

NTP Report 35 mice

Guidelines/Criteria	
Reference:	NTP. 1993a. NTP Technical Report on toxicity studies of a chemical mixture of 25 groundwater contaminants. NTP toxicity report series no. 35 - NIH Publication 93-3384. National Toxicology Program, National Institute of Environmental Health Sciences (NIEHS), Research Triangle Park, NC, USA
In vivo Study Type Route of Administration Species & age of animals	drinking water, water control group B6C3F1 mice, 6 weeks
Study Duration	26-weeks
Type of Mixture Binary >2 components Similar acting or dissimilar What Mode of Action was investigated?	no yes dissimilar action assumed (chemicals mix to simulate groundwater supplies near hazardous dumps) repeated dose toxicity
Parameters/End points Measured Target organs/Critical effects Pharmacological changes or adverse effects	body weight, mortality, organ weights, histopathology, clinical pathology, neurobehaviour (grip strengths of fore- and hind limbs, hind limb foot splay, horizontal and vertical activity counts, pawlick latency, startle response investigated in weeks 6, 12, 18, 24), reproductive toxicity adverse effects
Individual Components Characterisation of individual compounds Name, exact chemical name, CAS no. Were dose responses established for individual components? Were no effect levels established? Were doses below the NO(A)ELs investigated?	yes One mixture was investigated: Acetone, Aroclor 1260, Arsenic, Benzene, Cadmium, Carbon tetrachloride, Chloroform, Chlorobenzene, Chromium, 1,1-Dichloroethane, 1,1-Dichloroethylene, 1,2-Dichloroethane, 1,2-t-Dichloroethylene, Di(2-ethylhexyl)phthalate, Ethylbenzene, Lead, Mercury, Methylene chloride, Nickel acetate tetrahydrate, Phenol, Tetrachloroethylene, Toluene, 1,1,1-Trichloroethane, Trichloroethylen, Xylenes No, only mixtures at four dose levels were administered Yes Yes presumably
Mixtures Investigated Number of dose levels How does the mixture make-up compare to individual components? (e.g. low dose) equivalents used? No. of technical replicates per exposure condition (<i>in vitro</i>) No. of animals per dose group (<i>in vivo</i>)	Target concentrations: Acetone: 1.59, 5.3, 15.9, 53 ppm, Aroclor 1260: 0.0003, 0.001, 0.003, 0.01 ppm, Arsenic: 0.27, 0.9, 2.7, 9.0 ppm, Benzene: 0.375, 1.25, 3.75, 12.5 ppm, Cadmium: 1.53, 5.1, 15.3, 51.0 ppm, Carbon tetrachloride: 0.012, 0.04, 0.12, 0.40 ppm, Chloroform: 0.21, 0.7, 2.1, 7.0 ppm, Chlorobenzene: 0.003, 0.01, 0.03, 0.10 ppm, Chromium: 1.08, 3.6, 10.8, 36.0 ppm 1,1-Dichloroethane: 0.042, 0.14, 0.42, 1.4 ppm, 1,1-Dichloroethylene: 0.015, 0.05, 0.15, 0.5 ppm, 1,2-Dichloroethane: 1.2, 4.0, 12, 40.0 ppm, 1,2-t-Dichloroethylene: 0.075, 0.25, 0.75, 2.5 ppm, Di-2-ethylhexyl)-phthalate: 0.0005, 0.0015, 0.0045, 0.015 ppm, Ethylbenzene: 0.009, 0.03, 0.09, 0.3 ppm, Lead: 2.1, 7.0, 21, 70.0 ppm, Mercury: 0.017, 0.05, 0.17, 0.50 ppm, Methylene chloride: 1.125, 3.75, 11.25, 37.5 ppm, Nickel: 0.204, 0.68, 2.04, 6.80 ppm, Phenol: 0.87, 2.9, 8.7, 29.0 ppm, Tetrachloroethylene: 0.102, 0.34, 1.02, 3.40 ppm, Toluene: 0.21, 0.7, 2.1, 7.0 ppm, 1,1,1-Trichloroethane: 0.06, 0.2, 0.6, 2.0 ppm, Trichloroethylen: 0.195, 0.65, 1.95, 6.50 ppm, Xylenes: 0.048, 0.16, 0.48, 1.60 ppm Total concentrations: 11.3428, 37.8025, 113.128, 378.025 ppm <input type="checkbox"/> Would have to be evaluated, NOAELs of individual compounds are not given. not applicable 20 rats/sex/group Neurobehavioural parameter in 10 mice/sex/group
Observations/Findings	High dose: water consumption ↓ (40%), No other effects Neurobehavioural changes: No treatment-related changes observed.
Overall opinion (e.g. sufficient numbers of groups investigated, group sizes adequate, observations reproducible, low dose levels used investigated)	Good study design, sufficient number of animals, relevant endpoints; NOAELs of individual compounds should be evaluated and compared to the actual doses administered.