APPENDIX J

EVALUATION OF POTENTIAL SUBCHRONIC EXPOSURE TO METHYL BROMIDE USING PESTICIDE USE REPORT DATA

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Peter M. Rooney
Secretary for Environmental Protection

Department of Pesticide Regulation

James W. Wells, Director
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Pete Wilson
Governor

MEMORANDUM

TO: John Ross, Senior Toxicologist
Worker Health and Safety Branch
Department of Pesticide Regulation

FROM: Sally Powell, Senior Environmental Research Scientist Sally Powell
Worker Health and Safety Branch

DATE: December 16, 1998

SUBJECT: ADDENDUM TO MEMORANDUM TO JOHN ROSS DATED JULY 31, 1998, RE: EVALUATION OF POTENTIAL SUBCHRONIC EXPOSURE TO METHYL BROMIDE USING PESTICIDE USE REPORT DATA

This is an addendum to the evaluation of potential offsite subchronic exposure to methyl bromide reported in my July 31 memo to you (attached). In that evaluation I estimated the number of exposure days (defined as days when gas may be present in the air) per section for the 74 sections with 5 or more applications within a 3-month peak use period in 1995. The number was calculated using the dates of the actual applications and assuming that methyl bromide gas would be present for 7 days after each application. Seven days of off-gassing were assumed because permit conditions require most treated fields to be under tarps for 5 days. Gas is known to escape during the time a field is tarped, so at a minimum gas is expected to be present during 5 days. It can reasonably be expected that gas will continue to escape for at least 2 more days after tarp removal, but because no off-gassing interval has been agreed upon for methyl bromide, I have included in this memo the number of exposure days under 5- and 6-day off-gassing assumptions as well as 7 days.

It should be noted that these estimates have a bias toward being too low. Randy Segawa pointed out that the number of application days reported in the PUR understates the actual number for strawberry fields in Monterey County. This is due to the current practice of spreading the treatment of a single field over several days in order to satisfy permit restrictions; because only one field is involved, only

one application date is reported. More than half the sections with 30 or more exposure days are in Monterey County (under any off-gassing assumption), and in September-November 1995, 85 % of the agricultural applications of methyl bromide in that county were to strawberries.

Frequency distribution of exposure days per section during peak 3-month use periods in 74 sections with five or more applications in 1995.

Number of days gas is present	Assumed off-gassing interval (days)		
	5	6	7
	freq		
< 20	37	29	20
20 - 24	15	14	16
25 - 29	8	14	10[a]
30 - 34	5	4	12[b]
35 - 39	1	4	5[c]
40 - 44	5	2	3[d]
45 - 49	0	4	2
50 - 69	2	2	5
76	1		
86		1	
93			1

[a, b, c, d] In the original memo, these values were erroneously reported as 9, 13, 4 and 4, respectively.

Thus, depending on the off-gassing interval, 14, 17 or 28 sections would have methyl bromide gas present for 30 or more days during the 90-day period.

Attachment: Memo to John Ross from Sally Powell dated July 31, 1998

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SUBJECT: EVALUATION OF POTENTIAL SUBCHRONIC EXPOSURE TO METHYL BROMIDE USING PESTICIDE USE REPORT DATA

As you requested, I evaluated the potential for subchronic (defined as at least 30 days in any 90-day period) exposure to methyl bromide, using a dataset provided by Bruce Johnson and Yihua Lin of EMPM. Yihua extracted PUR data on methyl bromide applications, excluding commodity and structural fumigations, in the four counties with the greatest total pounds applied in 1995. For each of those counties they selected the three consecutive calendar months accounting for the greatest proportion of total use in the county that year.

Offsite exposure

Offsite exposure was evaluated on a section-by-section basis. The top four counties and peak 3-month periods were Fresno (Oct.-Dec.), Kern (July-Sept.), Monterey (Sept.-Nov.) and Ventura (July-Sept.). A total 1137 applications were made in 366 sections during the peak periods in these four counties. In 49 sections (13%), 6 or more applications were made during the peak period.

Frequency distribution of methyl bromide applications per section (peak 3-month period in 1995).

Number of applications	*freq*	Number of applications	*freq*
1	153	11	2
2	59	12	4
3	46	13	2
4	34	14	1
5	25	15	1
6	9	17	1
7	13	18	1
8	6	20	1
9	5	29	1
10	2		

I estimated the number of exposure days per section by using the actual dates of applications in the 74 sections having at least 5 applications, and assuming that methyl bromide gas would be present for 7 days following each application. Treated fields must be under tarps for 5 days according to current permit conditions. No off-gassing interval has been agreed upon for methyl bromide, but gas does escape during the time the field is tarped, and it can reasonably be expected to escape for at least 2 more days after tarp removal.

Exposure days in peak 3-month use period.

Number of days	*freq*
< 20	20
20 - 24	16
25 - 29	9
30 - 34	13
35 - 39	4
40 - 44	4
45 - 49	2
50 - 69	5
90	1

Of 29 sections having 30 or more exposure days in the 3-month period, 17 were in Monterey County, 9 in Ventura, 3 in Fresno and none in Kern County.

These numbers suggest that we should pursue the assessment of subchronic offsite exposure in Monterey County, and possibly in Ventura County as well. If a distribution of seasonal average concentrations in ambient air for the 17 sections can be developed, the exposure assessment can be done using the program previously used for 1,3-dichloropropene. Bruce Johnson has told me that it would be possible to develop the distribution using the ISCST3 model, although it would be a lot of work and require quite a bit of time.

Applicator exposure

The PUR database does not include the applicator identification number (only the grower i.d. for the owner of the treated property). It cannot, therefore, be used to evaluate potential exposure to individual applicators. The use reports themselves do include the applicator i.d., so the information could be obtained by going to the individual counties, searching through the paper files and hand-tabulating information. This would be a great deal of work, which I do not think would be justified, since the applicator i.d. number pertains to a company and thus is only a surrogate for identifying individual persons.

In order to find out about individual exposures, we will probably have to go to the pest control operators. Apparently, Tri-Cal is doing most of the methyl bromide field applications now, so it could be relatively easy to obtain the information. Monterey County had the greatest number of applications, 521 between September and November 1995. The fact that one company is doing most of the applications makes it likely that individual applicators will have more than 30 days of exposure. I suggest that we try to get Tri-Cal's employee records from Monterey County for September through November of last year.