
- Construction (concrete batch plants)

How It Works

Fogging systems use high pressure pumps to atomize water creating a fog atmosphere that consists of droplets that have an average diameter of around 10 microns. In effect, dust particles are absorbed by the fog droplets and fall to the ground.

Koolfog uses a "positive displacement" pump to produce pressures in excess of 1000 psi. Fog nozzles, designed specifically for size of location, water usage, and velocity, have an opening not much larger than the width of a human hair. The fog nozzle tips produce droplets in this 10-micron range to efficiently capture dust particulate matter that would otherwise escape into the air.

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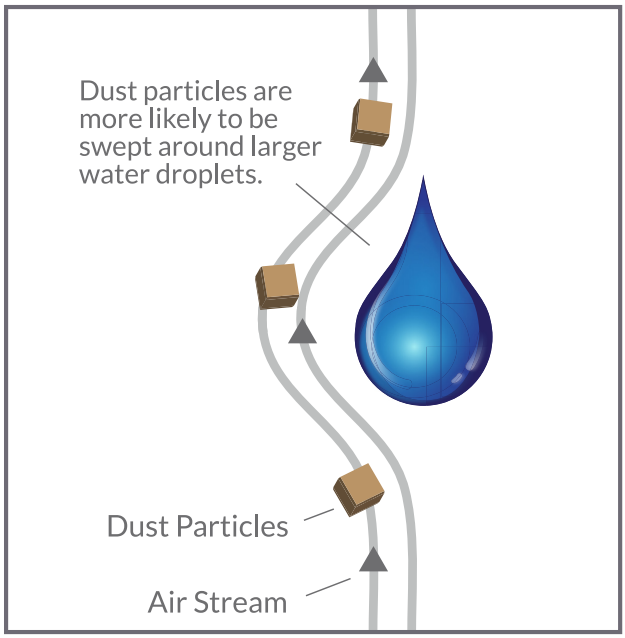
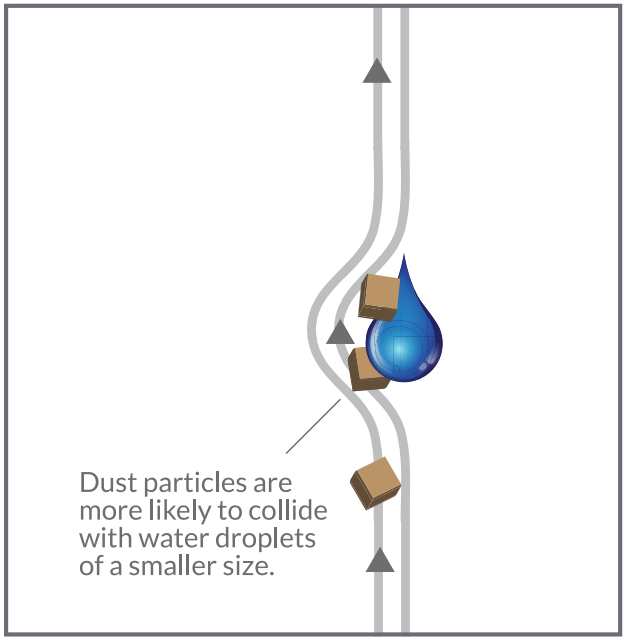
The Koolfog Advantage





Applicable Koolfog CASE Study

The Client:

SunGro is North America's largest producer of horticultural-grade peat and the largest distributor of peat moss and peat and bark-based growing mixes.

The Problem:

SunGro's Central Valley soil mixing and processing equipment is located in a large steel building with large doorways for vehicle access. The fugitive dust produced by the mixing process caused a visibility problem as well as created breathing challenges for employees. At times of high volume production, dust was seen to be leaking from the building enclosure.

The Process:

SunGro contacted Koolfog, Inc. to obtain information and educate staff on water based dust suppressant solutions. As a firm experienced in the technical art and science of high pressure mist and fog full life cycle system development, Koolfog was prepared to provide the necessary resources to meet SunGro's needs as well as meet their specific application requirements.

The Solution:

Koolfog designed a system to release fine fog droplets to knock down dust particles before they became a hazard. Installation included the construction of high pressure atomization lines to hang from the building rafters in a grid pattern across the ceiling. Nozzle lines were place approximately every 20' to provide full coverage over the soil mixer and containment areas and alternating spacing of nozzles ensured coverage between rows.

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