

Guidelines/Criteria	
	Reference: Wang TC, Wu CL, Lin JH, Tarn CY, Lin SY. 1987. Sister chromatid exchanges and chromosome aberrations induced by pesticide combinations in Chinese hamster ovary cells. Bull Instit Zool, Academia Sinica 26(4):317-329.
In vitro Study Type Route of Administration Species & age of animals	Chinese hamster ovary (CHO) cell assay
Study Duration	2hrs exposure plus 24hrs subsequent incubation
Type of Mixture Binary >2 components Similar acting or dissimilar What Mode of Action was investigated?	Yes No Dissimilar Genotoxicity
Parameters/End points Measured Target organs/Critical effects Pharmacological changes or adverse effects <i>In vitro</i>	Sister chromatid exchange and chromosomal aberrations
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?	Butachlor & chlomethoxynil; kasugamycin & carbendazim; captafol & polyoxin; probanasol & isoprothislam. Yes (other binary mixtures were also tested, but only those producing a response were tested as single components). Yes (all in ug/ml): butachlor 6.7 & chlomethoxynil 66.7; kasugamycin 1000 & carbendazim 167; captafol .0049 & polyoxin 161; probanasol 10 & isoprothislam 250. Yes, 2 to 4 except for captafol for which there were none.
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>)	5 in total of which 4, 3, 1 and 3 were at or below the NOEL of all components, for each of the 4 mixtures respectively. Four binary mixtures were tested in a ratio as marketed as formulated pesticides in China. Not stated
Observations/Findings	Mixtures tested at 1xNOEL of butachlor + 0.2xNOEL of chlomethoxynil, and at 0.009xNOEL of kasugamycin + 0.73xNOEL of carbendazim, caused an effect. However, mixtures tested at 0.2xNOEL of butachlor + 0.04xNOEL of chlormethoxynil, and 0.002xNOEL of kasugamycin + 0.15xNOEL of carbendazim showed no effect. The highest captafol/polyoxin mixture concentration tested at the NOEL for each component (1xNOEL of captafol + 0.000002xNOEL of polyoxin) produced no effect; this was also true for the probanasol/isoprothislam mixture (1xNOEL of probanasol + 0.2xNOEL of isoprothislam). Lower doses levels of mixtures than those referred to here all produced no effect.
Overall opinion (e.g. sufficient numbers of groups investigated, group sizes adequate, observations reproducible, low dose levels used investigated)	Not the best study in terms of information reported. Information on replication and on result variability is not presented, though it is indicated which groups differ significantly from controls.