

GASEOUS PHOSPHINE - A REVITALISED FUMIGANT

Robert F. RYAN,

*BOC Gases Australia Limited, PO Box 288, Chalswood, NSW 2067,
Australia.
Fax: 61299283919*

Phosphine generating formulations, commercially available for some fifty years, have made significant contributions to grain protection. A patented non-flammable gaseous phosphine formulation, Phosfume™, overcomes the flammable hazard associated with quick release of gaseous phosphine from metallic phosphide formulations and offers controlled dosing of phosphine to enable the expansion of traditional phosphine fumigation applications. The gaseous phosphine formulation is a compressed liquid gas mixture of phosphine and carbon dioxide dispensed through innovative equipment to deliver the appropriate gaseous phosphine flow required to satisfy a wide range of concentrations and exposure times (CT) options. Phosfume™ has been adopted by the Australian bulk grain authorities who have successfully treated in excess of 15 million tonnes of grains using traditional fumigation procedures in sealed storage and flow-through fumigation (Siroflo®) in non-gastight structures. International interest is intense with a number of countries actively planning adoption of this fumigation technique. The ability to deliver high concentrations of phosphine instantly has initiated investigation of the use of phosphine as a replacement of the "ozone depleting" methyl bromide in disinfestation treatment. The identification and elimination of contaminants formed by phosphine reacting with atmospheric oxygen uncovered new aspects of phosphorus chemistry the recently patented multi-component non-flammable compressed gas formulation developed to reduce production and dispensing costs of the liquefied gas mixture support gaseous phosphine as the revitalised fumigant.