Perchloroethylene (PCE, PERC)

This sheet is about exposure to perchloroethylene in pregnancy and while breastfeeding. This information is based on published research studies. It should not take the place of medical care and advice from your healthcare provider.

What is perchloroethylene?

Perchloroethylene is a chemical, sometimes referred to as PCE or PERC. Other names include perchlor, and tetrachloroethylene. For this sheet, we will use the PCE abbreviation.

PCE has been used as a degreaser and dry-cleaning agent. It has also been in paint, spot and paint removers, adhesives, printing inks, household cleaners, and glues.

How would I be exposed to PCE?

PCE is a volatile liquid, meaning that it quickly evaporates (turns into a gas and gets into the air) when it is being made and used. It can get into water and soil when there is an accidental spill or a leak. PCE enters our body mostly through the air we breathe. People might also be exposed through skin contact or by drinking contaminated water.

How can I limit exposure to PCE?

The use of PCE among industries, such as dry-cleaning, has gone down over the past 35 or so years. Because of this, levels of PCE in air measurements have been dropping. Also, newer dry-cleaning machines and practices have greatly lowered worker exposure to PCE.

Products with PCE should be used outside whenever possible. If you are using products with PCE inside the house, open doors and windows, and turn on fans to bring in fresh air. Air out items that have been dry cleaned with PCE before bringing them into the house or before you wear them.

If you work with PCE or other chemicals, make sure that you use all recommended protective gear as outlined by the product's safety data sheet (SDS). Employers should provide proper safety gear and SDS. Always follow the directions outlined in the SDS on how to store, use, and clean up the products you use.

The Occupational Safety & Health Administration (OSHA) has information on how to reduce workplace exposure to PCE and has set limits on exposure to PCE in the workplace. Small businesses can also contact OSHA's on-site consultation services to help determine whether there are hazards at their worksite: 1-800-321-OSHA (6742).

Does the level of exposure (high versus low) to PCE matter?

Like other chemical exposures, the amount (level) and duration (time) are important in thinking about the chance for health problems. In general, ongoing exposure through a work setting would be expected to give a higher total exposure than an occasional household exposure. Smell is not a good measure of the level of exposure to chemicals. If someone becomes very ill from a chemical exposure, this may signal higher exposure.

What are the side effects of PCE exposure?

The effects of PCE depend on how often and how long people are exposed. People exposed to high amounts of PCE might have drowsiness, dizziness and nausea. They may also have headaches, confusion, or itching of the eyes, throat, and nose. If PCE is on the skin, it could cause dryness, redness, and/or blistering.

Can exposure to PCE make it harder for me to get pregnant?

It is not known if exposure to PCE alone would make it harder to get pregnant. Studies from the 1970s to the 1990s did not agree if it would take longer to get pregnant after exposure to PCE from working at a dry-cleaning business. Available studies did not measure the women's actual level of exposure to PCE.

Can exposure to PCE increase the chance of miscarriage?

Miscarriage is common and can occur in any pregnancy for many different reasons. Some, but not all, studies from the

1970s to the 1990s suggested that long-term exposure to high levels of PCE at work might increase the chance of miscarriage. Currently, dry-cleaning machines are better at reducing worker exposure to PCE. This means high level exposure would be unlikely in dry-cleaning workplaces that follow proper use and storage of PCE. General exposure to background levels is unlikely to increase the chance of miscarriage.

Can exposure to PCE increase the chance of birth defects?

Birth defects can happen in any pregnancy for different reasons. Out of all babies born each year, about 3 out of 100 (3%) will have a birth defect. We look at research studies to try to understand if an exposure, like PCE, might increase the chance of birth defects in a pregnancy. It is unlikely that PCE would increase the chance for birth defects with general background exposure.

It is not known if exposure to high levels of PCE over time (for example drinking water contaminated with high levels of PCE) is linked to a higher chance of birth defects. Some, but not all studies on exposure to PCE-contaminated water reported a higher chance for birth defects, like cleft lip and/or palate (an opening in the upper lip or the roof of the mouth). However, many of these studies looked at women living near contaminated water but were unable to confirm if those women drank the water or had been exposed.

Can exposure to PCE in pregnancy increase the chance of other pregnancy-related problems?

Most studies on PCE exposure during pregnancy did not find an increased chance for babies to have low birth weight (weighing less than 5 pounds, 8 ounces [2500 grams] at birth) or preterm delivery (birth before 37 weeks).

Can exposure to PCE in pregnancy affect future behavior or learning for the child?

It is not known if exposure to PCE during pregnancy can affect future behavior or learning for the child.

PCE and breastfeeding:

PCE can enter breast milk. PCE has not been well studied during breastfeeding. The Centers for Disease Control and Prevention (CDC) report that for most women, the benefits of breastfeeding would outweigh possible concerns with exposure to environmental chemicals in general. Be sure to talk to your healthcare provider about all your breastfeeding questions.

If a man works around PCE, could it affect his fertility or increase the chance of birth defects?

Some studies have suggested that PCE might cause changes in sperm that could affect men's fertility (ability to make healthy sperm) or increase the chance of birth defects. For more general information on paternal exposures, please see the MotherToBaby fact sheet Paternal Exposures at https://mothertobaby.org/fact-sheets/paternal-exposures-pregnancy/.

Who can I contact for more information?

If you have specific concerns regarding your work site, discuss them with your healthcare providers or contact MotherToBaby with your specific exposures. You can also look at our MotherToBaby fact sheet on Reproductive Hazards of the Workplace at https://mothertobaby.org/fact-sheets/reproductive-hazards-workplace/ for general tips on working with chemicals.

In addition, talk with your employer about the option to hire an industrial hygienist (https://www.aiha.org/consultants-directory) or arrange for a Health Hazard Evaluation through the CDC's National Institute for Occupational Safety and Health (NIOSH) (https://www.cdc.gov/niosh/hhe/default.html) to have your work site evaluated for ways to keep all workers there as safe as possible.

Please click here for references.

Questions? Call 866.626.6847 | Text 855.999.3525 | Email or Chat at MotherToBaby.org.