



GETEX
URGENT SOLUTIONS TO URGENT PROBLEMS

VOLATILE ORGANIC COMPOUND MIXTURES

Some mixtures of the vapours of volatile organic compounds contain substances which exhibit independent effects because they act on different parts of the body or by differing mechanisms, however it probably more common for components of a mixture to exhibit additive or synergistic effects.

When a person is exposed to two or more contaminants an additive effect occurs when the contaminants act on the same target organ or by the same mechanism. In such a situation the total effect on the body equals the sum of each of the individual substances. For substances whose effects are purely additive, conformance to the airborne exposure standard occurs when

$$\frac{C_1}{L_1} + \frac{C_2}{L_2} + \dots + \frac{C_n}{L_n} = < 1$$

Where C_1, C_2, \dots, C_n are the average measured airborne concentrations of the particular substances 1, 2, ...n and L_1, L_2, \dots, L_n are the exposure standards for the individual substances.

When assessing the hazard from a mixture of airborne contaminants, it is important to identify and quantify all components in the airborne mixture as a number of factors such as particle size distribution or solvent vapour pressure give rise to substantial variations between the concentration of each component of the parent mixture and that which occurs in air.



HIA members
the best in the business 



**GETEX
PTY LIMITED**

ABN 99 116 287 471
Suite 2.02, Building 2,
Waterloo Business Park
35 Waterloo Road
North Ryde NSW 2113
Phone: (02) 9889 2488
Fax: (02) 9889 2499
Email: help@getex.com.au
Web: www.getex.com.au

If for some reason this cannot be done, then an alternative is to assume the mixture follows Raoult's Law, although this law only applies to Ideal Mixtures. If Raoult's Law is applied the theoretical composition of the vapour generated by a mixture can be calculated, however this method is less satisfactory as there is no truly Ideal Mixture although some mixtures go close. An Ideal Mixture may be described as a mixture of two liquids where there is zero enthalpy change in mixing, that is, the temperature doesn't rise or fall when the two are mixed.

While exposure to some vapours is additive, eg through their general effect on the central nervous system via narcotic and anaesthetic effects, other solvents have deleterious effects on other organs and the assessment of a mixture must take account of the basis for any potential interactions.

There are some materials for which the deleterious effect of a mixture is multiplicative, synergistic or potentiative, not additive.

It should be clear from the above that a Consultant with expertise in assessing exposure to Volatile Organic Compounds, VOCs, is needed. A person with Chemistry, toxicology, thermodynamics, experience, and knowledge in various other technical fields is the preferred choice. All GETEX Consultants are Degree qualified in a relevant Professional field. Senior staff have long experience in the industry.

GETEX holds Professional Indemnity Insurance and is NATA accredited to ISO / IEC17025 for chemical testing (certain tests only).

Before you choose a Consultant ask questions, check it out.

THE EXPERTISE IS HERE

Contact GETEX for assistance with VOCs

GETEX operates 24 hours/day, 7 days per week
(02) 9889 2488

www.getex.com.au

help@getex.com.au