

Health concerns for workers who worked around **Pentachlorophenol (PCP)**

This study summary contains important information that is related to your health. You were mailed this information because our records indicate that you worked at a plant in our study that produced pentachlorophenol (PCP). You may have been exposed to PCP at your worksite.

Study Background:

Some studies have found PCP may cause certain health problems. Because of this, the National Institute for Occupational Safety and Health (NIOSH) assessed health risks among workers from four PCP production plants.

Included in the study were 2,122 men and women who worked at a plant that produced PCP during 1940 - 2005. These plants were located in:

- Midland, Michigan (PCP produced during 1936 - 1980)
- Sauget, Illinois (PCP produced during 1938 - 1978)
- Tacoma, Washington (PCP produced during 1957 - 1985)
- Wichita, Kansas (PCP produced during 1958 – about 2006)

These plants were chosen because they produce PCP and other chlorophenols. All of the men and women in this study worked in a PCP production department sometime during their employment.

This was a records-based study, so no surveys or samples were taken from workers. Because of this, you may not have known this study was being done. Personnel records, work history (e.g. jobs worked), and some medical records were used to find who worked at these four plants during the time that PCP was produced.

What is PCP?

Pentachlorophenol (PCP) is a man-made chemical that is used as a pesticide and wood preservative. In pure form, PCP is a clear crystal. The most common form used is impure, which is often dark gray or brown. It comes in the form of dust, beads, or flakes and dissolves in oil.

Since 1984, PCP is no longer available to the general public, though it is still used as a wood preservative for railroad ties and telephone poles.

PCP had many different trade names. A few of these include Dowicide, Penchlorol, Penta, Penta Plus, Pentachloral, Pentacon, Penwar, Priltox, Santobrite, Santophen 20, Sinituho, and Weedone.

How could I have been exposed to PCP?

PCP dust and fumes can be inhaled. At room temperature, PCP has no odor, but when heated has a strong medicinal odor, which is described as a sweet or burnt smell. It can also be absorbed through the skin and ingested, if hands are not washed well before eating.

How was PCP produced?

Using heat and pressure in an autoclave, PCP is produced by mixing chemicals (phenols and chlorine).

Post-production processing may have had even higher PCP exposure than PCP production. These processes included:

- **Flaking** made PCP flakes. These were made by pumping molten PCP into a pan. A water-cooled drum was then rolled through the PCP, which crystallized and was then shaved off with a knife. The flakes were then bagged.
- **Prilling** made PCP beads or pellets. These were made by spraying liquid PCP into a tower. This formed sleet-like pellets, which collected at the bottom of the tower.
- **Block molding** made blocks of PCP. Molten PCP was poured into one or two-ton molds and allowed to harden. The molds were then wrapped in plastic for shipping.

How would I know if I've been exposed to PCP?

PCP exposure can have many symptoms:

- If inhaled, it can cause coughing, dizziness, headache, difficulty breathing, and sore throat
- If absorbed, it can cause redness, blisters, or chloracne (chloracne is a condition of acne-like bumps on the face, neck and arms that can occur with high exposure to chlorine compounds).
- If ingested, it can cause stomach cramps, diarrhea, nausea, vomiting, weakness, and unconsciousness

Tests are available to measure PCP in the body. However, these tests cannot tell you how much PCP you were exposed to over the years because PCP leaves the body quickly. These tests also cannot be used to predict if you will get sick from past exposure. The tests can only help determine exposure levels that happened within the last few days.

What we found in our study:

- We found a 77% higher risk of non-Hodgkin lymphoma (NHL) among workers. NHL is a type of cancer that affects the lymph nodes, spleen and other organs of the immune system. 17 workers out of 2,122 died of NHL, whereas only 9 or 10 would have been expected in a similar sized group from the general population. Other studies have also found NHL was increased in workers exposed to PCP. Length of employment did not influence these results. In other words, we did not see a trend of increasing NHL risk with increasing length of employment. Because of this, it is possible that this finding could be related to other chemicals at the plant. The information we had on PCP exposure was limited.
- Though other studies found that PCP may increase the risk of other illnesses, we did not see this in our study. These illnesses included aplastic anemia, soft-tissue sarcoma, leukemia, and cancer of the liver, adrenal gland, thyroid gland and parathyroid gland.

Should I be worried? What should I do?

Though we found an increased risk of NHL, it does not mean you will get sick. A 77% increased risk may seem high, but it is in relation to the normal risk of NHL, which is low.

At your next yearly visit, tell your doctor that you worked around chemicals. Your doctor should know that you worked in a plant that produced PCP, even if it was years ago and the plant is no longer open. It is important to keep doctors informed of job-related exposures.

Should my family be worried?

Many employers provided and laundered work clothes. If you did not use this service or were not offered this service, it is possible PCP dust was carried home on your work clothes. If your work clothing was laundered at home, your family may have been exposed to small amounts of PCP. If you think this may have occurred, your family members should also tell their doctors. Though it is likely that these exposures were low, keeping doctors informed allows for better patient care.

How will this study make a difference?

The EPA has listed PCP as a “probable” cancer-causing agent. The International Agency for Research on Cancer (IARC) considers it “possibly” cancer-causing. Our study will add to what is known about PCP. This information is considered when making decisions about regulating PCP. Such decisions help protect the health of those men and women who are still being exposed to PCP in their job. Though the availability of PCP is limited, it is still used to preserve utility poles, fence posts, and railroad ties. Production workers, railroad workers, and telephone line workers are still at risk of being exposed.

For more information:

This study only looked at health effects among workers. It did not assess possible health effects of the surrounding communities. For more information about PCP and how it may affect the public, more generally, visit:

- Pentachlorophenol ToxFAQs Sheet
www.atsdr.cdc.gov/tfacts51.pdf
- Pentachlorophenol Public Health Statement
www.atsdr.cdc.gov/ToxProfiles/tp51.pdf



If you would like copies of these information sheets or if you have any questions about our study, please call 1.800.CDC.INFO (1-800-232-4636).