

Alternative Method for Phosphine Fumigations – The Horn Diluphos System™ and Vaporph₃os™



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The Food Safety/Pest Management industry has seen an increasing trend in the agricultural grain and commodity markets to find creative and safer ways to help limit liability issues when performing essential fumigations to help protect commodities and manage stored product pests. Risk management analysis from insurers has played a major role in pressing for viable and safer alternative solutions when the fumigation tool becomes necessary in protecting these valuable commodities. The primary focus has been on targeting, phasing out, and prohibiting the associated risks of confined space entry by embracing available safer alternatives that avoid confined space entry, reduce the potential of fumigant ignition, and the potential fires that can be very dangerous, expensive, and devastating.

The Horn Diluphos System™ is a revolutionary fumigation application technology that safely and effectively blends pure cylinderized phosphine (Vaporph₃os™ - Cytec Industries, Inc.), directly with air to safe and effective levels of phosphine gas (10,000 ppm), well below the lower flammability limit (LFL) of 18,000 ppm. This safer and immediately available blended concentration of phosphine gas is directly injected from outside of the targeted structure without risk of ignition, and immediately is working to kill targeted insects. Exposure times are reduced as targeted insects are immediately exposed to phosphine. This unique introduction of phosphine avoids the potentially dangerous confined space entry usually required to professionally, safely and effectively apply the residue - producing solid metal phosphide formulations (tablets, pellets, and dust retaining packaging products). There are no residues generated in the Horn Diluphos System (HDS) application, neither solid nor liquid that would require the potential deactivation and/or disposal procedures and issues associated with solid metal phosphide products and to the phosphine generators that are currently available. Environmental hazards are reduced as only hydrogen phosphide is applied, which is readily deactivated by sunlight upon ventilation into the atmosphere. There are no ammonia or CO₂ emissions. The system relies on several safety mechanisms which have been proven safe and effective, even in serious incidents such as the loss of electrical power during the application procedure.

The Horn Diluphos System fumigation application technology has been widely tested and proven in applications to multiple storage facilities and structures, food processing mills, warehouses, flat storages, sea containers, silos, bins, steel tanks, ground piles, fumigation chambers, and various other structures in the fumigation of raw agricultural commodities, processed foods, animal feed and feed ingredients, as well as to nonfood commodities such as wood, dunnage, cotton and tobacco. The HDS equipment has been utilized in over 8000 cold storage fruit fumigations in Chile with great success. The HDS is widely used in Argentina, Australia, Chile, New Zealand, Uruguay, and in the United States.

There are currently four models of the HDS equipment that are configured to meet most fumigation size and application requirements. Several Food Protection Alliance™ member companies utilize and offer mobile self-contained HDS fumigation service utility trailers that can provide safe and effective fumigation service at your site.



FPA is an organization of regional companies formally organized to provide Pest Management/Food Safety/Fumigation/Alternatives and Fumigation & Product sales throughout North America. 1-877-FPA(372)-3334.