

Memorandum

To: Douglas Y. Okumura, Chief
Environmental Monitoring and
Pest Management Branch

Date: March 20, 1998

From: Department of Pesticide Regulation - 1020 N Street, Room 161
Sacramento, California 95 8 14-5624

Subject: MONITORING RESULTS FROM A DEEP UNTARPED APPLICATION IN
MADERA COUNTY-METHOD 2

Introduction-Methyl bromide is widely used as a preplant soil fumigant for control of nematodes, fungi, diseases, and weeds. The Department of Pesticide Regulation (DPR) and county agricultural commissioners have implemented permit conditions, including buffer zones, to mitigate unacceptable methyl bromide exposure. Buffer zone distances are set so that concentrations measured at this distance do not exceed 0.21 parts per million (ppm; 24-hour time-weighted average). The buffer zone distances for the methods have been determined from data received and evaluated by the Department to date. Additional monitoring was conducted to test and evaluate the effectiveness of the buffer zone distances.

Materials and Methods-The seventh field monitored was a 30.5-acre field near Madera (Madera County) treated with methyl bromide by a deep untarped application method (method 2) on January 22, 1998. In this method the methyl bromide is injected into the soil with two shanks set at a depth between 18 and 20 inches. At this application, the application rig was followed by a tractor with a disc and ring roller to finish the soil surface. The field was treated in 10-foot wide strips with alternating treated and untreated strips. The field was an old orchard to be replanted with new trees.

The entire application consisted of a 28 acre field plus a smaller 2.5 acre field located 300 feet northeast of the field. The application rate was 175 pounds per acre of formulated product, 99.5 percent methyl bromide/O.5 percent chloropicrin. The application took approximately 6 hours.



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Ambient air samples were collected at fourteen locations using charcoal tubes and SKC air samplers. Seven samplers were located at the residential buffer zone distance, two on each side except for the east side with only one sampler. Seven samplers were located 30 feet from the edge of the field, one on each side except the east and each corner. Based on permit conditions, the buffer zone determined for the application was 5 10 feet. Table 1 and Figure 1 indicate the position of each sampler. A series of five samples was collected at each of the 14 locations beginning with start of fumigation at 07:45. Samples were collected for two 6-hour and three 12-hour periods, for a total of 48 hours.

The weather was foggy during the mornings with clear skies in the afternoons and nights. Temperatures ranged from 35 to 58 degrees Fahrenheit. Wind speeds ranged from very calm to 15.4 miles per hour with speeds 5 mile per hour or less for 84 percent of the time during monitoring. The wind blew in all directions during the monitoring period.

Results-Off-site air concentrations did not exceed DPR's target level of 0.21 parts per million (24-hour time weighted average) at the residential buffer zone distance of 5 10 feet (Table 1). Air concentrations ranged from no detectable amount to 0.11 parts per million (24-hour time weighted average) at the 5 10 foot buffer zone distance. The highest concentrations were detected during the first 12-hour monitoring interval. If you have any questions please call me at (916) 324-4297.



