Title	Studies and commercial application of VAPORPH3OS phosphine fumigant for disinfestation
	of exported fruits and vegetables in South America
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Abstract

Postharvest treatment of exported fresh fruits and vegetables against insect pests can now be commercially done in a safe and practical way using VAPORPH3OS phosphine fumigant (99.3% cylindered pure phosphine and marketed as TK-Gas or F-Gas trade name in South America) in combination with the Horn Diluphos System (HDS) fumigation equipment. Use of cylindered pure phosphine offers many advantages such as complete kill of all stages of insects in 24-72 h, no-phytotoxic effect, no damage to the ozone layer (Montreal Protocol), no greenhouse effect (Kyoto Protocol), allows treatment at low temperatures during normal storage conditions, residue level below the maximum residue limit, and being more cost effective than conventional cold storage treatment or methyl bromide fumigation. This paper highlights efficacy, quality and residue studies using cylindered phosphine that served as supporting documents to the development and approval of fumigation protocols for exported fruits and vegetables from Chile. Since 2005, Fosfoquim SA has been providing funigation service using pure phosphine to many large fruit and vegetable exporting companies in Chile. Until now, more than 100 MT of methyl bromide have been replaced using VAPORPH3OS phosphine fumigant. A brief description is presented of the phosphine fumigation process from cool store preparation to gas injection and venting of phosphine gas by aeration. Exported fruit such as kiwifruit, apples, grapes, oranges and plums, among others from Chile treated with pure phosphine, are now shipped to over 25 developed and developing countries. The fumigation protocol for exported fruits using pure phosphine has now become a mandatory requirement for fruits exported from Chile to Mexico or Iran, and other countries are evaluating its application. Some trends and developments on future adoption in the developed countries such as USA and New Zealand are also presented.