



Department of Pesticide Regulation



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MEMORANDUM

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TO: Joe Frank, Senior Toxicologist
Worker Health and Safety Branch **HSM-01004**

FROM: Sally Powell, Senior Environmental Research Scientist
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DATE: February 9, 2001

SUBJECT: EXPOSURES TO METHYL BROMIDE BASED ON ARB 2000 MONITORING IN
MONTEREY/SANTA CRUZ AND KERN COUNTIES

Methods

Before calculating the exposures, one-half the detection limit was substituted for two Kern County samples that were below the detection limit. (No samples in Monterey/Santa Cruz were below the quantitation limit.) The detection limit for methyl bromide was 7.1 ng/m³ (0.00182 ppb). Further, where there were pairs of colocated samples for the same day, the two values were averaged.

All exposures are expressed as air concentrations in ppb.

Acute (24-hr) exposure

For each monitoring site separately, the maximum and the 95th percentile of all daily (24-hr) monitoring samples are given. The 95th percentile is calculated using lognormal methods:

$$95^{\text{th}} \text{ \%ile} = \exp\{\text{arithmetic mean of log concentrations} + t_{(.95; n-1)} * (\text{sd of logs})\}.$$

Short-term (7-day) exposure

For each monitoring site separately, the maximum and the 95th percentile of the weekly mean concentrations are given. Each weekly mean is calculated as the arithmetic mean of the 2, 3 or 4 24-hr samples taken at a site during the week (i.e., nonmonitoring days are ignored). The 95th percentile of weekly mean concentrations is calculated using normal methods:

$$95^{\text{th}} \text{ \%ile} = \text{arithmetic mean of week means} + t_{(.95; n-1)} * (\text{sd of week means}).$$

Seasonal (7- or 8-week) exposure

For each monitoring site separately, seasonal exposure is the mean concentration over the monitoring period. It is calculated as the arithmetic mean of the 8 (7 in Kern Co.) weekly means calculated as above for 7-day exposure.

Results

Plots of 24-hr concentrations by day at each site are attached. Acute, short-term and seasonal concentrations are presented in Table 1.



Table1. Methyl bromide concentrations (ppb) based on ARB 2000 monitoring in Monterey/Santa Cruz and Kern Counties.

Site	n days	Daily		Weekly		8-wk	
		Maximum 24-hr	95 th percentile 24-hr	Maximum weekly mean	95 th percentile weekly mean	Mean of weekly means	
Monterey/Santa Cruz Counties (8 monitoring weeks, Sept-Oct 2000)							
		----- ppb -----					
CHU	31	2.41	2.26	1.61	1.63	0.644	
LJE	30	24.0	18.5	10.5	11.1	3.79	
OAS	31	1.84	1.21	1.01	0.918	0.387	
PMS	31	30.8	30.2	15.5	17.1	7.68	
SAL	31	7.91	6.17	3.01	3.14	1.29	
SES	31	16.4	12.2	8.30	7.45	2.60	
Kern County (7 monitoring weeks, July-Aug 2000)							
		----- ppb -----					
ARB	25	0.996	0.556	0.507	0.507	0.189	
CRS	24	14.2	25.4	4.59	5.54	2.16	
MET	26	0.224	0.239	0.145	0.163	0.084	
MVS	26	0.487	0.262	0.201	0.195	0.092	
SHA	26	3.52	3.98	1.77	2.05	0.792	
VSD	26	0.347	0.292	0.175	0.181	0.099	

