

## Tetrachloroethylene (Perchloroethylene)



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### Reproductive toxicant: Group 3

There are some epidemiological studies that have raised concerns regarding the reproductive toxicity of tetrachloroethylene (TCE), as they indicated a possible association between occupational exposure and adverse effects on reproductive health among chemical workers (especially dry cleaning/laundry workers)<sup>1-6</sup>. However, the results of these studies are considered insufficient evidence as a whole for the reproductive toxicity of TCE, because the levels of tetrachloroethylene in the workplace as well as those of coexisting chemicals were not clearly identified. On the other hand, animal studies have shown some evidence of reproductive toxicity in rats and mice, including resorption, subcutaneous edema, delayed ossification, and behavioral changes in offspring<sup>7, 8</sup>) although one study failed to show such effects clearly in rats and rabbits<sup>9</sup>). Based on this evidence, TCE is classified as a Group 3 reproductive toxicant.

### References

- 1) Bosco GM, Figa-Talamanca I, Salerno S. Health and reproductive status of female workers in dry cleaning shops. *Int Arch Occup Environ Health* 1987; 59: 295-301.
- 2) Rachootin P, Olsen J. The risk of infertility and delayed conception associated with exposures in the Danish workplace. *J Occp Med* 1983; 25: 394-402.
- 3) Hemminiki K, Franssila E, Vaninio H. Spontaneous abortions among female chemical workers in Finland. *Int Arch Occup Environ Health* 1980; 45: 123-6.
- 4) McDonald AD, McDonald JC, Armstrong B, et al. Occupational and pregnancy outcome. *Bri J Ind Med* 1987; 44: 521-6.
- 5) McDonald AD, Armstrong B, Cherry NM, et al. Spontaneous abortion and Occupation. *J Occup Med* 1986; 28: 1232-8.
- 6) Eskenazi B, Fenster L, Hudes M, et al. A study of the effect of perchloroethylene exposure on the reproductive outcomes of wives of dry-cleaning workers. *Am J Ind Med* 1991; 20: 593-600.
- 7) Schwetz BA, Leong BKJ, Gehring PJ. The effect of maternally inhaled trichloroethylene, perchloroethylene, methyl chloroform, and methylene chloride on embryonal and fetal development in mice and rats. *Toxicol Appl Pharmacol* 1975; 32: 84-96.
- 8) Nelson BK, Taylor BJ, Setzer JV, Hornung RW. Behavioral teratology of perchloroethylene in rats. *J Environ Pathol Toxicol* 1979; 3: 233-50.
- 9) Hardin BD, Bond GP, Sikov MR, Andrew FD, Beliles RP, Niemeier RW. Testing of selected workplace chemicals for teratogenic potential. *Scand J Work Environ Health* 1981; 7 (Suppl. 4): 66-75.