1384 **CHRONIC INHALATION TOXICITY OF ETHYLENE OXIDE IN MONKEYS - LENS OPACITIES AT TERMINATION OF EXPOSURE AND 10-YEAR FOLLOW-UP.** **DW Lynch, DD Sharpnack, EF Krieg, Jr., K Ketring*, and TR Lewis*.** NIOSH, Experimental Toxicology Branch, Cincinnati, OH and *Private Consultant, Cincinnati, OH.

Male cynomolgus monkeys were exposed to 0 (control), 50, or 100 ppm ethylene oxide (ETO) for 7 hrs/day, 5 days/wk for 24 months. Ophthalmic examinations were performed during the 24th month of exposure and on surviving animals following 10 years with no additional ETO exposures. Following sedation with IM ketamine/xylazine, mydriasis was induced with topical 1% tropicamide hydrochloride. Eyes were examined by a board certified veterinary ophthalmologist using a hand-held slit lamp and ophthalmoscope. At the first exam, the incidences of lens opacities were: controls 0/12, ETO 50 ppm 2/11 (3 opacities), and ETO 100 ppm 3/11 (6 opacities). At the second exam, the incidences were: controls 2/4 (3 opacities), ETO 50 ppm 2/3 (4 opacities), and ETO 100 ppm 4/4 (8 opacities). Overall, the combined incidences were: controls (2/12; 3 opacities), ETO 50 ppm (4/11; 7 opacities), and ETO 100 ppm (6/11; 12 opacities). No significant differences in the incidence of opacities were observed at either time point or with the combined data using Chi-square. The opacities observed at the second exam varied over a wide range and were graded as minimal/subtle (grade 1) to severe (grade 5). A repeated measures design was used to compare the severity of lens lesions in the 11 control and exposed monkeys, and the effect of dose was significant ($F(2,8) = 8.88$, $p = .0093$). Fisher's LSD test showed that the ETO 100 ppm group (mean lens severity rating 3.63) was significantly different ($p < 0.05$) from the controls (mean lens severity 0.38). The finding of opacities in monkeys exposed to ETO is consistent with reports of cataracts in sterilizer operators occupationally exposed to high levels of ETO.

1385 **EFFECTS OF DOSE-RATE ON CHRONIC TOXICITY OF ETHYLENE OXIDE: PRELIMINARY REPORT.** **WJ Moorman, JC Clark, PB Shaw, T Ong, SN Schrader, DW Lynch, and TR Lewis.** NIOSH, Experimental Toxicology Branch and T.R. Lewis, Private Consultant. Cincinnati, OH.

Male F344 rats were exposed to ethylene oxide (ETO) in four treatment groups (200 each) as follows: 100 ppm for 6 hrs [Low Dose-Rate (D/R)]; 300 ppm for 2 hrs (Medium D/R); 600 ppm for 1 hr (High D/R); and clean air controls. Exposures were on a 5 day/week schedule for up to 24 months. Each ETO treatment received an equal product of concentration X time (600 ppm*hrs). Early sacrifices (3, 6, & 9 months) involved evaluation of spermatotoxic, cytogenetic, and immunotoxic indices and DNA adduction. Surviving rats were sacrificed following 24 months of exposure. DNA adduct, immunotoxic, and histopathologic evaluations are in progress. All ETO treatments demonstrated increased mortality, however mortality was not related to dose-rate. The Low D/R and Medium D/R groups had lower mean body weights than the High D/R or the controls. Spleen weights were higher and brain weights were lower in the Low D/R and Medium D/R treatments. All ETO exposed rats demonstrated reduced testicular weights, and the Low D/R and Medium D/R groups had lower sperm counts than the High D/R or controls. The Low D/R also had lower sperm velocity (curvilinear) than the controls. The cytogenetic studies revealed that genetic damage occurred more readily in spleen cells than in bone marrow cells. All ETO treatments demonstrated a higher frequency of sister chromatid exchanges (SCE) in spleen cells compared to the controls after 3 months of exposure. At 3 and 6 months of exposure, an increased SCE frequency was found in bone marrow cells in the Low D/R group. The impact of dose-rate varies in different tissues and may relate to rates of perfusion, repair, and cell proliferation.

1386 A 90-DAY SUBCHRONIC INHALATION TOXICITY STUDY OF 1,5-HEXADIENE IN THE RAT. G B Kolesar, S D Crofoot, W H Siddiqui, G J Sibert and J J Clary. Dow Corning Corporation, Midland, MI.

1,5-Hexadiene is used as an intermediate in the production of silicone polymers. A 90-day vapor inhalation study was conducted to determine its subchronic toxicity in rats. Male and female CD® rats were exposed to target concentrations of 0, 31, 315 and 1000 ppm 1,5-Hexadiene vapors for six hours/day, five days a week, for 13 weeks. One satellite recovery group consisting of male and female rats were also exposed concurrently to 1,000 ppm of 1,5-Hexadiene.

No effects in body weights, food consumption and clinical chemistry were noted during the study. There were no significant differences in organ weights or test article-related gross pathologic changes among groups. Test article-related microscopic changes in organ system was limited to tracheal mucosa in the high dose females. This effect had completely resolved by the recovery sacrifice. The NOAEL for 1,5-Hexadiene in female and male rats were 315 and 1,000 ppm, respectively.

1387 COMPARISON OF SENSITIVITY FOR VARIOUS STRAINS OF MICE BASED ON RD50 VALUES OBTAINED FROM EXPOSURE TO AEROSOLIZED ETHYLBENZENE. L A BOYLSTEIN, M F Stock, and Y Alarie. University of Pittsburgh, Pittsburgh, PA.

Swiss Webster male mice have been used to evaluate sensory irritation properties of airborne chemicals. Their response is well correlated to the effect in humans. However, reports of human subjects being much more sensitive than the "average" individual indicate that a more sensitive mouse strain is desired for toxicological research. This series of experiments was done to see which of four strains (A/J, A/HeJ, Balb/cJ, and Swiss Webster) was the most sensitive when exposed to a known sensory irritant. The various strains of mice were exposed in groups of four to 20, 100, 426 or 994, 1987 and 4975 ppm ethylbenzene. RD50 values were obtained. The ranking from the most to least sensitive strain was as follows: A/J female< A/J male<A/HeJ female<Swiss Webster male. Since there were such differences between the strains of mice when exposed to ethylbenzene, the data suggests that sensitivity to a given chemical is dependent on the genetic background of the mouse strain being used in the experiment. Supported under Grant No. R01-ES02747 from NIEHS.

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