

US EPA ARCHIVE DOCUMENT

Heptachlor Epoxide

CAS Number: 1024-57-3

What is heptachlor epoxide?

Heptachlor epoxide is a man-made compound that looks like a white powder. Heptachlor epoxide is created when a substance called heptachlor is released to the environment and mixes with oxygen.

What is heptachlor epoxide used for?

Between the 1960s and 1970s heptachlor was used to kill termites found in the home and farmers used it to kill insects found on farm crops, especially corn crops. In the late 1970s, the use of heptachlor was phased out. By 1988, the commercial sale of heptachlor was banned in the United States. The use of heptachlor is restricted to controlling fire ants in power transformers.

How can heptachlor epoxide enter and leave your body?

Heptachlor can get into your body by breathing contaminated air over a long period of time. It can also enter the body if you eat and drink food, water, or even milk that is contaminated with heptachlor. Once in your body, heptachlor changes to heptachlor epoxide (a form of heptachlor that mixes with oxygen).

Nursing mothers who are exposed to heptachlor epoxide may pass the substance on to their babies while breast feeding.

Heptachlor epoxide can enter the body through skin contact. Because heptachlor is no longer commercially available, exposure through skin

contact is very limited.

How can you be exposed to heptachlor epoxide?

Heptachlor tends to stay in soil for long periods of time. One study found heptachlor epoxide in crops that were grown in heptachlor-treated soil 15 years earlier. You can be exposed to heptachlor epoxide by eating these crops.

Because heptachlor is not widely available and its use is restricted, the greatest exposure is through the workplace. You can be exposed to heptachlor epoxide if you work in a job where heptachlor is made or at a hazardous waste site or landfill where it is disposed.

You can be exposed to heptachlor epoxide if heptachlor was used in your home to control termites. It is possible that traces of heptachlor could linger if applied to soil underneath your home.

What are the health affects of exposure to heptachlor epoxide affect your health?

The health effects from exposure to heptachlor epoxide will vary depending on how much you are exposed to and the length of time.

There is very little information available about the short-term exposure to high doses of heptachlor epoxide to humans. But animal studies show that heptachlor epoxide is very toxic to humans and animals. Animals that were fed high levels of heptachlor during a short period of time

experienced tremors and convulsions.

Not much information is available about the health effects on humans from long-term exposure to heptachlor epoxide. But animal studies suggest that long-term exposure can affect the liver. The animals studied have shown enlarged livers, damage to liver and kidney tissue, and increased red blood cells. Animals also experienced tremors and convulsions. Animals that were fed heptachlor developed liver cancer.

Studies show that female rats exposed to heptachlor were less likely to become pregnant. Those that did become pregnant had smaller litters or the offspring showed developmental problems. When baby rats were fed heptachlor, they developed cataracts just after their eyes opened. Other studies show that heptachlor fed to animals caused cancer. The Environmental Protection Agency believes heptachlor is a probable cancer causing agent because of the results of a number of studies. However, another agency, the International Agency for Research on Cancer does not classify heptachlor as cancer causing to humans because there is not enough data.

What levels of exposure can result in harmful health effects?

No data was found that could connect the level of exposure to heptachlor epoxide to a specific exposure route that caused harmful effects. There was no data available on the harmful effects from breathing heptachlor-contaminated air. The only information that was found was related to the health effects related to skin contact. Rats exposed to 195 to 250 milligrams per kilogram of body weight (mg/kg) of heptachlor died.

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 for Heptachlor and Heptachlor Epoxide*. Atlanta, GA: U.S. Department of Health and Human Services, 1989.
2. Agency for Toxic Substances and Disease Registry (ATSDR). *Toxicological Profile for Heptachlor and Heptachlor Epoxide*. Atlanta, GA: U.S. Department of Health and Human Services, 1993.
3. Mississippi State University Extension Service, Farm Chemical Safety Series, Recognizing Pesticide Poisoning. <http://msucare.com/pubs/pub1933.htm>
4. Reigart, Rount J. and Roberts, James R. Medical University of South Carolina. *Recognition and Management of Pesticide Poisonings*. Fifth ed. Washington, D.C.: U.S. Environmental Protection Agency, Office of Pesticide Programs, 1999.