

POSITION PAPER - PROPOSAL TO REDUCE WES-TWA FOR METHYL BROMIDE FROM 5PPM TO 1PPM

The Department of Labour Workplace Exposure Standards

The Department of Labour is the primary agency responsible for setting Workplace Exposure Standards (WES) as part of the administration of the Health and Safety in Employment Act (HSE), 1992.

WES relate to worker exposure to airborne substances in workplaces.

WES are health-based values. In assigning the WES value, defining a level that will achieve freedom from adverse health effects is the major consideration. Employee exposure to hazardous substances should be controlled to a level as far below the relevant WES as practicable by applying the hierarchy of control required by the HSE Act. Section 10(2)(c) of the Act requires that where significant hazards are minimised, the employer must monitor the employees exposure to the hazard. WES can be used by those involved in occupational health practice as guidelines for evaluating exposure to airborne hazards. Compliance with the designated value does not, however, guarantee protection from discomfort or possible ill-health outcomes for all workers.

As New Zealand does not have prevalent epidemiological studies of the working population, New Zealand's standards reflect international experience. The methyl bromide WES was chosen for review as it is inconsistent with some international workplace exposure guidelines.

Setting WES

Animal studies of the health effects from chronic inhalation of methyl bromide gas suggest that the (maximum) no-observed-adverse-effect-level (NOAEL) for at least one species may be less than the current WES-TWA level of 5ppm. In a study in rats, a concentration of 3ppm was the lowest-observed-adverse-effect-level (LOAEL), but the NOAEL was not identified, as no concentration lower than 3ppm was tested. However in such situations it is conventional to regard the NOAEL as likely being around three-fold lower than the observed LOAEL. Accordingly, one agency (ACGIH) have established a WES-TWA of 1ppm, and this level is also being considered in New Zealand.

It can be noted that this level is not derived directly from data on the human experience, but rather that the animal data cannot reasonably exclude the possibility of adverse human effects at these levels. The level does not represent an extremely conservative interpretation of the animal data, as it does not incorporate additional uncertainty or safety factors, such as to allow for the possibility of greater susceptibility of humans than the test species to the observed adverse effect.

ERMA reassessment of methyl bromide

In July 2008, the Environmental Risk Management Authority (ERMA) decided there were grounds for the reassessment of fumigant methyl bromide. The reassessment process and final decision are expected to be completed mid-late 2010.

The outcome of the Department of Labour review of the methyl bromide WES should be viewed as an input into the ERMA reassessment process.

Respiratory protection and WES

When minimising airborne exposure by using respiratory protection, the type of respirator used must be selected on the basis of the airborne concentration and the protection factor of the respirator. If the airborne concentration (outside the mask) is 10ppm and the protection factor of the respirator is 10, then the concentration of the substance inside the mask could be up to 1ppm. The WES apply to the concentration of the substance that the worker is inhaling therefore knowledge of airborne concentration as well as respirator protection factor is vital in determining the level of protection required.