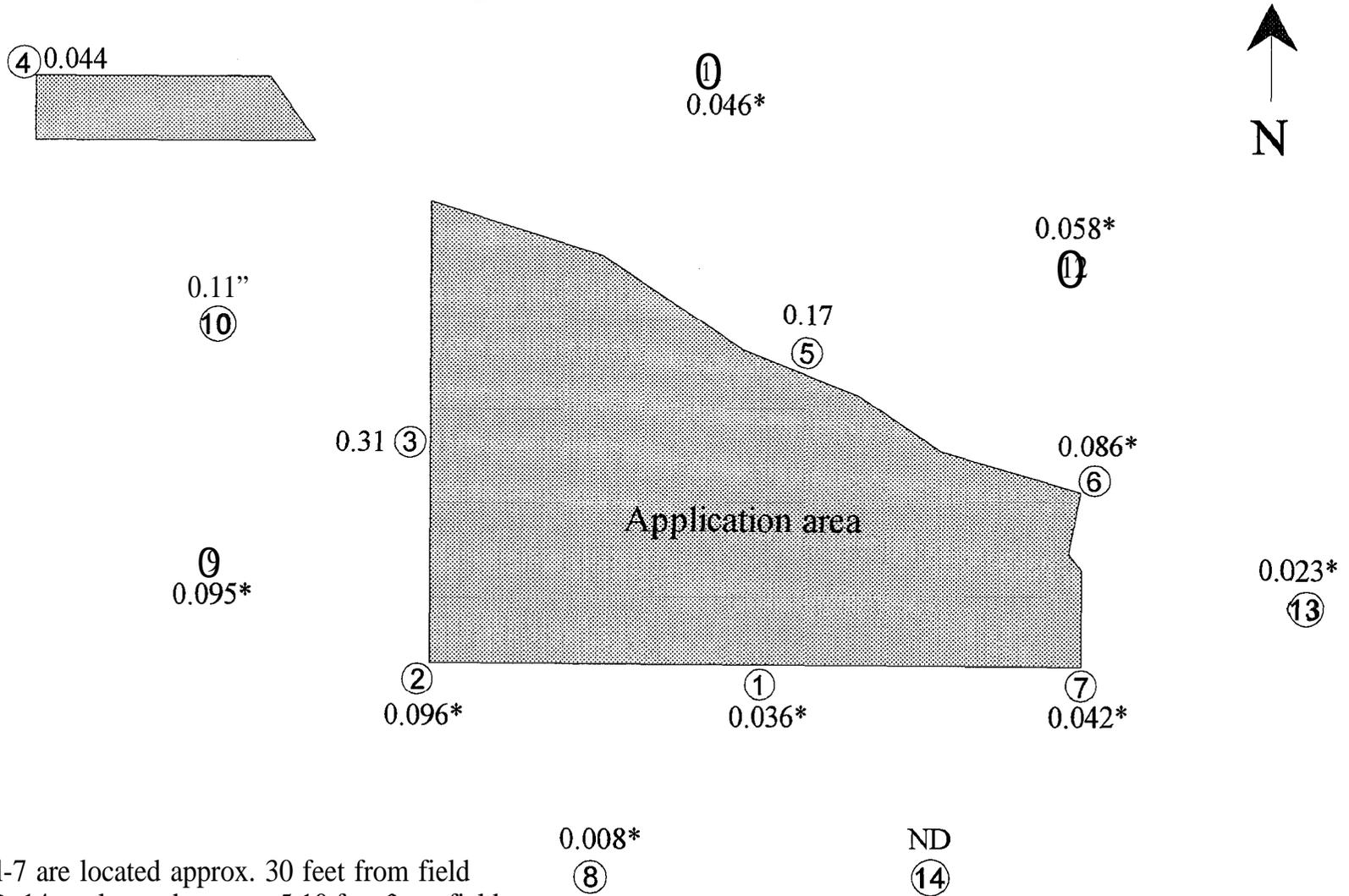
Pamela L. Wofford
Associate Environmental
Research Scientist
Environmental Monitoring and
Pest Management Branch



Randy Segawa
Senior Environmental
Research Scientist Supervisor
Environmental Monitoring and
Pest Management Branch

Attachment

Figure 1. The application site, sampling sites and highest 24-hour time weighted averages (parts per million).
 (* indicates that 24-hour average includes a period of no detectable amount where 1/2 the detection limit was used to obtain the 24-hour average).



Sites 1-7 are located approx. 30 feet from field
 Sites 8- 14 are located approx. 5 10 feet from field

Table 1. Ambient methyl bromide air concentrations.

Sampler Location			Methyl Bromide (ppm) for Each Sampling Period					
			07:45 - 13:45 (6 hrs)	13:45 - 19:45 (6 hrs)	19:45 - 07:45 (12 hrs)	07:45 - 19:45 (12hrs)	19:45 - 07:45 (12 hrs)	24-hr Peak' (24 hrs)
Site ID	Direction	Distance (ft)						
1	south	30	ND "	0.009	0.064	0.015	0.027	0.036*
2	southwest	30	ND	ND	0.186	0.016	0.050	0.096*
3	west	30	0.019	0.101	0.563	0.066	0.117	0.312
4	northwest	30	0.011	0.019	0.073	0.032	0.040	0.044
5	north	30	0.012	0.284	0.190	0.021	0.113	0.169
6	northeast	30	ND	0.110	0.115	0.011	0.052	0.086*
7	southeast	30	ND	0.095	0.034	0.012	0.020	0.042*
8	south	510	ND	ND	0.011	0.007	0.008	0.008*
9	west	510	ND	ND	0.185	0.011	0.037	0.095*
10	west	510	ND	0.016	0.216	0.017	0.032	0.113"
11	north	510	ND	0.076	0.052	ND	0.017	0.046*
12	north	510	ND	0.091	0.068	ND	0.030	0.058*
13	east	510	ND	0.015	0.035	ND	0.010	0.023*
14	south	510	ND	ND	ND^b	0.007	ND	ND

¹ the peak 24-hour time-weighted average is derived fi-om the concentrations in bold.

* indicates that 24-hour average includes a period of no detectable amount where ½ the detection limit was used to obtain the 24-hour average.

ND = No detectable amount; "reporting limit = 0.010 ppm, ^b reporting limit = 0.005 ppm