

USING ECO2FUME PHOSPHINE FUMIGANT, HEAT AND CO2 FOR STRUCTURAL FUMIGATION OF A FOOD PLANT

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Due to the proposed 2005 phaseout of the food industry's most common structural fumigant, methyl bromide, our industry is under intense pressure and timing to find a safe, viable, legal and cost effective replacement(s.) To date, there are no one-for-one methyl bromide replacements that are labeled by EPA. However, Pillsbury continues to drive and lead efforts, with non-financial support of private fumigation companies, to find effective alternatives. Eco2Fume may fill a void.

Eco2Fume phosphine fumigant is a recently EPA labeled product available in 205 pound high-pressure cylinders. It is 98% CO₂ and 2% phosphine gas. Cytec Industries, Inc. of West Paterson, NJ manufactures and markets this product globally. Eco2Fume was developed in Australia where over 12 million metric tons of wheat/year are fumigated. In August 2000, Eco2Fume received full EPA registration. This flour mill/warehouse site of Pillsbury was offered as the first such site fumigated in the U.S. with Eco2Fume in combination with the patented (no. 5,403,597 Fumigation Service & Supply, Inc. Indianapolis, IN.) combination method of using heat and CO₂. To use Eco2Fume, the certified applicator must also attend/"pass" Cytec's product stewardship program to receive a certification card/number in order to purchase/use Eco2Fume.

In December 1997, a Board level decision was made at Pillsbury to stop the further use of methyl bromide in Pillsbury-owned facilities. Pillsbury has continued to be successful in effective structural stored product insect control by using a scientific performance based Integrated Pest Management Program including proper sanitary design of equipment/buildings, detailed sanitation procedures, GMP's, targeted use of EPA labeled pesticides, detailed inspections and heat (Heaps, 1994, 1996, Heaps and Black, 1996 and Burks, et. al., 2000.) None of these are cure alls nor do they fit all needs all the time.

On the other hand, we know that phosphine is effective against stored product insects but has not traditionally been used as a structural fumigant due to corrosion concerns. The highlight of Eco2Fume is that it uses a relatively "low" phosphine PPM. concentration that is strictly monitored to help manage corrosion concerns. It must be noted however that this corrosion is cumulative and occurs over a period of time. The use of

phosphine for structural fumigations must only be used when needed and other alternatives are not effective/viable.

Actual field data with “real life” Eco2Fume fumigations is being generated now and our industry continues to stay tuned to their results. It must be emphasized that one does not use this material like the currently EPA labeled Magtoxin, Fumicel, or Phostoxin brand phosphine fumigants! Do not expect to purchase it and use Eco2Fume without special technical training and familiarity. Stewardship and hands-on training is essential with Eco2Fume.

This work shows that Eco2Fume phosphine fumigant/heat/CO₂ can be used in a “controlled” fumigation to attain needed stored product insect efficacy at a competitive cost to methyl bromide. Pillsbury will continue to test/use this fumigation technique in other plants as applicable. It will NOT be used as a one-for-one methyl bromide replacement but viewed as another “option” available in a scientific performance based Integrated Pest Management Program.