

Guidelines/Criteria	
	Reference: Côté MG, Plaa GL, Valli VE, Villeneuve DC. 1985. Subchronic effects of a mixture of "persistent" chemicals found in the Great Lakes. Bull Environ Contam Toxicol 34(2):285-90.
<b>In vivo Study Type</b> Route of Administration Species & age of animals	90-day toxicity study Diet Sprague-Dawley rats
<b>Study Duration</b>	90 days
<b>Type of Mixture</b> Binary >2 components Similar acting or dissimilar  What Mode of Action was investigated?	No 15 component mixture Similar and dissimilar (12 organochlorine insecticides and 3 phthalates) Nothing specific
<b>Parameters/End points Measured</b> Target organs/Critical effects  Pharmacological changes or adverse effects	Clinical observations, body weight, food consumption, haematology, urinalysis, clinical chemistry, gross organ pathology and weights (heart, liver, spleen, kidney, brain), liver enzyme assays, histopathology
<b>Individual Components</b> 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?	Aldrin, dieldrin, DDT, DDE, endrin, heptachlor, lindane, methoxychlor, mirex, toxaphene, arochlor 1254, chlordane, DEHP, MEHP and dibutylphthalate No No N/A
<b>Mixtures Investigated</b> 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> )	Four mixtures were tested plus a control. The mixtures contained all 15 components at doses equivalent to 1x, 10x, 100x and 1000x the 1978 Great Lakes Water Quality Objectives. N/A 20 per sex per group
<b>Observations/Findings</b>	No statistically significant dose related effects except a reduction in lung inflammatory disease in the top two dose groups (presumed antiseptic effect)
<b>Overall opinion</b> (e.g. sufficient numbers of groups investigated, group sizes adequate, observations reproducible, low dose levels used investigated)	Reasonable study for the period, but documentation is rather brief. The Great Lakes water standards were designed to protect aquatic organisms, not humans. Nevertheless the lack of effects at 1000x the standard is re-assuring.