

A STUDY ON BENZENE

Overview

Benzene, also known as benzol, is an organic chemical compound with the formula C₆H₆. It is sometimes abbreviated PhH. Benzene is a colorless and flammable liquid with a sweet smell and a relatively high melting point.

It is an aromatic hydrocarbon produced by the burning of natural products. It is used in the manufacture of numerous products and it is a human [carcinogen](#) ([#OSHA](#)).

Just the facts

Physical Information

Name: Benzene

Use: additive in gasoline, industrial [solvent](#)

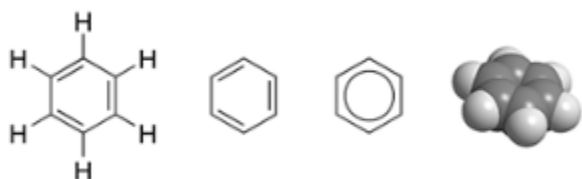
Source: glues, [Tobacco](#) smoke, gases

Recommended daily intake: none

Absorption: inhalation

Toxicity/symptoms: a known carcinogen

Chemical Structure



Chemical Description

Benzene is a clear, colorless liquid at room temperature and it readily evaporates into the air. Its vapor is heavier than air so it will stay close to the ground ([#CDC](#)). Small traces of benzene*can be observed whenever carbon-rich materials undergo combustion.

Until World War II, most benzene production came as a byproduct of smelting steel. As demand increased in the 1950s because of its heightened importance as an industrial solvent, benzene began to be created using petroleum. Benzene production has diminished over the years due to its [carcinogenic](#) effects.

Uses

Benzene was first used in the 19th and early 10th century as an aftershave lotion and for douches because of its pleasant smell. It was also used around this time as an industrial [solvent](#) to degrease [Metals](#), to decaffeinate coffee, and later was used as an additive to petrol because it increases the octane rating and reduces knocking in the engine. It was replaced by tetraethyl lead but has benzene has recently began to be used again as [Lead](#) use is being retracted. The use is very limited due to concerns over its toxicity and ability to leach into the groundwater (It is around 2% of gasoline in the US but can be up to 5% in other countries).

Benzene use today is immense, measured in the billions of pounds making it one of the top 20 most widely used [Chemicals List](#). It is mainly used in the production of other chemicals such as dyes, drugs, [Pesticides](#), and products such as rubber, nylon, and glues to name only a few.

Sources

It is formed from both natural processes and human activity ([#CDC](#)). Natural sources of benzene include volcanoes and forest fires. Numerous household products including glues, [Tobacco](#) smoke, and crude oil and gasoline ([#CDC](#)). Food and water have been contaminated before.

Health Effects

Acute exposure to benzene can lead to nervous system ailments such as dizziness, drowsiness, and eventual unconsciousness. Chronic exposure has more pernicious effects. Liver enzymes convert benzene to more toxic metabolites which can affect the bone marrow by crippling blood cell production , causing [anemia](#), and can lead to leukemia.

It is also a known carcinogen and may lead to higher levels of leukemia.

Precautions

People should limit their exposure to benzene and monitor their environment carefully and use protective equipment if necessary. See the [OSHA Safety and Health Tips on Benzene: Possible Solutions](#)

Regulation

The [US EPA](#) recommends that benzene not exceed 5 ppb in drinking water. The [US Occupational Health and Safety Administration](#) set a standard of 1 ppm of benzene in the air over an 8-hour period with an action level set at 0.5 ppm in an effort to encourage reduction in the workplace.

Current Events

Unexplained benzene found in well in Florida in 2005 was never brought to the attention of the public.

Source : <http://www.toxipedia.org/display/toxipedia/Benzene>