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COMPARATIVE STANDARDS FOR FUMIGANTS, CONTROLLED AND MODIFIED ATMOSPHERES

C. P. F. DE LIMA

*Department of Agriculture, South Perth, WA, 6151, Australia.
E-mail: fdelima@agric.wa.gov.au*

ABSTRACT

In practice, a successful fumigation will satisfy the purpose for the treatment. If the treatment is of quarantine significance, a far higher standard is required than if it is for commercial purposes. Adults are generally easier to kill than immature stages, and require lower doses. Methyl bromide is a heavier gas and requires a lower standard of sealing in a container than phosphine. Fumigants like ethyl formate and carbon dioxide also require less gas-tight containers for short exposure periods. Fumigants that require longer exposure periods like phosphine and carbon dioxide require higher standards of gas-tightness to maintain toxic gas concentration. Fumigating empty containers requires greater sealing than for containers that are filled with produce, because in full containers, much of the gas is adsorbed and absorbed in the produce and released at a rate that maintains an equilibrium gas concentration. A toxic threshold gas concentration must be achieved at any point in a storage container where live insects are present and the concentration must be held for the required period of time to achieve kill. All fumigation, CA and MA gases are toxic to humans and occupational safety and health standards must be followed. Release of fumigants into the atmosphere after treatment must conform to environmental guidelines of designated distance and gas concentration.