

US EPA ARCHIVE DOCUMENT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUL 28 1992

OFFICE OF
PESTICIDES AND TOXIC
SUBSTANCES

MEMORANDUM

SUBJECT: EVALUATION OF PRELIMINARY AIR MONITORING DATA FOR
STRUCTURAL FUMIGATION WITH SULFURYL FLUORIDE

TO: Lois Rossi, Chief
Reregistration Branch
Special Review and Reregistration Division (H7508W)

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THRU: Steve Knott, Acting Head *Steve Knott*
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Please find below the OREB review of

HED Project #: _____

RD or SRRD Record #: _____

Caswell #: _____

Date Received: 7/14/92 Review Time: 2 days

Date Returned: 7/29/92

Deferral to: ___ Biological Analysis Branch/BEAD

___ Chemical Coordination Branch

___ TB - I

___ TB - II

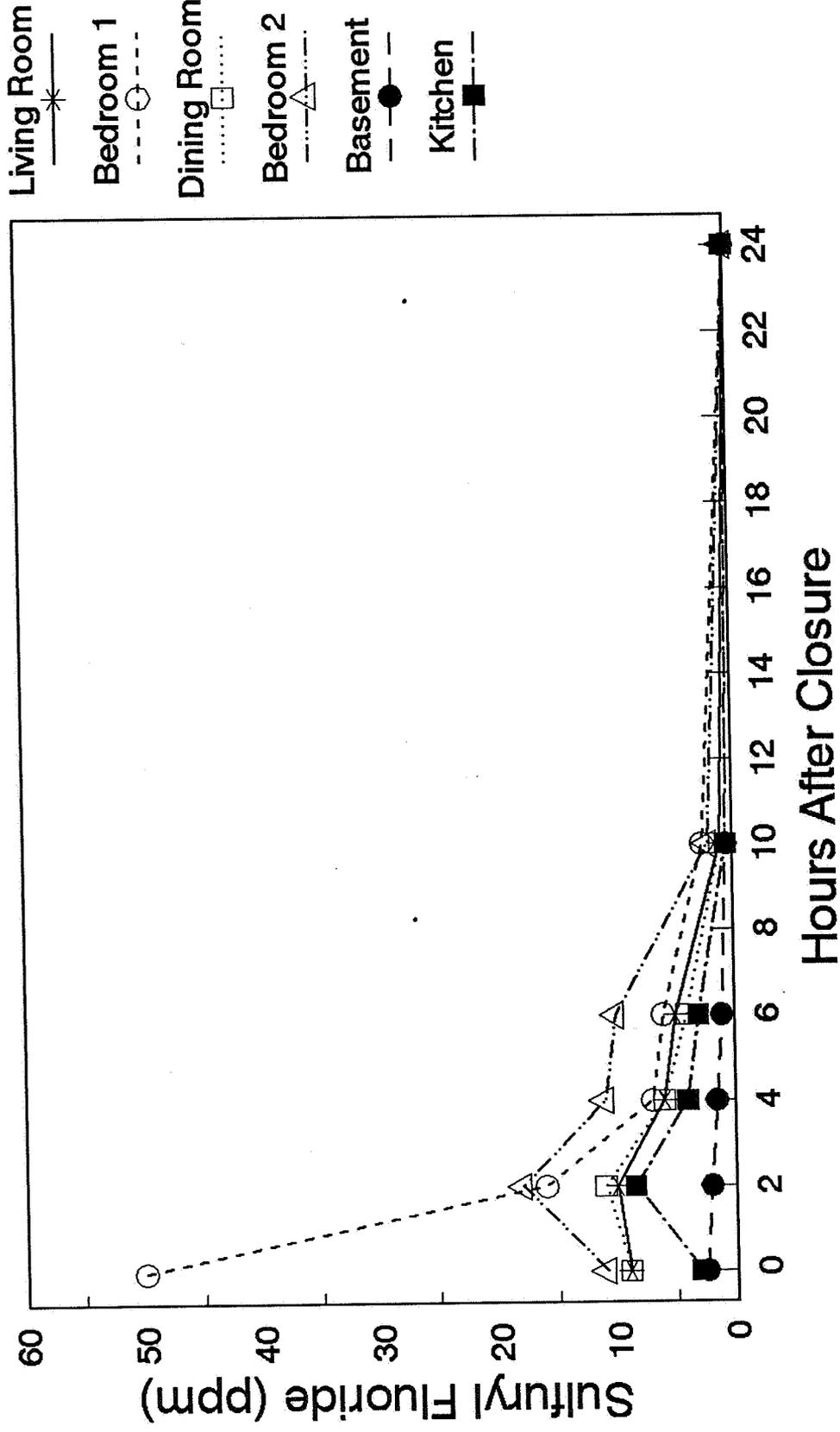
1.0 INTRODUCTION

Sulfuryl fluoride (VIKANE) is an odorless gas used to fumigate structures for control of dry wood termites and powder post beetles. The structure is covered with a tarp and the gas introduced through a closed system. The concentrations of gas in the structure are monitored with a Fumiscope. The fumigation period begins when monitors located in different parts of the building consistently yield the same value, indicating that an equilibrium has been reached. The fumigation period is typically about 24 hours. Following fumigation the tarp is removed and the structure aerated to a level of 5 ppm or less. The structure is then closed up and any residual levels are allowed to reach equilibrium. If this equilibrium value exceeds 5 ppm, the structure is again aerated and the concentrations monitored. This procedure is repeated until equilibrium concentrations do not exceed 5 ppm.