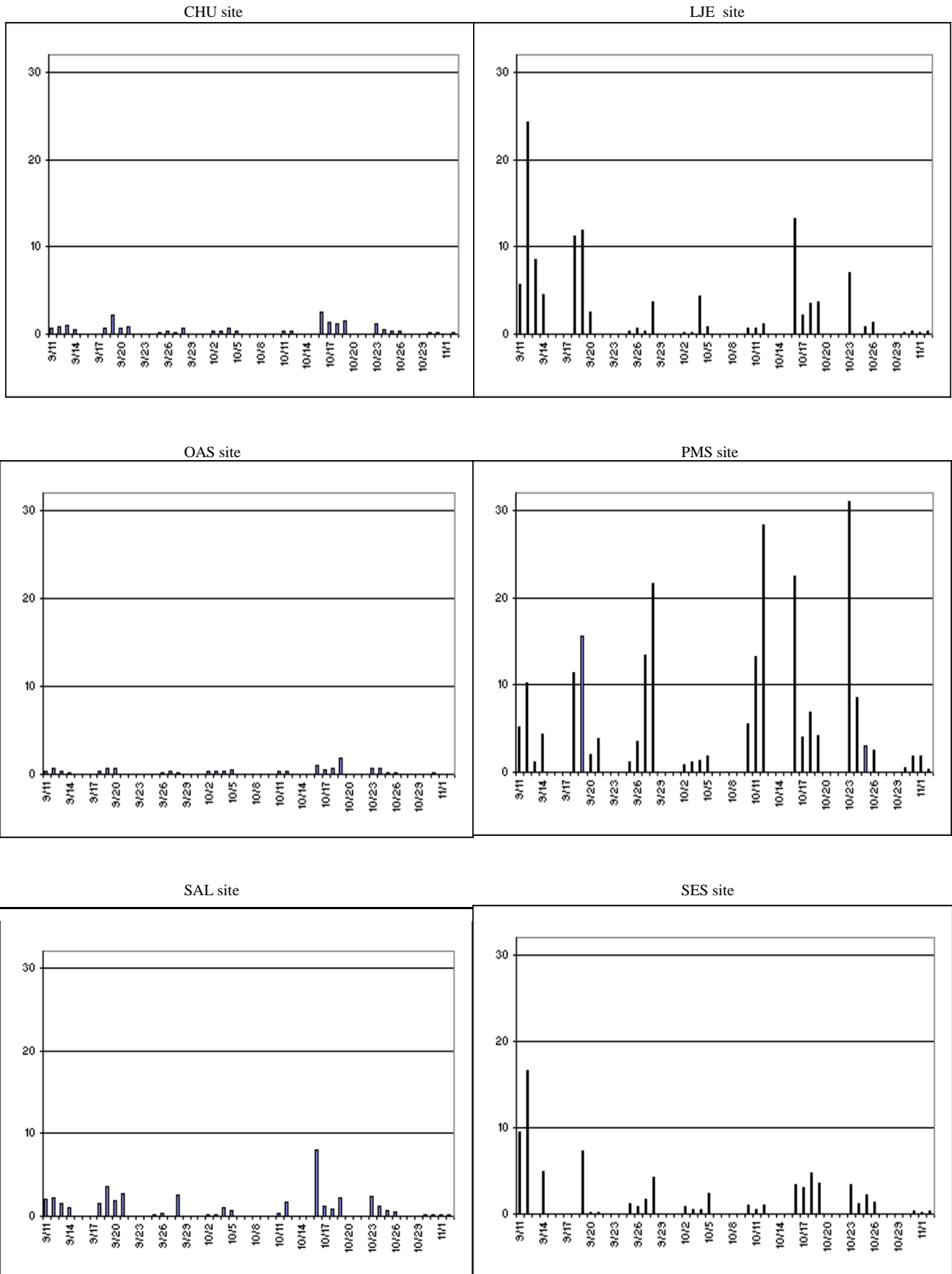
Exposure appraisal

The average concentrations presented here are based on limited monitoring data and must be considered as having some degree of uncertainty. Each site is a single geographic point, monitored only 3-4 days per week for a relatively short period. The representativeness of the monitored locations and times is unknown. Further, the timing and location of nearby methyl bromide applications will influence the concentrations, and they are not yet known for the monitoring period.

cc: Tom Thongsinthusak
 Lori Lim
 Randy Segawa

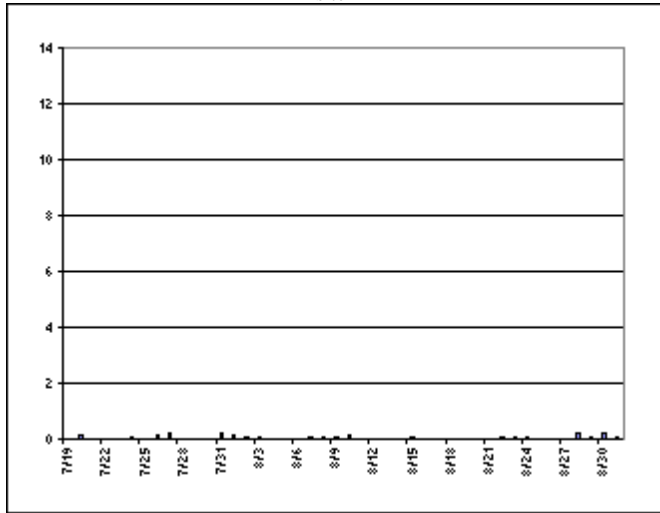
Attachments

24-hr methyl bromide concentrations (ppb) by monitoring date in Monterey/Santa Cruz Counties, Fall 2000

