13544

025951

Chemical:	**Sulfuryl fluoride**
PC Code:	**078003**
HED File Code	**12000 Exposure Reviews**
Memo Date:	**05/15/2001**
File ID:	**DPD274960**
Accession Number:	**412-02-0010**

HED Records Reference Center
01/04/2002

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OPP OFFICIAL RECORD
HEALTH EFFECTS DIVISION
SCIENTIFIC DATA REVIEWS
EPA SERIES 361

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

May 15, 2001

MEMORANDUM:

pc code 078003

SUBJECT: **Sulfuryl Fluoride** (078003): Residential Risk from Dissipation of Sulfuryl Fluoride after Structural Fumigation (62719-EUP-45) **DP Barcode No.** 274960 **MRID No.** none

FROM: Becky Daiss, Environmental Health Scientist Becky Daiss
Reregistration Branch 4
Health Effects Division (7509C)

THROUGH: Susan V. Hummel, Branch Senior Scientist Susan V. Hummel
Reregistration Branch 4
Health Effects Division (7509C)

TO: Steven Weiss
Registration Action Branch 2
Health Effects Division (7509C)

This memorandum provides an assessment of residential risk from exposure to sulfuryl fluoride SF following reoccupation of a treated home. RRB4's analysis of existing data provides sufficient evidence to show that risks to residents from exposure to (SF) resulting from home fumigation is negligible. Therefore, we do not believe that a more detailed assessment of risk to residents is necessary.

RRB4's assessment of negligible residential risk is based on studies submitted by the registrant (DowElanco) which indicate that SF levels present at the time of residential reoccupation will dissipate to concentrations below levels of concern within about 24 hours of reentry. This conclusion is based largely on a study of 10 homes conducted by the registrant (8/11/92 - No MRID). The results of this study showed that re-entry concentrations of between 1.4 and 4.2 ppm dissipated to below 0.25 ppm within periods ranging from 8 to 27 hours. Ambient concentrations for the study were measured using a Miran 101 portable infrared gas detector. The maximum limit of detection (MLD) achievable with the Miran 101 is 0.25 ppm according to the unit manufacturer, Foxboro Analytical. It is important to note that the MLD of 0.25 ppm can be achieved only under controlled conditions with equipment that has been carefully calibrated and used by an experienced analytical chemist. Measurements taken by

workers in the field will generally be less precise. For routine field measurements, the limit of detection will be about 1-2 ppm. For the 10 home study conducted by DowElanco, concentrations were measured and recorded down to the 0.25 ppm MLD of the Miran portable unit.

Findings of the 10 home study regarding the rapid dissipation of post-fumigation SF concentrations are supported by a second study of 8 houses, also conducted by DowElanco (8/17/92 - No MRID). This study indicated that SF concentrations decline rapidly under poor aeration conditions (all doors and windows closed). In this study, relatively high concentrations of SF (up to 50 ppm) dropped to < 0.5 ppm (as measured with Interscan and/or Miran 101 portable detectors) in all 8 structures within a 24 hour period. Half-loss time determined from this study was 1.5 - 4 hours.

The current label specifies that a fumigated structure may not be re-occupied unless the SF concentration is 5 ppm or less. The 5 ppm re-occupancy ceiling combined with study results and the fact that relatively rapid dissipation to 0 is to be expected based on the physical/chemical properties of gases, provides sufficient basis for a negligible residential risk determination.

An additional consideration is the fact that, based on analysis of workers exposed while performing fumigation activities for a proposed SF Experimental Use Permit (EUP), HED intends to recommend that the worker re-entry SF concentration be reduced from 5 to 1 ppm for the experimental use (fumigation of walnuts and raisins). It is likely that, based on the EUP analysis, and a reassessment of occupational exposure from structural fumigation, HED will also recommend that the worker reentry level for structural treatment be reduced to 1 ppm. The residential reoccupation level will also likely be reduced to 1 ppm as a consequence. Adoption of a 1 ppm reoccupation level would provide an added measure of confidence that risks to residents from fumigation of homes with SF are negligible.