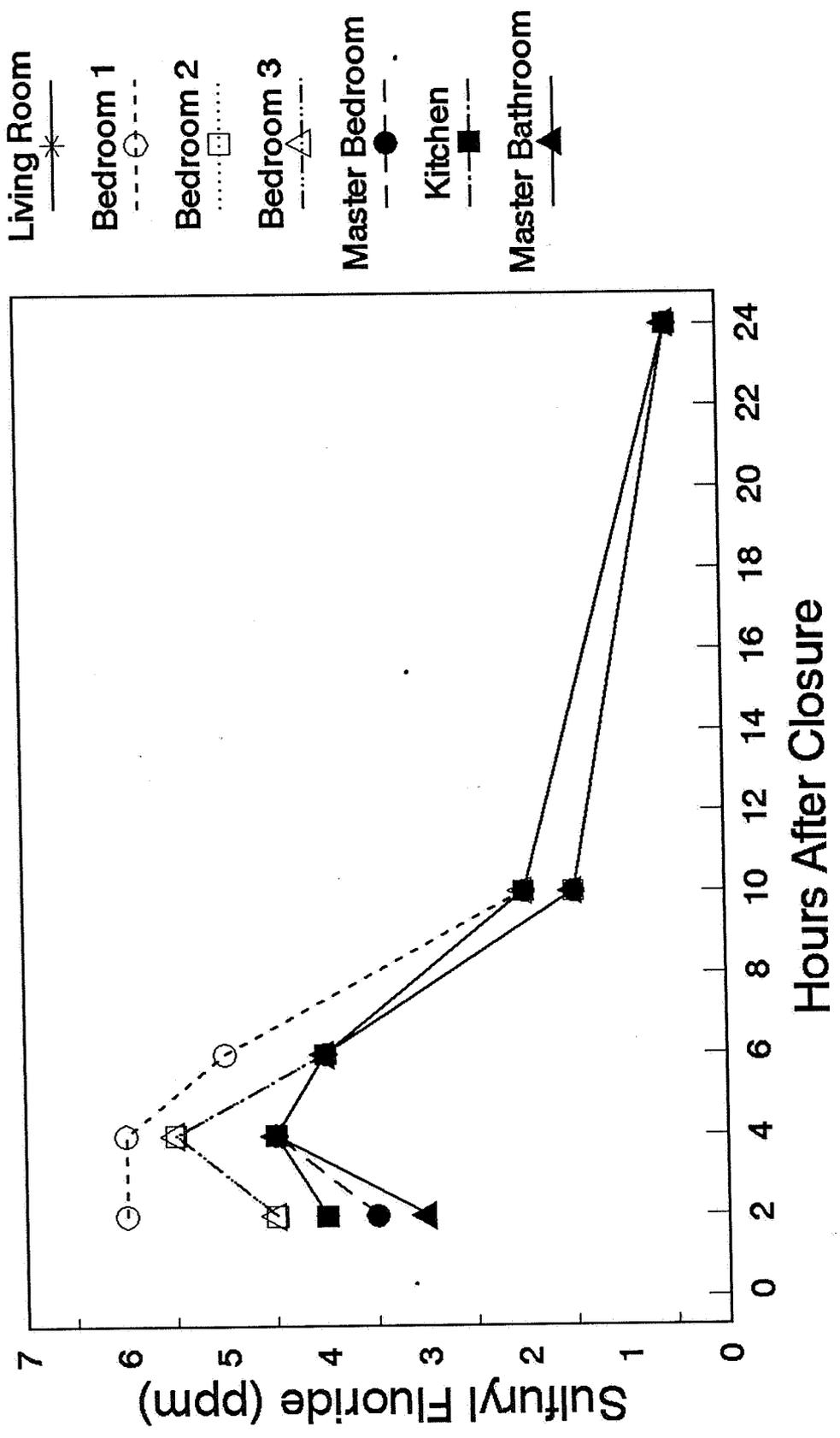
2.0 CONCLUSIONS

OREB has been requested to provide a preliminary data review for air monitoring data addressing the levels of sulfuryl fluoride remaining in structures treated with this fumigant. The submission consists of field notes from an ongoing study measuring the levels in a number of treated homes. OREB emphasizes that this assessment is based on very limited data and that quality assurance information, other than that associated with the field treatment sheets, is not available. OREB has requested additional confirmatory data and expects this information to be submitted by the registrant in the near future. OREB will review any additional data following completion of this study. The treated homes were designated numbers 501 to 504 to allow future combination with other air monitoring data for this compound. The air monitoring data for the four individual houses are presented graphically in the attached charts and in Table 1. The exact time