FACT SHEET

Silica, Amorphous and Other Non-Crystalline Forms

CAS #: synthetic amorphous silica: 7631-86-9; fused silica: 60676-86-0; silica fume: 69012-64-2; uncalcined diatomaceous earth: 61790-53-2; pyrogenic colloidal silica: 112945-52-5; precipitated silica and silica gel: 112926-00-8

This fact sheet provides a summary of the Development Support Document (DSD) created by the TCEQ Toxicology Division (TD) for the development of Regulatory Guidelines (ESLs, AMCVs and ReVs) for ambient exposure to this chemical. For more detailed information, please see the DSD or contact the TD by phone (1-877-992-8370) or e-mail (tox@tceq.texas.gov).

What is amorphous silica?

Amorphous silica includes synthetic amorphous silica (SAS), and naturally occurring amorphous silica such as diatomaceous earth, precipitated amorphous silica and amorphous silica gel, pyrogenic silica, fumed amorphous silica, fused amorphous silica, and colloidal amorphous silica. Diatomaceous earth is used in clarifying liquids; in the manufacture of fire brick and heat insulators; and in metal polishes and dentifrices. Precipitated amorphous silica and amorphous silica gel are used as a grease thickener, diluents for insecticide, and fillers for paint, rubber, and paper. Industrial by-products of amorphous silica include fused silica and silica fume. Fumed amorphous silica, a fine white powder, is a by-product of ferrosilicon, an electrometallurgical process. SAS is used in synthetic resins, plastics, lacquers, vinyl coatings, adhesives, paints, printing inks, and silicone rubber. SAS is also used as fillers in the rubber industry, insulation material, and toothpaste additives. SAS may be used in drugs, cosmetics, and liquid carriers in the manufacture of agrochemicals and animal feed.

How is amorphous silica released into ambient air?

Amorphous silica is released into ambient air from a variety of sources. Trace levels of amorphous silica can be identified in urban and suburban air as a fractional component of particulate emissions such as agricultural dust or from industries that use silica in their processes. Exposure to high concentrations of amorphous silica occurs primarily in the occupational workplace.

How can amorphous silica affect my health?

Permitted levels of amorphous silica should not cause adverse health and welfare effects. Compared to crystalline forms of silica, which produce severe lung inflammation and lung scarring at high concentrations, the various forms of amorphous silica produce less severe and

more temporary lung effects. Laboratory animal studies indicate that lung inflammation occurs after short-term and long-term inhalation exposure to high levels of amorphous silica.

The International Agency for Research on Cancer (IARC) concluded there is inadequate evidence in humans that amorphous silica and SAS cause cancer, so amorphous silica has not been classified as causing cancer in humans (Group 3).

Is amorphous silica odorous or harmful to plants?

There are no odors associated with amorphous silica. Amorphous silica has not been shown to have adverse effects on plants.

Why does the TCEQ set Regulatory Guidelines for amorphous silica?

The TCEQ has set various air quality guideline levels (ESLs, AMCVs and ReVs) to protect human health and welfare. Please see Definitions of ESLs, ReVs, and AMCVs located on the TCEQ DSD webpage for more information. The air quality guideline levels for amorphous silica have been designed to protect the general public from short-term and long-term adverse health and welfare effects. The general public includes sensitive populations such as children, the elderly, pregnant women and people with preexisting health conditions. If you would like to know more about the specific ESLs, AMCVs and ReVs developed, what the values are and what they are used for, please see the DSD.