



POTENTIALLY TOXIC ELEMENTS

Heavy Metals

Metal enrichment of soil can occur naturally, by industrial contamination or by sewage sludge applications. Metals may be subdivided into several categories according to their environmental availability (solubility) and their toxicity to animal and plant life.

Phytotoxic

Phytotoxicity is a term used to describe toxic effects on plants. Phytotoxic metals are not normally hazardous to man or animals but if they are present in excess, can adversely affect plants. Copper, zinc and boron are essentially trace elements and are required in small amounts for healthy plant growth.

Zootoxic

The term zootoxic is used to describe those metals which are potentially harmful to man and animals. If ingested, inhaled or absorbed through the skin in enough quantity these metals can act as poisons. Plants may also absorb metals from contaminated soil and a risk can exist if these plants are then eaten. Zootoxic metals include arsenic, cadmium, chromium, lead, mercury and selenium.

Cyanide

Cyanide contamination of soils and waters can result from a wide variety of common industrial activities, metal plating works, and old gas works sites are two common examples. Cyanide can be present in a variety of forms and as simple salt or as a gas it is extremely poisonous.

Phenols

The term phenols is applied to a large group of chemically related compounds. Phenols occur naturally in low concentrations in the environment and can be found in plant tissue. They may also be encountered in soils or waters as a result of industrial pollution. Phenols form acid solutions and can be very corrosive by skin contact and may also act as poisons.

Sulphates

Sulphates occur naturally in the environment and form salts in combination with metals such as calcium or sodium. Sulphates can be generated by oxidation of sulphur, for example on old gasworks, or by oxidation of sulphides from lake sediments. The reaction produces sulphuric acid which can result in extremely acid conditions.

Sulphides

Sulphides represent the reduced form of the element sulphur. They occur naturally in the environment in ores (pyrite-iron sulphide) and in poorly oxygenated soils. High levels of sulphide accumulate quite naturally in the sediments of rivers and lakes from the decay of organic material. Under acid conditions sulphide rich sediments can liberate hydrogen sulphide which is a very toxic gas.





Polyaromatic Hydrocarbons (PAHs)

Polyaromatic hydrocarbons is a term given to a vast range of chemical compounds. PAHs are often very stable compounds in the environment and a number are known to be potentially carcinogens. PAHs are commonly encountered as contaminants of former industrial sites and are derived from numerous sources and industrial processes. PAHs are a major component of coal tars which are a by-product of town gas production.

Total Petroleum Hydrocarbons (TPHs)

Total petroleum hydrocarbons (TPHs) are mixtures of hydrocarbon compounds, normally derived from fossil fuels and particularly crude oil. TPHs can be divided into two main groups dependent on their chemical structure. Aromatic TPHs and Aliphatic.

BTEX

BTEX is the collective term given for benzene, toluene, ethylbenzene and the three isomers (types) of xylene. BTEX compounds are volatile organic compounds (VOCs) BTEX are the most common compounds in petroleum and are found in petroleum derived products, such as petrol, and are also widely used in the manufacture of paints, synthetic rubber and agricultural chemicals. BTEX are hazardous and potential carcinogens.

Asbestos

Asbestos is a naturally occurring material that was commonly used in manufacturing and construction as a roofing, insulation and fire-retardant properties. The inhalation of asbestos fibres can cause severe illnesses, including asbestosis (a respiratory disease caused by scarring of the lungs) and cancer. The use of asbestos is now strictly regulated by the Control of Asbestos Regulations 2006.