of sampling varied from house to house. Samples were classified by the next hourly interval or, in the case of samples taken less than 2 hours after closure, the measurement closest to 2 hours was used. Of the twenty five samples collected at or near 24 hours after closure of the structures, three were at a level of 1 ppm. All others read either zero or 0.5 ppm, levels below the operational sensitivity of the instrument. OREB has used a concentration of 0.5 ppm (500 ppb) for exposure calculations. Dissipation of the gas would be expected to continue and it must be realized that these concentrations are probably artifactually high and the Margins of Exposure (MOEs) resulting from these levels may overestimate the risk to occupants following fumigation of the structure. The estimated daily exposures of individuals occupying these homes are presented in Table 2.

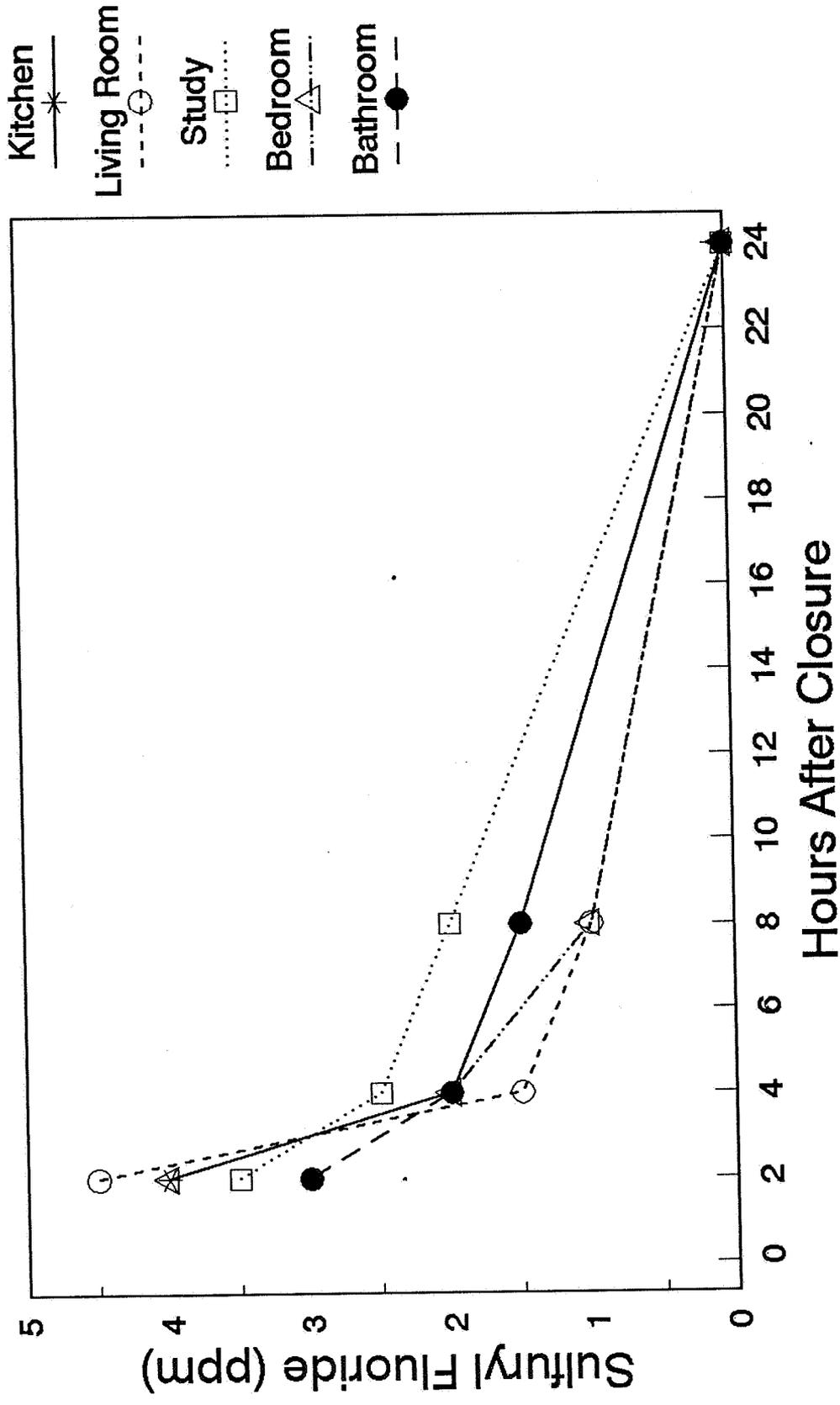
Sulfuryl Fluoride Concentrations in House 501 After a Single Aeration Followed by Closure



