PARADICHLOROBENZENE

fact sheet

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What is paradichlorobenzene?

Paradichlorobenzene is used as a fumigant insecticide to control clothes moths. It is also found in deodorant blocks made for trash cans and toilets. Paradichlorobenzene was first registered for use in the United States in 1942, and it is sometimes called 1,4-dichlorobenzene.

clothes moth, photo credit: Patrick Clement, flcikr

What are some products that contain paradichlorobenzene?

Mothballs containing paradichlorobenzene are solids that turn into toxic gas that kills moths. In 2010, there are over 30 products registered with the U.S. Environmental Protection Agency that contain paradichlorobenzene.

IMPORTANT: Always ***follow label instructions*** and take steps to ***avoid exposure***. If any exposures occur, be sure to follow the First Aid instructions on the product label carefully. For additional treatment advice, contact the Poison Control Center at 800-222-1222. If you wish to discuss a ***pesticide problem***, please call 1-800-858-7378.

How does paradichlorobenzene work?

The vapor of paradichlorobenzene is toxic to insects. In humans and other animals, paradichlorobenzene is broken down in the body to form other compounds that may be harmful to cells or organs such as the liver.

How might I be exposed to paradichlorobenzene?

You can be exposed to a pesticide if you breathe it in, get it on your skin, or if you accidentally eat or drink something containing a pesticide. This can happen if you get some on your hands and don't wash them before eating or smoking. People are most likely to be exposed to paradichlorobenzene by breathing in the vapors. When you smell mothballs, you are inhaling the pesticide. Small children and pets are at risk of eating mothballs, because they look like candy or other treats.

What are some signs and symptoms from a brief exposure to paradichlorobenzene?

People who have been exposed to paradichlorobenzene have experienced nausea, vomiting, dizziness, fatigue, and headaches. Paradichlorobenzene vapor can also irritate the eyes and nasal passages. If paradichlorobenzene contacts the skin for a prolonged period, it can cause a burning sensation. If a pet eats a mothball made of paradichlorobenzene, they may have vomiting, tremors, and/or abdominal pain. Paradichlorobenzene may also cause kidney and liver damage in pets.

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What happens to paradichlorobenzene when it enters the body?

In humans, paradichlorobenzene is distributed in the blood, fat, and breast milk. It is broken down into several other chemicals by the body and excreted in urine. Human volunteers who inhaled paradichlorobenzene exhaled half the dose. The amount of paradichlorobenzene in their blood dropped by more than 50% one hour after the exposure stopped.

In animals, paradichlorobenzene is rapidly absorbed through the lungs or gut, but more slowly through the skin. Paradichlorobenzene was found in the fat, liver, and kidneys. Smaller amounts were found in the blood plasma, lungs, and muscle. Paradichlorobenzene was eliminated from the body soon after the exposure stopped. When animals were exposed for long periods of time, their bodies began to break down the paradichlorobenzene faster, and tissue levels declined.

Is paradichlorobenzene likely to contribute to the development of cancer?

The World Health Organization (WHO) considered paradichlorobenzene possibly carcinogenic to humans based on studies with mice. The way paradichlorobenzene caused cancer in mice could possibly occur in humans as well. The U.S. EPA has classified it as "not likely to be carcinogenic to humans".

Has anyone studied non-cancer effects from long-term exposure to paradichlorobenzene?

Rats and rabbits exposed to very high doses of paradichlorobenzene vapor while pregnant gained less weight than control animals. In another study, mother rats had fewer surviving young. No information was found regarding paradichlorobenzene and asthma or other chronic diseases.

Are children more sensitive to paradichlorobenzene than adults?

While children may be especially sensitive to pesticides compared to adults, there are currently no data to suggest that children have increased sensitivity specifically to paradichlorobenzene. Young children may be more at risk of eating mothballs because the mothballs may look like candy.

What happens to paradichlorobenzene in the environment?

Most of the paradichlorobenzene that gets into the environment will turn into vapor. It can also be broken down by bacteria or become attached to sediments in water. Paradichlorobenzene that binds to soil may be taken up by plants, and plant leaves may absorb paradichlorobenzene from the air. Paradichlorobenzene in air is broken down slowly by other chemicals. It has been found in rainwater and snow. Paradichlorobenzene has been found in groundwater close to a source of contamination. In air, its half-life is about 31 days.

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Can paradichlorobenzene affect birds, fish, or other wildlife?

When researchers fed 10 ducks a diet containing 0.5% paradichlorobenzene for 35 days, three ducks died and the rest did not grow as well. Paradichlorobenzene is moderate to low in toxicity to fish, with differences in sensitivity by species. No information was found for the effects of paradichlorobenzene on bees.

Where can I get more information?

For more detailed information, visit the list of references below, call NPIC at 800-858-7378, or email us at npic@oregonstate.edu. NPIC provides objective, science-based answers to questions about pesticides.

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