UPDATE ON THE DEVELOPMENT OF SULFURYL FLUORIDE AS AN ALTERNATIVE TO METHYL BROMIDE

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ProFume* gas fumigant (containing 99.8% sulfuryl fluoride) is under development by Dow AgroSciences as an alternative to methyl bromide for the control of stored product insect pests in food processing, milling and storage. Sulfuryl fluoride has proven to be an ideal fumigant for structural fumigation due to its low boiling point, excellent penetration qualities, low reactivity potential and rapid aeration.

Biology research is underway to define dosages and treatment practices to optimize the control of all life stages of key stored product insect pests. Some of the pests included in the research are: red flour beetle (*Tribolium castaneum*), saw-toothed grain beetle (*Oryzaephilus surinamensis*), Mediterranean flour moth (*Ephestia kuehniella*) and Indian meal moth (*Plodia interpunctella*). Efficacy studies are being conducted in cooperation with the USDA-ARS, Central Science Laboratory in the UK and the Federal Biological Research Center for Agriculture and Forestry in Germany.

Fumigation of wheat and rice mills have been conducted in multiple locations within the United States, Germany, UK and Italy to further refine fumigant dosages and to gain a better understanding of the inter-relationship between target fumigant dosages and real-world environmental and structural conditions to optimize fumigation practices.

Food quality and residue studies have been conducted on a variety of commodities including dried fruits and tree nuts and three cereal grains: wheat, rice and corn. Food tolerances are expected which will permit the fumigation of these commodities.

Sulfuryl fluoride is currently approved by both USDA-APHIS and AQIS as a quarantine treatment for beetles and termites in wood products. Research trials currently being conducted by USDA-ARS will determine the sulfuryl fluoride quarantine dosage for the Asian Long Horned Beetle (*Anoplophora glabripennis*). Additional cooperative research is underway with the Japanese fumigation industry and government quarantine officials to assess the potential for sulfuryl fluoride to control log-infesting beetles under their specific fumigation conditions.

Keywords: Sulfuryl fluoride, fumigation, stored product insect control, quarantine

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ProFume is not available for sale. EPA registration pending.