

US EPA ARCHIVE DOCUMENT

Benzo(g,h,i)perylene

CAS Number: 191-24-2

What is benzo(g,h,i)perylene?

Benzo(g,h,i)perylene is one of a group of chemicals called polycyclic aromatic hydrocarbons, PAHs for short. PAHs are often found together in groups of two or more. They can exist in over 100 different combinations but the most common are treated as a group of 15. PAHs are found naturally in the environment but they can also be man-made. Benzo(g,h,i)perylene is a colorless crystal-like solid. PAHs are created when products like coal, oil, gas, and garbage are burned but the burning process is not complete.

Very little information is available on the individual chemicals within the PAH group. Most of the information available is for the PAH group as a whole. Information specific to benzo(g,h,i)perylene is included in this fact sheet when available.

What is benzo(g,h,i)perylene used for?

Most of the PAHs are used to conduct research. Like most PAHs, benzo(g,h,i)perylene is used to make dyes, plastics, pesticides, explosives and drugs. It has also been used to make bile acids, cholesterol and steroids.

How can benzo(g,h,i)perylene enter and leave your body?

One of the most common ways benzo(g,h,i)perylene can enter your body is through breathing contaminated air. It can get into your lungs when you breathe it. If you work in a hazardous waste site where PAHs are disposed, you are likely to breathe benzo(g,h,i)perylene and other PAHs. If you eat or drink food and water that is

contaminated with PAHs, you could be exposed.

Exposure can also occur if your skin comes into contact with contaminated soil or products like heavy oils, coal tar, roofing tar or creosote where PAHs have been found. Creosote is an oily liquid found in coal tar and is used to preserve wood. Once in your body, the PAHs can spread and target fat tissues. Target organs include kidneys, liver and fat. However, in just a matter of days, the PAHs will leave your body through urine and feces.

How can you be exposed to benzo(g,h,i)perylene?

You can be exposed to PAHs in the environment, in your home and in the work place. Because PAHs exist naturally in the environment, and they are man-made, you can be exposed in a number of ways. Fumes from vehicle exhaust, coal, coal tar, asphalt, wildfires, agricultural burning and hazardous waste sites are all sources of exposure.

You could be exposed to PAHs by breathing cigarette and tobacco smoke, eating foods grown in contaminated soil or by eating meat or other food that you grilled. Grilling and charring food actually increases the amount of PAHs in the food.

If you work in a plant that makes coal tar, asphalt and aluminum, or that burns trash, you can be exposed to PAHs. You can also be exposed if you work in a facility that uses petroleum or coal or where wood, corn and oil are burned.

What are the health effects of exposure to benzo(g,h,i)perylene?

A number of PAHs have caused tumors in laboratory animals that were exposed to PAHs

through their food, from breathing contaminated air and when it was applied to their skin. When pregnant mice ate high doses of a PAH (benzo (a) pyrene) they experienced reproductive problems. In addition, the offspring of the pregnant mice showed birth defects and a decrease in their body weight. Other effects include damage to skin, body fluids and the immune system which helps the body fight disease. However, these effects have not been seen in humans.

What levels of exposure have resulted in harmful health effects?

There is no information available from studies on humans to tell what effects can result from being exposed to individual PAHs at certain levels. However, breathing PAHs and skin contact seem to be associated with cancer in humans. Animal studies showed that mice exposed to 308 parts per million (ppm) of PAHs (specifically benzo (a) pyrene) in food for 10 days (short-term exposure) had offspring with birth defects. Mice exposed to 923 ppm of benzo(a)pyrene in food for months developed problems in the liver and blood.

The U.S. Environmental Protection Agency has indicated that not enough information exists to classify benzo(g,h,i)perylene as a cancer causing substance.

Where can you get more information?

Contact your state health or environmental department, or:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road N.E., E-29
Atlanta, Georgia 30333

References

1. Agency for Toxic Substances and Disease Registry (ATSDR). *Public Health*

Statement, Polycyclic Aromatic Hydrocarbons. Atlanta, GA: U.S. Department of Health and Human Services, 1990.

2. Faust, Rosmarie A., Oak Ridge National Laboratory, Chemical Hazard Evaluation Group. *Toxicity Summary for Benzo(g,h,i)perylene*. Oak Ridge, TN:1994.
3. U.S. Department of Health and Human Services. Hazardous Substances Data Bank (HSDB, online database). National Library of Medicine Bethesda, MD, 2001.