

Benzene: Health effects

Benzene is released into the air from many sources including car exhaust, petrol, smoke from tobacco and bushfires and from industry. It is highly mobile in soils and soluble (can dissolve) in water. People who smoke are exposed to approximately 10 times more benzene per year than the average non-smoker.

The effects on human health depend on the concentration of benzene and the type and extent of exposure.

What is benzene, where does it come from and what is it used for?

Benzene in its pure form is a colourless liquid with a sweet (aromatic) odour. Crude oil is the largest natural source of benzene, with petrol in Australia now containing about 1% by volume of this aromatic hydrocarbon.

Benzene is widely used by industry in the manufacture of many products including plastics, synthetic rubber, glues, paints, furniture wax, lubricants, dyes, detergents, pesticides and some pharmaceuticals.

Why is benzene of environmental concern?

Benzene is highly mobile in soils and soluble (can dissolve) in water. Leaking petrol tanks at storage sites and petrol stations have resulted in soil and groundwater contamination.

How can these chemicals affect health?

The effects on human health depend on a number of factors such as how long exposure occurs, to what degree (concentration of benzene in air, soil or water), and the health and age of the affected individual.

Inhaling very large amounts of benzene over short periods of time (5 – 10 minutes) can result in death. Lower levels can cause drowsiness, dizziness, rapid heart rate, headaches,

tremors, confusion and unconsciousness; in most cases people will stop feeling these effects when they are no longer exposed.

People who inhale benzene for long periods of time (months or years) at high enough levels may experience harmful effects in the tissues that form blood cells, especially the bone marrow.

A disruption of normal blood production can result in conditions such as anaemia or excessive bleeding. Blood production may return to normal after exposure to benzene stops.

The International Agency for Research on Cancer (IARC) has established that benzene is a human carcinogen (can cause cancer in humans).

How can exposure to benzene occur?

Exposure to benzene typically occurs by breathing in air containing benzene vapour. Benzene evaporates into the air very quickly and is readily absorbed into the body from the lungs. In addition, skin contact or ingestion of benzene-contaminated water will result in absorption by the body.

Preventing exposure of the general community to benzene is very difficult as it is released into the air from many sources including car exhaust, petrol, smoke from bushfires and from industry. These types of exposures are referred to as 'background exposures'.



Public Health Fact Sheet

People who smoke are exposed to approximately 10 times more benzene per year than the average non-smoker; while passive smokers (such as children in cars where adults are smoking) are also exposed to significantly more benzene.

It is important to understand that exposure to benzene occurs from multiple sources to varying degrees and that total exposure should be reduced to the lowest amount possible. This is to ensure that total exposure levels in your body are below those that may produce effects on health.

Does benzene breakdown in the body or the environment?

If benzene enters the body it may be temporarily stored in your bone marrow and fat but will quickly be metabolised (broken down) by the liver. Some of these metabolites also cause harmful effects and most leave the body in the urine within 48 hours.

Some research suggests that benzene may persist in urban air for up to 8 days before it is broken down into other compounds.

There is research to suggest that plants (including vegetables) watered with benzene-contaminated water may accumulate benzene.

Borewater

As leakage of petrol from storage tanks and petrol stations can contaminate groundwater, it is important that private bores be tested for benzene.

Who can I contact for my water to be tested?

A number of commercial chemical testing laboratories are able to test groundwater and should be able to supply sampling bottles and instructions for sampling.

As with all groundwater, SA Health recommends testing be conducted for a range of contaminants prior to any use and at least yearly. It is sensible to assume that groundwater is contaminated unless it has been shown to be suitable for its intended use.

Who can I contact for more information?

If you have any health queries, please call SA Health's Scientific Services on 8226 7100.

Translation service

For information in languages other than English, call the Interpreting and Translating Centre and ask them to call the Department of Health.

This service is available at no cost to you; contact 8226 1990.

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