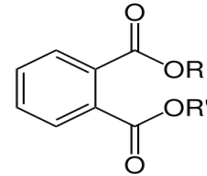


Phthalates 101 Fact Sheet

What are Phthalates?

Phthalates are a family of colorless, oily, man-made liquids. Most phthalates are used to make vinyl plastics more flexible and resilient and are often referred to as plasticizers. A number of consumer products use phthalates: cosmetics, food packaging, adhesives, building materials, pesticides, medical devices, and personal care products. Examples include vinyl flooring, garden hoses, detergents, raincoats, some children’s toys, nail polish, hair sprays, soaps, lotions, and perfumes.

Chemical Structure:



Properties of Phthalates

Phthalates are oily liquids at room temperature. They have low to moderate vapor pressure, which means they do not evaporate easily in air, and can moderately dissolve in soil and water systems.



Phthalates & The Environment

They can be released into the environment from a multitude of sources including industrial processing, industrial waste, municipal solid waste, and land application of sewage sludge. Studies have shown high bioaccumulation in animal tissue and freshwater organisms.

Health Effects of Phthalates

Human health effects of phthalates are not yet fully known. Phthalates are endocrine disruptors, and affect hormonal systems and can increase developmental abnormalities. The EPA classifies some phthalates as probable human carcinogens.

Chronic, repeated exposure has been linked to changes in sex hormones, low sperm count and quality, obesity, reduced female fertility, preterm birth/birth defects, low birth weight, and altered behavior in toddlers.

Pregnant women and those with immune disorders are more vulnerable to phthalate exposure. Males with immature reproductive systems have higher sensitivity levels to phthalates resulting in increased waist circumference, and insulin resistance.

Phthalates do not readily break down and can be found in groundwater and in drinking water following the water treatment process. They have an even slower rate of decomposition in soil.

Phthalate Exposure Pathways

Potential phthalate exposure pathways include inhalation, ingestion, intravenous injection tubing and solutions, and skin absorption. They can cross the placenta and have been found in breast milk.

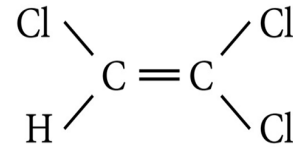
Human urine tested throughout the world has been found to contain phthalate metabolites, which are the products that remain after phthalate is broken down by the body. Females tend to have higher levels than males.

Trichloroethylene 101 Fact Sheet

What is TCE?

Trichloroethylene (TCE) has two major uses: as a solvent to remove grease from metal parts and as an intermediate in the production of other chemicals, such as the refrigerant HFC-134a, pharmaceuticals, insecticides, and flame retardant chemicals. TCE is also used as an extraction solvent for greases, fats, oils, waxes, and tars; by the textile processing industry to scour cotton, wool, and other fabrics; and as a component of adhesives, lubricants, paints, varnishes, pesticides, cold metal cleaners, and paint strippers.

Chemical Structure:



Properties of TCE

TCE is a man-made colorless liquid, has a sweet smell, and is **nonflammable**, which means it will not catch fire easily. TCE is also **volatile**, which means it evaporates quickly into the air. TCE has a density of 1.46 g/cm³ and will not float because it is heavier than water, which has a density of about 1g/cm³.



TCE & The Environment

TCE can be released into the soil, water, and air at locations where it is produced or used. It quickly breaks down in air, which is why it is not a persistent chemical in the atmosphere. Biodegradation, which is breakdown of a contaminant by bacteria, occurs in soil and water at a very slow rate and TCE is removed primarily through evaporation to air.

Health Effects of TCE

Exposure to moderate amounts of TCE may cause dizziness, sleepiness, or headaches; large amounts can lead to coma or death. Skin contact with concentrated solutions can cause rashes and inhaling high levels may damage nerves on the face. Exposure to high levels could result in liver or kidney damage and changes in the rhythm of the heartbeat. The EPA classifies TCE as a human carcinogen. TCE can cause kidney cancer and there is evidence of TCE-induced malignant lymphoma and liver cancer. Some men occupationally-exposed to TCE have seen decreases in sperm quality and reproductive hormone levels. Studies show exposure during pregnancy can cause congenital heart defects, central nervous system defects, and low birth weight. While TCE can be measured in blood and urine, TCE and its metabolites leave the body within days of exposure.

In soils, TCE has the potential to migrate through the soil into groundwater or, if exposed to air, to volatilize into the air as soil vapor. If soil vapor exists under buildings, it can potentially migrate into the enclosed spaces via vapor intrusion. In groundwater, TCE persists for a long time since it is unable to evaporate. TCE does not build up or accumulate significantly in plants or animals.

TCE Exposure Pathways

TCE exposure can occur through breathing contaminated air or drinking contaminated water. Workers at facilities using TCE or residents living near a facility or hazardous waste site containing TCE likely have a higher exposure to the substance.