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SUBJECT: METHYL BROMIDE MONITORING RESULTS FROM A RAISED TARP - NURSERY APPLICATION IN SAN DIEGO COUNTY

Introduction - Methyl bromide is widely used as a preplant soil fumigant for control of nematodes, fungus, diseases and weeds. In 1995, approximately 13 percent of the methyl bromide use in California was in nursery applications. Nursery applications are made within a greenhouse or as a field application and may be shanked in and tarped, or applied as a hot-gas at the soil surface under tarpaulin placed prior to application. 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 DPR to date. Additional monitoring was made to test and evaluate the effectiveness of the buffer zone distances.

Materials and Methods - The fourth field monitored was treated by raised tarp hot-gas application to approximately l-acre field in Carlsbad (San Diego County)

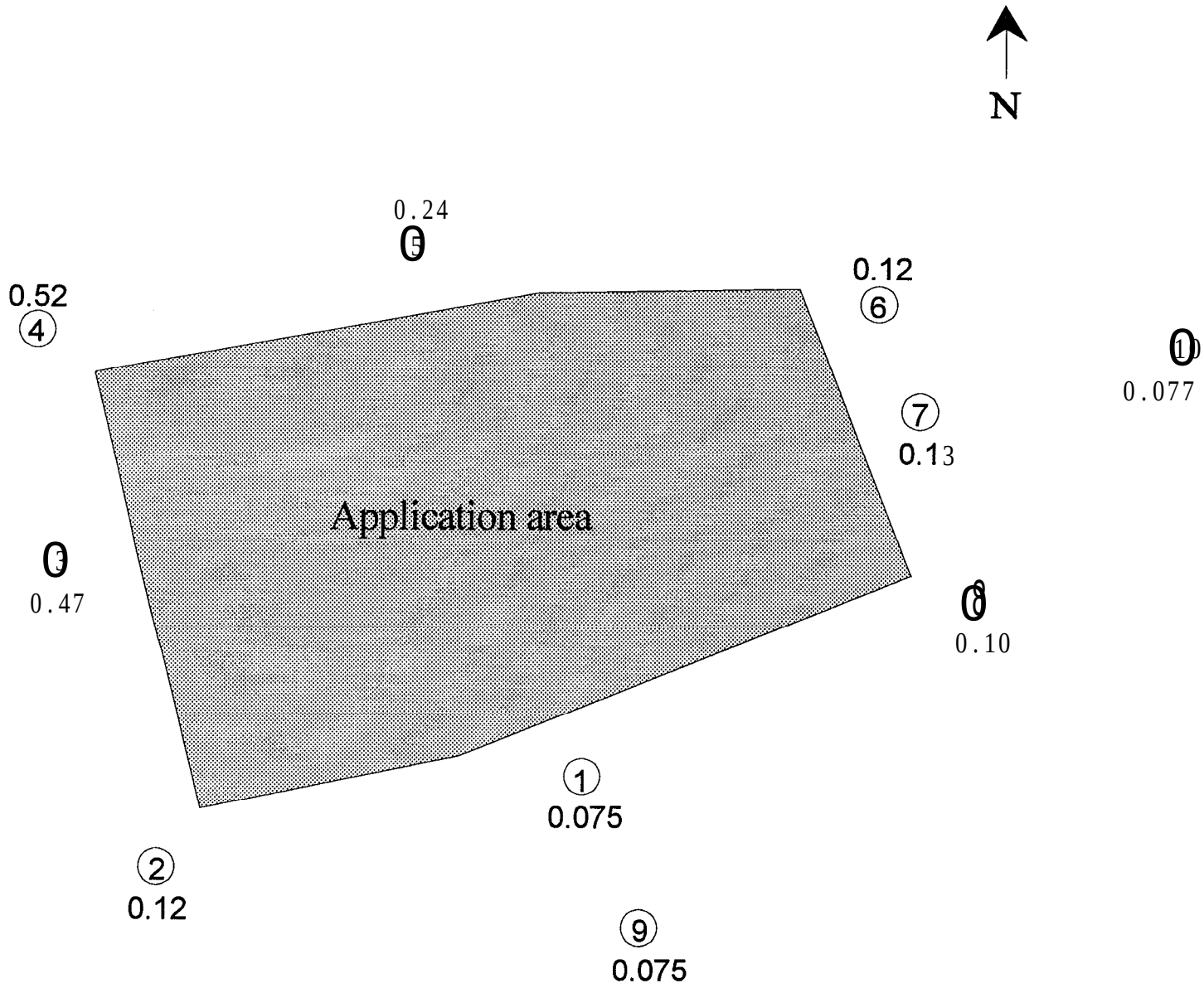
on October 16, 1997. The application was similar the first field monitored, in which a tarpaulin is secured over the field prior to application and the methyl bromide is heated and introduced under the tarp. The methyl bromide was passed through a manifold and injected under the tarp through lines on the soil surface down the entire length of the field. In this case, the equipment allowed fumigation to one line at a time. The field was to be replanted to sunflowers. The application rate was 435 lb/ac of formulated product, 99.5 percent methyl bromide/O.5 percent chloropicrin. The application took approximately three hours.

