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NAWROT*, P. S., R. O. COOK*, and R. E. STAPLES, National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina. Embryotoxicity and Teratogenicity of Various Noise Stimuli in the Mouse.

To determine the teratogenic and embryofetotoxic potential of noise in the CF-1 mouse females were exposed to one of three noise exposure paradigms from Days 1-6 or from Days 6-15 of gestation. Paradigms chosen represented (a) semi-continuous exposure to extremely high intensity noise (jet engine at 126dBA from noon to midnight), (b) startling type noise (alarm bells, jet engine noise, and narrow band warning devices at 110dBA) with pseudo-random onset and duration of each controlled by a microprocessor to yield a total exposure time of 18% over each 24 hr., and (c) very high frequency noise (commercial rodent repeller at 18-20 KHz from noon to midnight). Maternal plasma corticosterone levels were measured at several points during gestation. Reproductive status was determined on Day 18 of gestation and external, visceral, and skeletal alterations were sought among the fetuses. Pregnancy rate was decreased in all noise-exposed groups, except for (c) when exposed from Days 6-15, and both maternal weight gain and fetal weight were decreased in (b) when exposed from Days 1-6. Embryolethality occurred in (a) when exposed from Days 1-6 and fetolethality occurred in (c) when exposed from Days 6-15. No significant noise-related changes were noted in the incidence of structural alterations or in plasma corticosterone concentration.

Nawrot,* P. S., and R. E. STAPLES, National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina. Embryofetal toxicity and teratogenicity of benzene and toluene in the mouse.

The solvents were administered to CD-1 mice by gavage (t.i.d.) from Days 6 through 15 of gestation at levels of 0.3, 0.5, and 1.0 ml/kg body wt/dose or from Days 12 through 15 of gestation at 1.0 ml/kg body wt/dose. The vehicle used was cottonseed oil (0.5% of maternal body wt/dose). Exposure to benzene (Days 6-15) at the 0.5 and 1.0 ml/kg dose levels was followed by a significant increase in maternal lethality and in embryonic resorption. Fetal weight was significantly reduced at all three dose levels. The same findings were obtained after shorter exposure to benzene (Days 12-15) at the 1.0 ml/kg dose level, but the resorptions occurred later in gestation. No statistically significant benzene-related change was seen in the incidence of malformations after exposure to benzene for Days 6-15 or 12-15 of gestation. Maternal toxicity was not seen after exposure to toluene (Days 6-15) at any dose level, but a significant increase in embryonic lethality occurred at all dose levels, and a significant reduction in fetal weight was measured in the 0.5 and 1.0 mg/kg groups. After exposure to

toluene (Days 6-15) at 1.0 mg/kg, a statistically significant increase in the incidence of cleft palate was noted which did not appear to be due merely to a general retardation in growth rate. The same toluene regime given from Days 12-15 yielded only decreased maternal weight gain. Hence, benzene was not shown to be teratogenic in the mouse, but it was embryo- and fetotoxic even at the 0.3 ml/kg dose level; toluene was shown to be teratogenic at 1.0 ml/kg, embryolethal at 0.3 ml/kg, and decreased fetal weight occurred at 0.5 or 1.0 ml/kg.

NELSON, B. K., Behavioral and Motivational Factors Branch, Division of Biomedical and Behavioral Science, National Institute for Occupational Safety and Health, Cincinnati, Ohio. Behavioral Teratology of Perchloroethylene

Perchloroethylene (PCE), the degreasing solvent used by the majority of dry cleaners in the U.S., was evaluated for possible functional effects in offspring of rats exposed during gestation. Pregnant Sprague-Dawley rats were exposed to 900 ppm PCE 7 hours/day during gestation days 7-13 or 14-20. The dams exposed to PCE consumed less feed and gained less weight during the exposure period than the controls, and had a significant reduction in the proportion of pups born alive ($p < .005$). Behavioral testing of offspring from dams exposed to PCE on days 7-13 of gestation showed them to perform poorer than controls ($p < .02$) on a rotorod test of neuromuscular ability. Offspring from dams exposed to PCE on days 14-20 of gestation performed more poorly ($p < .01$) on a simple neuromuscular test (ascent on a wire mesh screen). However, later in development these pups were found superior to their controls ($p < .01$) on the rotorod and were relatively more active in the open field test ($p < .02$). In whole brain (minus cerebellum) analyses of the neurotransmitters dopamine, norepinephrine, and acetylcholine from newborn and 21-day old offspring, significant reductions were observed in the levels of acetylcholine in offspring from both exposure periods ($p < .05$) and dopamine for the group whose dams were exposed during the second week of gestation ($p < .05$). Another group of animals was exposed (7 hours/day), during the third week of gestation to 100 ppm PCE, the current OSHA permissible exposure limit. No significant differences were observed between the offspring of these animals and their controls on any of the behavioral tests.

NETZLOFF, M.L., Dept. of Pediatrics, University of Florida College of Medicine, Gainesville, Florida. Comparative nucleic acid changes in embryos following teratogenic 9-methyl PGA vs. diphenylhydantoin (DPH) treatment.

Our previous studies have demonstrated similar depressions in embryonic folic acid concentrations, but differing changes in polyamine levels following treatment of rodents



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