FACT SHEET

Nickel and Inorganic Nickel Compounds

CAS Numbers: Nickel: 7440-02-0; Nickel Sulfate: 7786-81-4; Nickel Subsulfide: 12035-72-2; Nickel Oxide: 1313-99-1; Nickel Chloride: 7718-54-9

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 are nickel and inorganic nickel compounds?

Nickel and nickel compounds are mineral products, which are valuable because of nickel's resistance to corrosion. Pure nickel is a hard silvery-white metal that can be combined with other metals, such as iron, copper, chromium, and zinc, to form alloys. These alloys are used to make coins, jewelry, and items such as valves and heat exchangers. Most nickel is used to make stainless steel. Nickel can combine with other elements such as chlorine, sulfur, and oxygen to form inorganic nickel compounds. Many nickel compounds dissolve fairly easy in water and have a green color. Nickel compounds are used for nickel plating, to color ceramics, to make certain types of batteries, and as substances known as catalysts that increase the rate of chemical reactions.

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

Nickel and inorganic nickel compounds may be released into the ambient air by industries that make or use nickel, nickel alloys, or nickel compounds. They may also be released into the air by facilities that burn oil, coal or trash.

How can nickel and inorganic nickel compounds affect my health?

Permitted levels of nickel and inorganic nickel compounds should not cause short- or long-term adverse health and welfare effects. Adverse health effects have been found in some people who breathed amounts of nickel much higher than levels found normally in the environment. Some people with occupational asthma, and who work in nickel refineries or nickel-processing plants, have experienced difficulty in breathing due to constriction in their lungs after short-term inhalation exposure to high levels of nickel. Lung cancer has been found in workers from nickel refinery or nickel processing plants after long-term inhalation exposure to high levels of nickel. In addition, lung damage was observed in laboratory animals that breathed high levels of nickel and nickel compounds in long-term studies. The International Agency for Research of Cancer has determined that some nickel compounds are carcinogenic to humans and that metallic nickel may possibly be carcinogenic to humans. The United States Environmental Protection Agency

has determined that nickel refinery dust and nickel subsulfide are human carcinogens. The TCEQ considers nickel compounds as a group to be carcinogenic to humans.

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

Nickel and inorganic nickel compounds are odorless and adverse effect to plants from nickel and inorganic nickel compounds in the ambient air have not been documented.

Why does the TCEQ set Regulatory Guidelines for nickel and inorganic nickel compounds?

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 nickel and inorganic nickel 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.