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1,1-Dichloro-1-fluoroethane Induces Micronuclei in Bone Marrow Cells by Repeated Inhalation Exposure but not by the Single Peritoneal Injection

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To investigate the genotoxic effect of 1,1-dichloro-1-fluoroethane, which was widely used as a cleaning solvent at the electronic part industry, the micronucleus frequencies were recorded by examining polychromatic erythrocytes in bone marrows of the rodents exposed to it with different routes.

With a single intraperitoneal injection, there were no changes in the micronucli frequencies at any different doses of 1,1-dichloro-1-fluoroethane, 500 mg/kg, 1,000 mg/kg and 1,500 mg/kg, when compared with the control group.

Meanwhile, with inhalation exposure for 13 weeks, there were statistically significant and dose-dependant increases in the micronucleus frequencies in each exposed group with the concentration of 1,500 ppm, 3,000 ppm, and 6,000 ppm respectively ($p<0.01$). The decreases of the percentages of polychromatic erythrocytes in the total number of erythrocytes were also statistically significant and dose-dependant ($p<0.05$).

These data imply that the micronuclei induced by 1,1-dichloro-1-fluoroethane can be maintained for a long time and the additive effects from the repeated inhalation exposure can be postulated. There may be a potentiation effect of bone marrow depression during hematopoiesis with the repeated exposure to 1,1-dichloro-1-fluoroethane.