

Guidelines/Criteria	
	Reference: Dolara P, Vezzani A, Caderni G, Coppi C, Torricelli F. 1993. Genetic toxicity of a mixture of fifteen pesticides commonly found in the Italian diet. Cell Biol Toxicol 9(4):333-343.
In vivo Study Type Route of Administration Species & age of animals	Rat micronucleus study Oral gavage 150g Wistar rats
Study Duration	24hrs
Type of Mixture Binary >2 components Similar acting or dissimilar What Mode of Action was investigated?	No Yes Dissimilar in general, though some are similar Genetic toxicity in general
Parameters/End points Measured Target organs/Critical effects Pharmacological changes or adverse effects	Occurrence of micronuclei and ratio of polychromatic and normochromatic lymphocytes Adverse
Individual Components Characterisation of individual compounds Name, exact chemical name, CAS no.	Dithiocarbamates (which one not stated), benomyl/cerbandazin (which one not stated), thiabendazole, diphenilamine, chlorothalonil, procymidone, methidathion, chlorpyrifos-ethyl, fenarimol, parathion-methyl, chlorpropham, parathion, vinclozolin, chlorfenvinphos, pirimiphos-ethyl.
Were dose responses established for individual components? Were no effect levels established? Were doses below the NO(A)ELs investigated?	No, only mixtures were tested No
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>)	3 Mixture contained 15 pesticides in proportion to their estimated occurrence in the Italian diet as food residues. The list above gives all 15 in declining order of concentration in the mixture. The doses were reported to be 100x, 1000x and 10000x the estimated human dietary exposure to pesticides in Italy, but this is a mistake - the correct figures are 0.1x, 1x & 10x. [Doses were 1, 10 and 100 ug/kg, and human exposure was estimated to be 716 ug/person/day.] 5
Observations/Findings	Reduction in ratio of polychromatic to normochromatic erythrocytes, but not statistically significant. No effect on occurrence of micronuclei.
Overall opinion (e.g. sufficient numbers of groups investigated, group sizes adequate, observations reproducible, low dose levels used investigated)	Relevant as a test of a simulated environmental mixture.