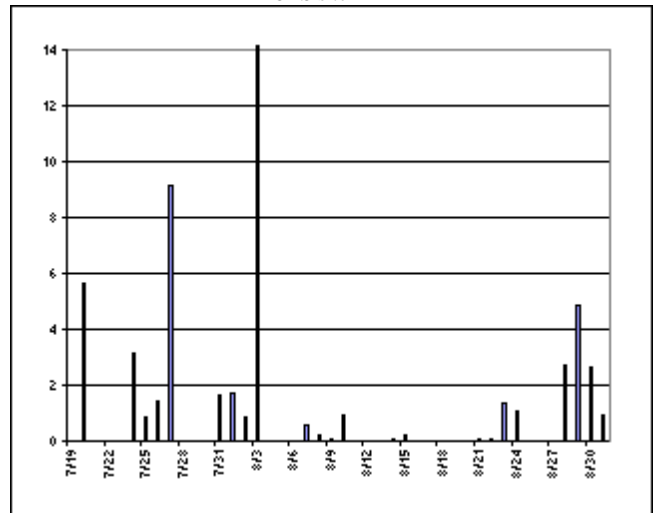


24-hr methyl bromide concentrations (ppb) by monitoring date in Kern County, Summer 2000

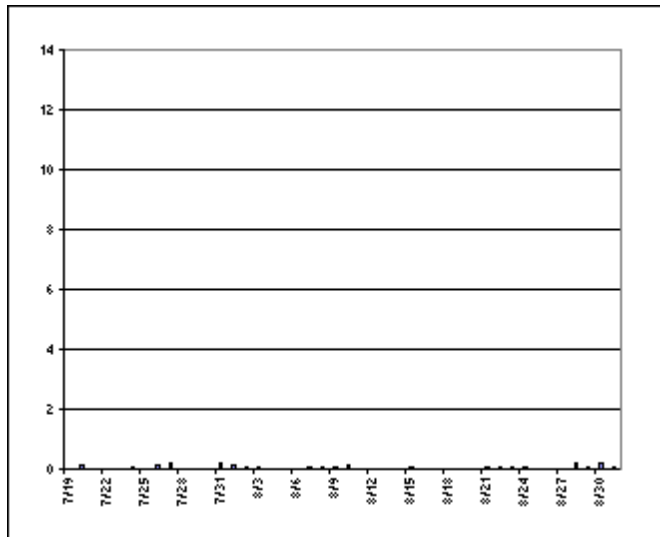
ARB site



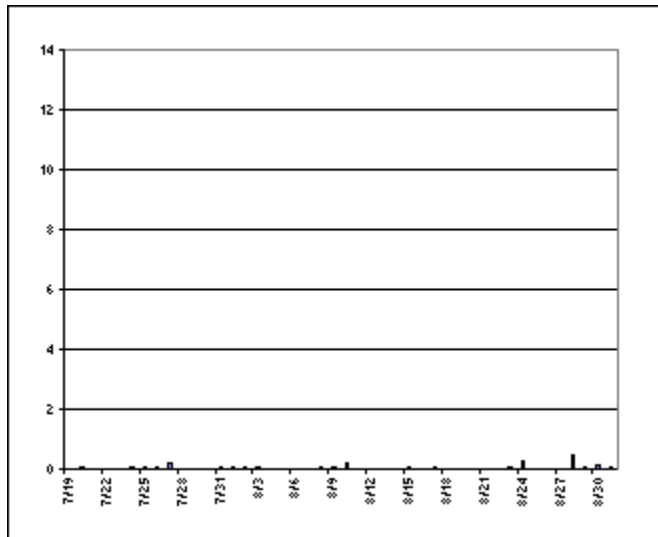
CRS site



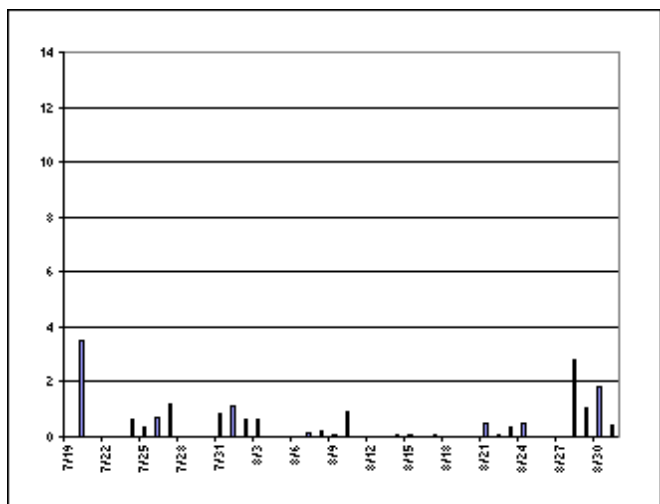
MET site



MVS site



SHA site



VSD site

