



### Summary of Health Effects

Styrene may cause cancer in humans and may also interfere with the body's hormones. Styrene can affect the way animals develop.

### How is styrene used?

Styrene is used in the manufacture of polystyrene resins, plastic packaging, disposable beverage tumblers, and toys.<sup>1,2</sup>

### Toxicity: What are its health effects?

According to the National Toxicology Program, styrene is reasonably anticipated to be a carcinogen.<sup>1</sup>

The International Agency for Research on Cancer determined that styrene is possibly carcinogenic to humans.<sup>2</sup> Developmental effects due to exposure to styrene include reduced growth and survival, as well as alterations in neurochemicals.<sup>3</sup>

Styrene is on the European Union's list of substances with documented endocrine-disrupting effects.<sup>4</sup>

### Exposure: How can a person come in contact with it?

A person can come in contact with styrene by breathing in contaminated air, eating and drinking contaminated food and drink, or from skin contact.

The principal route of exposure to styrene is from indoor air, due to emissions of styrene from building materials and consumer products.<sup>5</sup>

Once absorbed, styrene is distributed throughout the body, and the highest levels are seen in fat.<sup>6</sup>

The 2014 National Health and Nutrition Examination Survey (NHANES) found styrene in less than half of the blood sampled in the U.S from 2003-2006.<sup>7</sup>

---

## References

1. U.S. Department of Health and Human Services, National Toxicology Program (2014). *Report on carcinogens, thirteenth edition*. Retrieved from [ntp.niehs.nih.gov/ntp/roc/content/profiles/styrene.pdf](http://ntp.niehs.nih.gov/ntp/roc/content/profiles/styrene.pdf)

2. World Health Organization, International Agency for Research on Cancer (2002). *IARC Monograph on the evaluation of carcinogenic risks to humans, volume 82: some traditional herbal medicines, some mycotoxins, naphthalene and styrene*. Retrieved from [monographs.iarc.fr/ENG/Monographs/vol82/index.php](http://monographs.iarc.fr/ENG/Monographs/vol82/index.php)
3. U.S. Department of Health and Human Services, National Toxicology Program, Center for the Evaluation of Risks to Human Reproduction (2006). *CERHR Monograph on the potential human reproductive and developmental effects of styrene* (NIH Pub. No.06-4475). Retrieved from [ntp.niehs.nih.gov/ntp/ohat/styrene/styrene\\_monograph.pdf](http://ntp.niehs.nih.gov/ntp/ohat/styrene/styrene_monograph.pdf)
4. Danish Ministry of Environment (2004). *List of undesirable substances* (Environmental Review No.15). Retrieved from [www2.mst.dk/Udgiv/publications/2004/87-7614-477-1/pdf/87-7614-479-8.pdf](http://www2.mst.dk/Udgiv/publications/2004/87-7614-477-1/pdf/87-7614-479-8.pdf)
5. U.S. Environmental Protection Agency, Technology Transfer Network (2000). *Hazard summary for styrene*. Retrieved from [www.epa.gov/sites/production/files/2016-09/documents/styrene.pdf](http://www.epa.gov/sites/production/files/2016-09/documents/styrene.pdf)
6. Agency for Toxic Substances and Disease Registry (2010). *ATSDR Toxicological profile for styrene*. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Services. Retrieved from [www.atsdr.cdc.gov/toxprofiles/tp.asp?id=421&tid=74](http://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=421&tid=74)
7. Centers for Disease Control and Prevention (2014). *Fourth report on human exposure to environmental chemicals, updated tables, (August, 2014)*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Retrieved from [www.cdc.gov/exposurereport/](http://www.cdc.gov/exposurereport/)