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**Inhalation toxicity study of methanol, toluene, and methanol/toluene mixtures in rats: effects of 28-day exposure.**

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**Abstract**

The inhalation toxicity of methanol and toluene was investigated in rats. Young Sprague Dawley rats of both sexes were exposed to vapors of methanol (300 ppm, 3000 ppm), toluene (30 ppm, 300 ppm) or methanol/toluene (300/30 ppm, 300/300 ppm, 3000/30 ppm, and 3000/300 ppm) six hrs per day, five days/week for four weeks. Control animals inhaled air only. Increased serum alkaline phosphatase activity was observed in males exposed to high-dose toluene, and decreased creatinine was noted in the group exposed to high-dose methanol/toluene. The thyroid gland in females appeared to be a target organ for inhaled methanol, toluene, and methanol/toluene, although the changes were confined to a mild, and occasionally moderate, reduction in follicle size. Histopathological changes of the nasal passages, consisting of subepithelial nonsuppurative inflammation, occurred in higher incidences in rats exposed to methanol/toluene than in those exposed to the individual vapors. Inhalation of methanol, toluene, or methanol/toluene produced no changes in liver weights, hepatic mixed-function oxidases, or serum aspartate transaminase activities, and only minimal changes in liver histopathology. The only liver changes were decreased liver weight and increased cytoplasmic density of the periportal areas in females exposed to high-dose methanol/toluene. These data indicated that exposure to methanol, toluene, or a mixture of both produced mild biochemical effects and histological changes in the thyroid and nasal passage. No apparent interactive effects were observed.

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