Ambient air samples were collected at ten locations using charcoal tubes and SKC air samplers. Eight samplers were located approximately 30 feet from the field, one on each side and each corner. Two additional samplers were located at 100 and 150 feet from the east and south sides, respectively. A pond to the west of the field prevented placement of samplers further than 30 feet from the edge of the field. Thick brush and the slope of surrounding hills prevented the placement of samplers at the 260 feet resident buffer zone distance on any sides.

The weather was sunny and clear during daylight and clear at night with temperatures from 57 to 98 degrees Fahrenheit. Wind speeds ranged from very calm to 11 miles per hour with speeds 6 miles per hour or less for 8 1 percent of the time during monitoring. The wind blew predominantly to the northeast and northwest during the monitoring period.

Results - The highest air concentration measured was 0.52 parts per million (24-hour time weighted average) at a distance of 30 feet from the edge of the field (Table 1). The highest concentrations were detected during the first 12-hour monitoring interval.

Figure 1. The application site, sampling sites and highest 24-hour time weighted averages (parts per million).



Sites 1-8 are 30 feet from edge of field
Site 9 is 100 feet from edge of field
Site 10 is 150 feet from edge of field

Table 1. Ambient methyl bromide air concentrations.

Sampler Location			Methyl Bromide (ppm) for Each Sampling Period					
Site	Direction	Distance (ft)	11:00 - 17:00 (6 hrs)	17:00 - 23:00 (6 hrs)	23:00-11:00[1] (12 hrs)	11:00 - 23:00[1] (12hrs)	23:00 -11:00 (12 hrs)	24-hr Peak' (24 hrs)
1	south	30	0.127	0.434	**0.109**	**0.041**	0.023	0.075
2	southwest	30	ND"	0.43 1	**0.218**	0.024	0.05 1	0.121
3	west	30	ND	0.083	0.778	0.167	0.117	0.473
4	northwest	30	ND	0.086	0.830	0.200	0.297	0.515
5	north	30	0.012	0.059	0.365	**0.110**	0.074	0.237
6	northeast	30	0.077	0.262	0.176	0.066	0.037	0.121
7	east	30	0.158	0.214	**0.181**	0.073	0.036	0.127
8	southeast	30	0.179	0.117	**0.140**	0.066	0.028	0.103
9	south	100	0.022	0.090	0.092	0.058	0.023	0.075
10	east	150	0.081	0.082	**0.121**	0.033	0.016	0.077

[1] the peak 24-hour time-weighted average is derived from the concentrations in bold.

ND = No detectable amount; [a] reporting limit = 0.010 ppm