FACT SHEET

Arsenic and Inorganic Arsenic Compounds

CAS Number: 7440-38-2

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 arsenic?

Arsenic is a naturally occurring element that is widely distributed in the earth's crust. In the environment, arsenic can exist in different forms such as elemental arsenic, inorganic arsenic and organic arsenic compounds. Elemental arsenic and inorganic arsenics are being used in many industrial applications. Previously, inorganic arsenic was used to treat wood as "pressure-treated" lumber. However, in the US, the use of inorganic arsenic has decreased to a large extent due to the ban on production, and all of the arsenic used the U.S. presently is imported from other countries. Inorganic arsenic is no longer used in the U.S. for residential purposes. Organic arsenic compounds are mainly used as pesticides, on cotton fields and orchards.

Inorganic forms of arsenic are the most common forms of arsenic in air. Further, the organic forms of arsenic are generally considered to be less toxic than inorganic forms of arsenic. Therefore, this fact sheet and the associated arsenic DSD will not consider organic arsenic separately as it is expected to be of equal or lesser toxicity than inorganic arsenic.

How are arsenic and inorganic arsenic compounds released into ambient air?

Arsenic naturally occurs in the earth’s crust and is present in some pesticides. While natural sources contribute a small extent to atmospheric arsenic, the majority of arsenic released into the environment is from man-made sources. Arsenic found in mineral ores is released as a byproduct into the environment during the mining and smelting of copper, lead, cobalt, and gold ores. In addition, arsenic is also released into the environment during pesticide applications, coal combustion, wood combustion, and waste incineration processes. Arsenic cannot be destroyed in the environment; it can only change its form.

How can arsenic and inorganic arsenic compounds affect my health?

Permitted levels of arsenic and inorganic arsenic compounds should not cause short- or long-term adverse health and welfare effects. Breathing high levels of inorganic arsenic can cause sore throat, bronchitis, rhinitis, redness, swelling, and pain in the eyes. There have been some reports of workers experiencing a sensation of "pins and needles" in hands and feet on being exposed to very high levels of inorganic arsenic in air. There have also been reports of workers exposed to high levels of inorganic arsenic for many years in air to have skin pigmentation and darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso.

The International Agency for Research of Cancer, the United States Environmental Protection Agency, and the TCEQ consider arsenic and inorganic arsenic compounds, as a group, to be carcinogenic to humans.

Are arsenic and inorganic arsenic compounds odorous or harmful to plants?

Arsenic and inorganic arsenic compounds are odorless and adverse effects to plants from arsenic and inorganic arsenic compounds in the ambient air have not been documented.

Why does the TCEQ set Regulatory Guidelines for arsenic and inorganic arsenic?

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 arsenic and inorganic arsenic compounds 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.