

DUST AND PARTICULATE

Dust and particulate are synonymous terms describing a generic classification of airborne or potentially airborne solid materials. This general classification includes dust from grinding, wood dust, metal dust, smoke, and "nuisance dusts."

Why Be Concerned With Dust And Particulate?

Many dusts are chemically inert, meaning that they have little or no chemical toxicity. Prolonged and repeated exposures to high levels of inert dust, however, can cause lung damage by simply overwhelming the body's natural ability to remove contaminants from the lungs and maintain clean and unobstructed airways.

Some dusts, on the other hand, are chemically active and may cause specific health effects on the body, especially the lungs and skin. Certain dusts are referred to as sensitizers. This means that some individuals, who may have used a material for many years without any difficulty, may suddenly develop an allergic reaction to very small quantities of the material. You will want to refer to the Material Safety Data Sheets for the dust that you handle in order to determine their specific hazardous properties.

Finally, excessive levels of uncontrolled dust and particulate ultimately lead to poor house keeping, unsafe working conditions, quality problems and contribute to costs.

Who Is Affected By Exposure To Dust And Particulate?

The air we breathe contains many different types of dust and particulate including pollen, spores, cigarette smoke, bacteria, as well as mineral dust. In essence, all of us are affected by airborne particulate in some way.

How Can The Health Risk Of Particulate Exposure Be Determined?

The type of dust involved, the length of exposure (usually in years), the concentration in the breathing zone, and the size of the dust particle influence health risks associated dust exposure. Of these, the size of the particle generally determines where the material will be deposited in the respiratory system. Large particles are typically deposited in the upper respiratory system (nose and throat) and are easily and quickly removed from the body. Smaller particles, on the other hand, can become lodged deeper in the lung where they are more difficult to remove and may accumulate over time. Accumulations of foreign materials in the lung may eventually lead to permanent lung damage. Generally, cigarette smokers are more susceptible to lung damage than non-smokers.

If you work in a dusty environment, periodically you or someone performing your same job function may be asked to wear a sampling device to measure your personal exposure to airborne dust and particulate. This is done using a sampling filter, some rubber tubing, and a portable air pump.

In order to measure the respirable fraction, or the particles that are small enough to be deposited in the lungs, a device known as a cyclone is attached to the sampling filter. The cyclone forces the incoming air to spin, causing the larger particles to be removed from the air stream and the smaller particles to be collected on the sampling filter. The respirable fraction, therefore, is always less

than or equal to the total amount of dust present in the air and provides a better estimation of the amount of dust being deposited inside the body.

How Are Particulate Exposures Controlled?

Although OSHA specifically regulates exposures to certain types of particulate, such as zinc oxide, and certain metal dusts, many types of dusts do not have a specific exposure limit. In these circumstances, OSHA will enforce an exposure limit for "Nuisance Particulate" or "Particulate Not Otherwise Classified." For these materials, OSHA has established exposure limits for both Total and Respirable Fraction particulate exposure. In the absence of a specific OSHA exposure limit, the company will observe and comply with these limits or exposure limits which have been established by another reputable scientific agency such as the American Conference of Governmental Industrial Hygienists (ACGIH) or the National Institute for Occupational Safety and Health (NIOSH).

Dust and particulate are controlled through the company's respiratory protection program that may include engineering controls, administration controls, and personal protective equipment. If your position is equipped with a local exhaust system to control airborne particulate, be sure that the system is turned on when you are using it, that it is free from obstructions, and that the duct baffles are open at the positions which are in use. Advise your supervisor if material begins to accumulate at the opening of the exhaust system - this is usually a sign that the system needs maintenance.