## Xylene (*ortho*-, *meta*-, and *para*-xylene and their mixture)
## $C_6H_4(CH_3)_2$
## [CAS No.95-47-6, 108-38-3, 106-42-3]
## Reproductive toxicant: Group 3

There are no human studies clearly demonstrating the reproductive toxicity of xylene; however, there is some evidence in animal studies indicating its teratogenicity and other adverse effects on the next generation. After 4 h/day inhalation exposure to xylene (*ortho*-, *meta*-, or *para*-xylene) at 115 ppm during gestation days 6–15, fetuses with retarded skeletal development and reduced weight gain were observed in mice[1]. Although reduced dam weight gain was noted in rats exposed to 7,000 mg/m$^3$ (1,610 ppm) *para*-xylene, there were no significant differences in the number of pups and their weights on postnatal days 1 and 3[2]. After 24 h/day inhalation exposure to xylene (*ortho*-, *meta*-, or *para*-xylene) at 150, 1,500, or 3,000 mg/m$^3$ (35, 350, or 700 ppm) during gestation days 7–14, placental and fetal weights were significantly reduced in rats. Also, postimplantation fetal loss was increased by *para*-xylene, and an increased incidence of extra ribs was noted as a result of *meta*- and *para*-xylene exposure in the 3,000 mg/m$^3$ group[3]. After 6 h/day inhalation exposure to xylene (*ortho*-, *meta*-, or *para*-xylene) at 100, 500, 1,000 or 2,000 ppm during gestation days 6–20, no evidence of teratogenic effects was noted for any of these agents up to 2,000 ppm in rats. All tested agents produced developmental toxicity at 1,000 and 2,000 ppm, concentrations that also produced significant maternal toxicity. With *ortho*-xylene and technical xylene, developmental toxicity also occurred at 500 ppm in the absence of maternal toxic effects[4]. Based on these reports, the evidence regarding the developmental toxicity of xylene (*ortho*-, *meta*-, or *para*-xylene) seems to be insufficient for classification in Group 2 but sufficient for classification in Group 3. Xylene (*ortho*-, *meta*-, or *para*-xylene) is thus classified as a Group 3 reproductive toxicant.

### References


1) Ungváry G, Tátrai E. On the embryotoxic effects of benzene and its alkyl derivatives in mice, rats and rabbits. Arch Toxicol Suppl 1985; 8: 425–30.
2) Rosen MB, Crofton KM, Chernoff N. Postnatal evaluation of prenatal exposure to p-xylene in the rat. Toxicol Lett 1986; 34: 223–9.
3) Ungváry G, Tátrai E, Hudák A, et al. Studies on the embryotoxic effects of ortho-, meta- and para-xylene. Toxicology 1980; 18: 61–74.
4) Saillenfait AM, Gallissot F, Morel G, et al. Developmental toxicities of ethylbenzene, ortho-, meta-, para-xylene and technical xylene in rats following inhalation exposure. Food Chem Toxicol 2003; 41: 415–29.