

### **Abstract**

There is now an alternative for fresh fruit fumigation where cylinderised phosphine, free of ammonia, is used at low temperature for the effective control of fresh fruit pests without phytotoxic effect and with residue below the maximum residue limit of 0.01 mg/kg. The pure phosphine from VAPORPH<sub>3</sub>OS (99.3% Cylinderised phosphine from CYTEC) is blended and diluted safely with air using the Horn Diluphos System and applied directly to the fruits while in cold storage. The fumigation treatment which varies with the type of fruit is carried out using a phosphine concentration of 700-3500 ppm for a period of 36-72 hours and a temperature range of 1-15°C. This fumigation treatment is now commercially used in Chile for exported fruits such as apples, grapes, kiwis, etc, to control the main fruit pests such as mealy bugs, apple moth, eulia, fruit tree weevil, Mediterranean fruit fly, fruit fly, Chilean false spider, and thrips. Residue studies using ECO<sub>2</sub>FUME (2% phosphine, 98% CO<sub>2</sub>) in New Zealand on Pacific Rose apples at a treatment of 1500 ppm for 48 hours at 0-1°C showed phosphine residue of 0.09 mg/kg right after fumigation, no detectable after 48 hours, 5 days and 10 days. Further studies on a semi-commercial scale are needed to develop a valid protocol for the New Zealand apple industry.