Sulfuryl Fluoride Concentrations in House 502 After a Single Aeration Followed by Closure



Sulfuryl Fluoride Concentrations in House 503 After a Single Aeration Followed by Closure



Sulfuryl Fluoride Concentrations in House 504 After a Single Aeration Followed by Closure

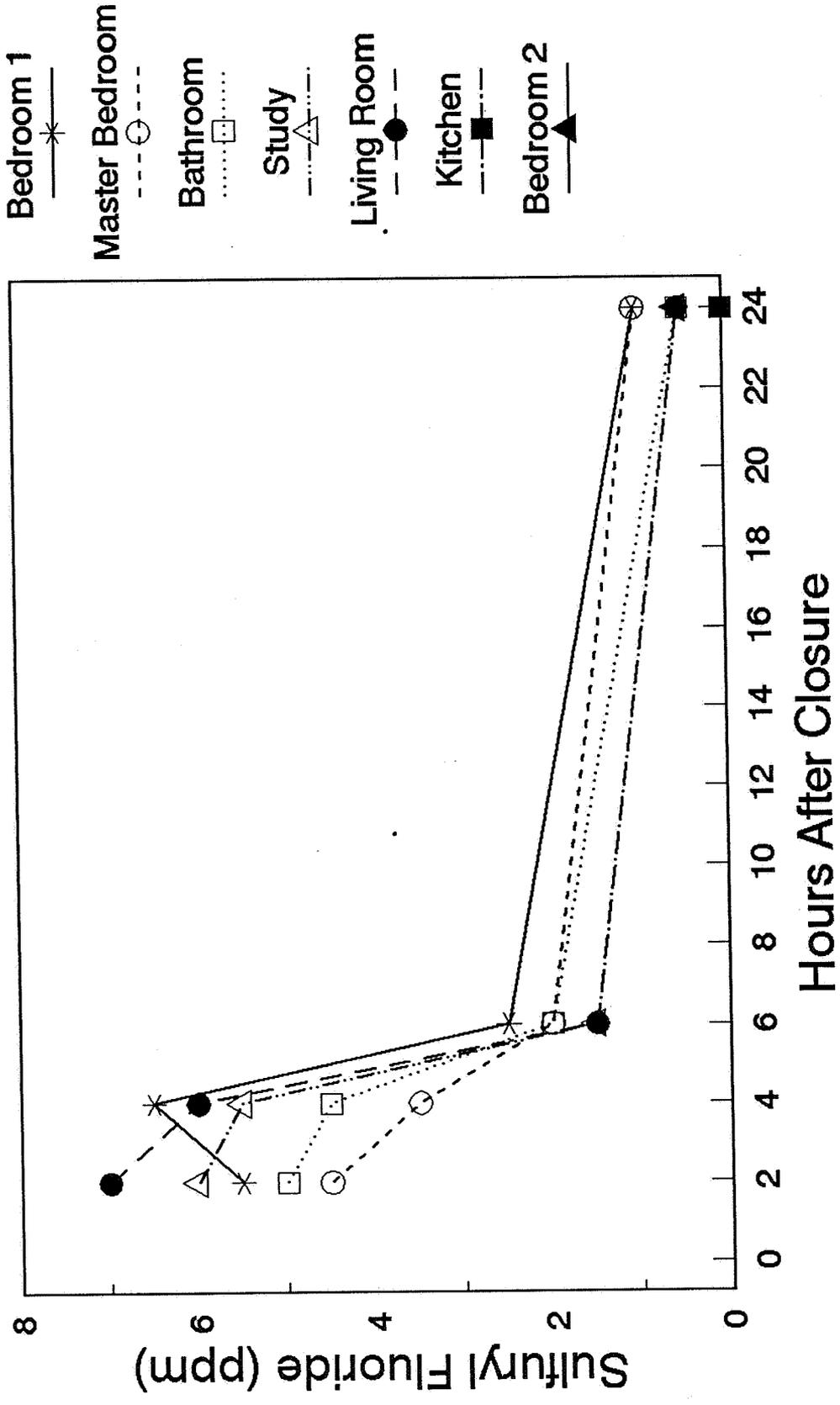


Table 1. Average Concentrations of Sulfuryl Fluoride in the Rooms of Homes Treated with the Fumigant During DowElanco Air Monitoring Study. Preliminary Information Only. Rooms are not sorted by treated house or type of structure.

	Time Category (Hrs) ¹									
	0	1	2	3	4	5	6	7	10	24
Basement	2.5	2.0	2.0	3.3	1.5	1.0			0.5	0.0
Bathroom		3.0	3.0	6.0	2.0	2.0		1.5		0.3
Bedroom 1		4.3	6.0				5.0		2.0	0.5
Bedroom 2		3.2	4.5	5.5			4.0		1.5	0.5
Bedroom 3		3.2	4.5	5.5			4.0		2.0	0.5
Dining Room	9.0	11.0	11.0		6.0	4.0			1.0	0.0
Front Bedroom	50.0	21.7	16.0	6.5	7.0	4.3			2.5	0.5
Kitchen	3.0	3.4	5.5	4.0	3.0	2.3	4.0	1.5	1.3	0.3
Living Room	9.0	5.8	6.2	4.2	3.8	3.3	4.0	1.0	1.5	0.3
Master Bathroom		2.0	3.0	4.5			4.0		1.5	0.5
Master Bedroom		2.8	3.5	4.0		2.0	4.0		1.5	0.8
Middle Bedroom		10.7		9.5		3.0				1.0
Study		3.5	3.5	4.3	2.5	1.5		2.0		0.3
Average	14.1	6.8	6.3	4.6	4.1	3.3	4.1	1.4	1.5	0.3

¹ Categories were determined by classifying samples in the next hourly time interval. That is, a sample taken after 1.5 hours would be classified in the 2 hour group, etc.

Table 2. Estimated Daily Exposures of Residents of Homes Fumigated with Sulfuryl Fluoride. Sulfuryl Fluoride is assumed to remain at a level of 0.5 ppm (500 ppb).

Sex	Body Weight (kg)	Respiratory Volume (m ³ /day)	Hrs per Day	mg/m ³	Exposure (mg/kg/day)
Males	70	21	24	2.1	0.63
Females	60	12	24	2.1	0.42

3.0 DESCRIPTION OF TREATMENT

Structures in this ongoing study were treated with sulfuryl fluoride in the usual manner at customary commercial application rates. The aeration procedures, however, were altered for the purposes of this study to provide an exposure scenario that would exceed the levels expected with the label required aeration procedures. After aeration of the treated structures to a level of 5 ppm or less the houses were closed. They remained closed for a period of 24 hours. Air concentrations are measured at intervals over this 24 hour period, the exact intervals depending on the house being monitored. A final measurement was taken after 20-24 hours. All measurements were taken using an Interscan or Miran infrared spectrophotometer. The registrant has indicated that these instruments have a working level of detection of about 1 ppm. A level of 0.5 ppm (500 ppb) was used for exposure calculations.

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