

Benzene

In 2006, benzene hit the headlines after excessive levels were found in some soft drinks on our supermarket shelves.

So why all the fuss? Well benzene is a carcinogen, or cancer-causing agent that really shouldn't be turning up in soft drinks or any other food or drink for that matter.

Prior to the 1920s, benzene was frequently used as an industrial solvent. As its toxicity became obvious, benzene has been replaced by other solvents. Benzene was also added to petrol to increase the octane rating (there are now strict limits on the amount that can be added).

Today, benzene is mainly used as an intermediate to make other chemicals. Its most widely-produced derivatives are used to make polymers and plastics, resins and adhesives and nylon. Smaller amounts of benzene are used to make some types of rubbers, lubricants, dyes, detergents, drugs, explosives and pesticides.

Benzene exposure has serious health effects. Eating or drinking foods containing high levels of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death.

The major effect of benzene from chronic (long-term) exposure is to the blood. Benzene damages the bone marrow and can cause a decrease in red blood cells, leading to anaemia. It can also cause excessive bleeding and depress the immune system, increasing the chance of infection.

In recent history there have been many examples of the harmful health effects of benzene and its derivatives. Toxic Oil Syndrome caused localised immune-suppression in Madrid in 1981 from people ingesting benzene-contaminated olive-oil. Chronic Fatigue Syndrome has also been highly correlated with people who eat foods that have been treated with solvents to remove fat or foods which contain benzoic acid.

We also have to be realistic about our exposure to benzene as we conduct our daily lives. We breathe in 220µg (micrograms) of benzene every day due to general atmospheric pollution. A motorist refilling a fuel tank would inhale a further 32µg. For smokers, cigarette smoking is the main source of exposure: a 20 cigarette per day smoker would take in 7900µg per day!

Taking the worst example found to date - a soft drink containing 87.9ppb (parts per billion) benzene. Someone drinking a 500ml can would ingest 44µg of benzene.

Provided that drinking water supplies are safe, the occasional consumption of a soft drink containing benzene is unlikely to pose a significant health hazard.