

California ProFume™ Update

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ProFume™ has been registered in California since May 2005, and has been used successfully in many different types of applications, across many different commodity sectors. All of the major rice mills have converted to using ProFume™ for treatment of their facilities where methyl bromide was once used. ProFume™ is currently the primary fumigant used in long-term rice storage, where *Rhyzopertha dominica* (Lesser grain borer) is a primary pest that is tolerant to phosphine fumigants, and methyl bromide regulations make it a prohibitive alternative. The dried fruit and tree nut industry is also finding that ProFume™ can be used very cost-effectively.

Many food processors have been pro-active in initiating alternative technologies in their operations where methyl bromide has been an integral part of their pest management program. As the transfer of technology takes place, periodic adjustments are necessary to create and implement an effective program. Over the last two years, we have found that ProFume™ is a very cost-effective alternative to methyl bromide. By analyzing data produced from the Fumiguide™ software program, a fumigator can adjust subsequent fumigations to use ProFume™ very efficiently. For example, when applying ProFume™ in a warehouse containing dried fruit, you can create a profile on that facility by using the monitoring data to generate accurate Half-Loss Time (HLT) measurements for the next fumigation. By knowing the exact HLT's, and by making sealing improvements to the facility, a substantial savings on fumigant can be realized. We have also found that ProFume™ aerates from commodities and facilities more rapidly compared to methyl bromide, and aeration times can be reduced and transferred to exposure time for ProFume™, which will reduce the dose requirements.

In April, a seed company needed to perform a fumigation for rodent control. This company had previously used phosphine, but experienced damage to electronic equipment, and methyl bromide couldn't be used due to its potential phytotoxicity on seed. Controlling rodents with ProFume™ requires a very low dose of 36 oz-hrs, so the company decided to try ProFume™, but targeted 70 oz-hrs to add a "safety factor". This 1.2 million cubic foot facility was constructed of corrugated metal with insulated walls and ceilings, and appeared to have a high level of gas retention. We conservatively estimated an 18 hour HLT, and applied 375 lbs of ProFume™ (5 oz/1,000 cubic feet). The warehouse's actual HLT ended up being 77.1 hours, and we accumulated 158 oz-hrs in less than 14 hours. For future fumigations, it was calculated that the dose could be decreased to 167 lbs. for a large cost savings.

A large nut processor recently expanded their facility to increase their handling capacity and built additional silos which will require fumigation with methyl bromide. After meeting with regulatory officials, it was determined that they could not increase their fumigation capacity if they continue to use methyl bromide due to the regulatory constraints and buffer zone requirements. After thorough analysis and consideration of alternative fumigants, it was determined that ProFume™ would meet their requirements for a quick turnaround time, and minimal buffer zones. By using "Precision Fumigation", they can accurately dose their silos, and minimize the amount of required fumigant resulting in smaller buffer zones. They are currently in the process of incorporating ProFume™ in their fumigation program.

Since the summer of 2005, *Rhizopertha dominica* has been a primary pest of stored paddy rice in Northern California. There have been dozens of facilities that have experienced multiple failures using phosphine fumigants, and methyl bromide is not a consideration for numerous reasons. We began using ProFume™ in 2005, and have successfully found application methods to apply ProFume™ in farm bins, silos, warehouses, and flat/bunker storage. ProFume™ has been extremely successful, and is now the preferred fumigant in the industry.

In summary, ProFume's™ "Precision Fumigation" concept has improved the overall quality of fumigations in California. Since ProFume™ received registration in 2005, we have successfully performed many different types of applications on a multitude of storage structures and facilities. By using the technical expertise of experienced fumigators, ten years of intensive field trials, and the support of Dow AgroSciences, we have found many ways to use ProFume™ effectively .