

Trichloroethylene (TCE) in Air

TCE is a solvent used for degreasing metal parts during the manufacture of a variety of products. It can be found in consumer products, including some wood finishes, adhesives, paint removers, and stain removers. TCE can also be used in the production of other chemicals.

TCE:

- is a nonflammable, colorless liquid or gas
- evaporates easily into air
- smells sweet at high concentrations; at lower levels, there is no odor

People may breathe TCE from:

- working in industries that produce or use TCE
- living or working near facilities that release TCE to the air
- using TCE-containing products
- vapors from contaminated soil or groundwater that moves into indoor air

Health concerns from breathing TCE

Most exposures to TCE in air are to low amounts and not likely to result in a health effects. The possibility of health effects depends on the amount of TCE in air and how long people breathe it.

Exposure to TCE in the first eight weeks of pregnancy may increase the risk of heart defects in the baby. In most cases, this risk is thought to be extremely low. TCE may also affect the immune system – this includes changes to the developing immune system in early life. TCE may also harm the central nervous system, kidney, liver, and male reproductive system.

Studies in workers and animals breathing very high levels of TCE suggest that long-term exposures may increase the risk of certain types of cancer (kidney, liver, and non-Hodgkin’s lymphoma).

TCE Air Values

The Minnesota Pollution Control Agency (MPCA) develops Intrusion Screening Values (ISVs) to understand when actions may be needed to protect health. The Residential ISV is an amount that is safe for people to breathe. This level is protective for sensitive people, including children, pregnant women, and people who already have health issues.

ISVs are much lower than the regulatory limits set for workplaces where the chemical is used. Breathing an amount of TCE that is above the ISVs does not mean health effects will occur; however, the risk for health effects increases as the level of exposure increases. When ISVs are exceeded, MDH recommends steps be taken to reduce exposures.

Value	Description
2.1 µg/m ³	Residential ISV - a safe level that protects all people from health effects.
7 µg/m ³	Workplace ISV - a safe level for people who may have exposures in the workplace over many years.
>1,000 µg/m ³	Level at which rodents in laboratory studies experienced subtle immune system effects.
55,000 µg/m ³	Regulatory occupational exposure limit.
>100,000 µg/m ³	Level at which some workers experienced health effects, including an increase in kidney cancer.

(measured in micrograms per cubic meter, or µg/m³)

Minnesota Department of Health
 Site Assessment and Consultation Unit
 Phone: 651-201-4897; email: health.hazard@state.mn.us
 To obtain this information in a different format, call: 651-201-4897.