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## Managing Resistance in a Single Fumigant Environment – An Industry Perspective

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**Abstract:** The CBH Group, the central grain storage and handling organisation in Western Australia, has been totally reliant on phosphine as its primary insect control strategy for over the last 20 years. This reliance has put the CBH Group in a precarious position should phosphine resistance develop to levels where control failures occur.

As a result the CBH Group, in collaboration with other industry and government bodies, developed a phosphine resistance management strategy to combat resistance development and extend the life of phosphine in Western Australia. This strategy can be broken down into a number of critical components including the development of fumigation protocols, resistance monitoring, implementation of the Phosure extension program, Research and Development, and a \$5 million Sealed Storage maintenance program. Furthermore a rigorous data capture, auditing and monitoring system has been implemented to measure the ongoing success of the strategy and compliance to the critical components.

This strategy has seen the maintenance of phosphine resistance at low levels within Western Australia.

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## Recent Developments in the Application of CYTEC Cylinderized Phosphine Fumigants for Timber, Logs and Horticultural Produce

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**Abstract:** ECO<sub>2</sub>FUME (2% phosphine and 98% carbon dioxide by weight) and VAPORPH<sub>3</sub>OS (99.3% phosphine) are two cylinderized phosphine fumigants which are currently used in many countries for the treatment of cereal grains, nuts and beans, dried fruits, tobacco, processed feeds and structural fumigation. Being cylinderized formulation of fumigants, they have the distinct advantages over the solid metal phosphides of being faster, safer and greener.

With the increased pressure to find alternatives to methyl bromide, CYTEC in recent years has embarked on expanding the applications of ECO<sub>2</sub>FUME and VAPORPH<sub>3</sub>OS to timber, logs and horticultural produce. Small scale and commercial scale trials were conducted on the treatment of major export commodities from New Zealand such as sawn timber, raw logs, kiwi fruit and apples. This paper describes the results of the trials in terms of efficacy, residue and quality. Fumigation protocols were established as optimum treatment for sawn timber, raw logs and kiwi fruit and apples and achieved a 100% efficacy for the specific target insect pests. There was no significant changes in the quality of the treated fruits. Residue levels of phosphine in the kiwi fruit and apples at 48 hours after treatment were far below the maximum residue limit of 0.01 mg/kg.