EFFECTS OF ACRYLAMIDE ON MULTIPLE BEHAVIORAL ENDPOINTS IN THE PIGEON. S. A. Daniel and H. L. Evans. New York University.

Little is known about acrylamide's effects on cognitive function in animals. We now describe the effects of subchronic injections (PO) of 0, 20, and 60 mg/kg/day of acrylamide monomer on (1) duration discrimination responding; (2) fixed-interval and shape discrimination responding and (3) feeding behavior in pigeons (N=12). Sixty mg/kg/day caused rapid impairment on all tests; partial recovery occurred within 3 weeks. FI response rate remained elevated post-acrylamide. At 20 mg/kg/day for 90 days, small but consistent decreases in duration discrimination accuracies were seen. Acrylamide affects a variety of behavioral processes involving sensory, motor and associative functions

EFFECTS OF 2,4-D ON SCHEDULE-CONTROLLED BEHAVIOR. J. Dougherty, G. Shulze and R. Taylor. Veterans Administration Medical Center, Lexington, and Graduate Center for Toxicology, University of Kentucky.

2,4-Dichlorophenoxy acetate n-butyl ester was a component of Agent Orange herbicide used in Vietnam, and is commercially-available in lawn care products. The behavioral effects of 2,4-D were studied using a variable-interval (VI 120, TO 4 min) schedule of sucrose pellet-reinforced lever pressing in Wistar albino rats. The herbicide was injected SC in polyoxyethylated castor oil prior to daily 1-hr test sessions. Decreased response rates were observed within 60 min and reached a peak at 4–6 hr. Pre-drug response rates were recovered within 24–48 hr, which correlates with the urinary excretion of 95% of the injected dose within 48 hr as the hydrolysed metabolite (2,4-D acid). Doses of 10–300 mg/kg were active and motor incoordination was evident above 100 mg/kg.

DEVELOPMENT OF A PORTABLE PERFORMANCE ASSESSMENT SYSTEM FOR BEHAVIORAL TOXICOLOGY. Robert S. Kennedy,[1] Alvah C. Bittner, Jr,[2] Martin G. Smith[1] and Margy M. Harbeson[2]. [1]Essex Corporation, Orlando, FL and [2]Naval Biodynamics Laboratory, New Orleans, LA.

In a series of experiments conducted at the Naval Biodynamics Laboratory, over 140 performance tests of skills and abilities were evaluated by determining whether they were differentially stable and reliable when examined over a fifteen day repeated measures paradigm. Many of these were paper and pencil or apparatus tests frequently reported on in the information processing, environmental stress or behavioral toxicological literature. Surprisingly, less than 30% were found to be acceptable metrically, either because of instability or lack of acceptable reliability. Present plans call for adapting the "good" tests to a portable microcomputer system and progress in this program is discussed.

TRICHLOROETHYLENE: POSSIBLE OPIOID INVOLVEMENT. Jeffrey L. Nelson, Department of Psychology and Harold Zenick, Department of Environmental Health, University of Cincinnati, Cincinnati, OH 45257.

Trichloroethylene (TCE) is a chlorinated hydrocarbon solvent which is widely used as an industrial degreasing agent. Workers exposed to TCE often exhibit CNS symptoms similar to those symptoms produced by narcotics. The present study evaluated the analgesic properties of TCE and the effects of TCE exposure on measures of male sexual behavior in rats. The data indicated that TCE (1000 pm) produced an analgesic response 1 hour following administration. This analgesic response was blocked by the opiate antagonist, naloxone (2.0 mg/kg, IP) when given 15 minutes prior to testing. TCE (1000 pm) 4 hours before testing also produced effects on male copulatory behaviors. Naltrexone (2.0 mg/kg, IP) given 30 minutes before testing blocked several of these TCE-induced effects. These data suggest that many of TCE's effects may be mediated either directly or indirectly via the endogenous opioid system.

THE PERFORMANCE OF INFANT MONKEYS EXPOSED TO CAFFEINE IN UTERO ON NON-SPATIAL DISCRIMINATION REVERSAL TASKS. Steven G. Gilbert and Deborah C. Rice. Toxicology Research Division, Bureau of Chemical Safety, Health and Welfare Canada.

Cynomolgus monkeys (*Macaca fascicularis*) were exposed *in utero* to caffeine throughout gestation by dosing the mothers with caffeine in the drinking water. Infants were separated from their mothers at birth. Beginning at about 45 days of age, they performed on a two-choice non-spatial reversal discrimination problem, followed by a multiple non-spatial discrimination using four sets of stimuli. Infants were tested in a home cage environment 16 hours a day; experimental control and data collection were by means of a minicomputer. Some caffeine exposed infants were impaired relative to controls on these tasks.

WORKING MEMORY PERFORMANCE IN THE RAT· EFFECTS OF AGING AND PREVIOUS ADMINISTRATIONS OF CARBARYL. George A. Heise, Jeffrey Hudson and Carl Overshiner. Indiana University.

At the end of their first year of life, groups of rats trained on working memory tasks (e.g., go-no go alternation and two-lever reversals) received either a range of doses of carbaryl, scopolamine and physostigmine, or 28 twice-weekly sub-acute doses of 5 mg/kg carbaryl. Only very slight deficits in working memory performance, and no differences between the treatment groups, were observed when the rats were reexamined (without further carbaryl or drug treatment) at 591–598 or 880–893 days of age. However the 880–893 day-old rats were profoundly deficient in complex motor coordination, as indicated by their inability to walk a narrow "bridge" without falling off.

BEHAVIORAL CORRELATES OF NEUROPATHOLOGY PRODUCED BY SOMAN INTOXICATION. M. Z. Mays, J. H. McDonough, Jr., H. E. Modrow, III, C. D Smith and C. G. McLeod, Jr. United States Army Medical Research Institute of Chemical Defense.

Rats surviving exposure to a convulsion-producing dose of the organophosphate, soman, frequently exhibit behavior typical of rats with setpal lesions. In two experiments rats were given either a subcutaneous injection of soman (123 μg/kg or 110 μg/kg; approximately a 24 hr LD50) or saline. Ratings of the degree of overt acute soman intoxication were significantly higher ($p<0.001$) in treated rats. Treated rats also took significantly longer to return to their pre-injection body weight ($p<0.001$). Analysis of ratings of reactivity to handling yielded a significant interaction ($p<0.001$), with groups not differing prior to treatment and treated animals