

Guidelines/Criteria	
	Reference: Cometto-Muñiz JE, Cain WS, Abraham MH, Gola JMR. 1999. Chemosensory detectability of 1 butanol and 2-heptanone singly and in binary mixtures. <i>Physiol Behav</i> 67(2):269-276.
In vivo Study Type Route of Administration Species & age of animals	Airborne Human, various ages, osmic and anosmic
Study Duration	Series of single tests
Type of Mixture Binary >2 components Similar acting or dissimilar What Mode of Action was investigated?	Yes None Not defined; one alcohol and one ketone tested Olfactory nerve stimulation (odour), trigeminal nerve stimulation (nasal pungency, eye irritation)
Parameters/End points Measured Target organs/Critical effects Pharmacological changes or adverse effects	Nose (odour, pungency), eye (irritation) Pharmacological (odour), adverse (nasal pungency and eye irritation)
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?	1-butanol (99.8%), 2-heptanone (98%) Yes Yes, stimulus-response (psychometric) functions were established using two-fold dilution steps. Yes, in terms of varying probabilities of detection by individual subjects
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 No. of subjects per dose group (<i>in vivo</i>)	5 dilutions each of single compounds; 16 binary mixtures (4 concentration levels each for the two compounds), 1 dilution with both compounds at zero probability of detection Probabilities (p) of detection (0.20, 0.40, 0.60 and 0.80) for specific concentrations were calculated. Binary mixtures were established in a 4x4 matrix where each p of one chemical was combined with each level of the other. Up to 12 alternative, forced-choice judgments per subject for odour, up to 24 for nasal pungency, up to 6 for eye irritation Eighteen osmic subjects, age 18 - 54 y Seven anosmic subjects, 28 - 59 y
Observations/Findings	Detectability of binary mixtures followed a straightforward dose-addition model, most closely for odour perception, but also for nasal pungency and eye irritation.
Overall opinion (e.g. sufficient numbers of groups investigated, group sizes adequate, observations reproducible, low dose levels used investigated)	In contrast to previous investigations, the number of subjects was larger, and the investigation went beyond establishment of simple thresholds to a range of responses from chance detection to virtually perfect detection. No significant variation from dose addition was seen. However, only binary mixtures were tested.