BEST PRACTICES--MONITORING FOR PRECISION FUMIGATION

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ProFume* gas fumigant (99.8% sulfuryl fluoride) is being developed as a methyl bromide alternative for postharvest insect control for the food processing industry. Using Precision Fumigation techniques, ProFume can be applied with fumigation flexibility allowing maximum productivity with minimal downtime. Through cooperative efforts with government and university researchers, food commodity groups and commercial fumigators in Europe and the USA, 26 empty mill fumigation trials have been conducted since 1996.

These trials investigated Precision Fumigation techniques to "optimize fumigant use by maximizing efficiency and minimizing risk". Precision Fumigation is achieved by integrating into the fumigation management plan factors affecting pest control, such as pest biology, temperature, exposure time, and enhanced sealing techniques to improve gas retention. Long-term availability of all fumigants will depend on our ability to use them wisely and efficiently.

A best practice of Precision Fumigation is monitoring area-specific gas concentrations within the fumigated space using a Fumiscope™ (Key Chemical and Equipment Co., Clearwater, FL). The Fumiscope Model D was recently improved with a patent pending system making the instrument more accurate by eliminating sample humidity fluctuation. By monitoring a fumigation, the fumigator can identify area-specific and overall gas Half-Loss Times (HLT) and confirm targeted gas Concentration x Time (CT) dosage accumulations. Also, the need for fumigant re-introduction to achieve a target CT can be determined. A low CT at any location may result in a lack of pest control, unless additional fumigant is introduced to correct these differences.

The Fumiguide* calculator is another best practice component of Precision Fumigation. This innovative computer-based program calculates dosages based on input from a wide range of fumigation variables. By tracking all inputs and monitoring data, the program helps fumigators customize and optimize a fumigation management plan to a specific situation. The Fumiguide can also be used to plan a fumigation scenario and record information for the actual job.

In summary:

- Dow AgroSciences continues to research, develop and promote “Precision Fumigation” techniques to “optimize fumigant use by maximizing efficiency and minimizing risk”.
- Current fumigation practices can result in non-uniform gas concentrations and subsequent unacceptably low CT dosage accumulations within a fumigated space.
- Well-planned fumigant monitoring (quantity and placement) with the Fumiscope Model D permits the fumigator to identify CT dosage accumulation across the fumigated space.
- By inputting monitoring data into the ProFume Fumiguide, real-time adjustments to the fumigation management plan can be made ensuring targeted pest population control.
- Thorough preplanning followed by critical review of past fumigation experience are the keys to continuous fumigation process improvement yielding cost savings and enhanced safety.

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ProFume is not available for sale. EPA registration is pending.