

Addendum
May 19, 1999

October 19, 1998, memorandum MONITORING RESULTS FROM A TARPED, HIGH BARRIER FILM, SHALLOW INJECTION METHYL BROMIDE APPLICATION IN SAN LUIS OBISPO COUNTY.

In addition to charcoal tubes, 12 SUMMA canisters were co-located in the September 2, 1998 air monitoring of the tarped, high barrier film, shallow injection methyl bromide application in San Luis Obispo county. During intervals 2, 3 and 4, sampler sites 1, 3, 5 and 18 were monitored with both SKC air samplers with charcoal tubes and SUMMA canisters with Veriflo® flow regulators.

The SUMMA canisters are six-liter stainless steel spheres with low pressure flow regulators. The regulators are set in the laboratory at 6.6 to 6.9 ml per minute and the canisters are evacuated to 30 inches of Hg vacuum . In the field the pressure is checked and the regulators are installed prior to sampling; after the 12-hour sampling period the pressure is rechecked. The vacuum pressure decreases during sampling; if the pressure is less than 3 inches of Hg the sample is considered non-linear.

The non-linear samples cannot be compared with the SKC/charcoal tube samples which sample the air at a constant rate and weight the 12-hour sampling interval evenly. When SUMMA canisters/Veriflo® regulators are operating non-linearly the air is sampled at different rates during 12-hour sampling interval, generally higher at the beginning and lower (or zero) at the end of the interval. This weights the beginning of the interval more than the end. Since the concentration of methyl bromide is not constant throughout the interval there is a bias towards the initial concentration.

The reported concentration of methyl bromide was slightly higher in the SUMMA canisters compared to the charcoal tubes: 0.0419 ppm versus 0.0361 ppm (mean values). The highest 24-hour time-weighted-average (TWA) concentration was 0.066 ppm detected 30 feet from field's edge at SUMMA sampler 18. This value did not exceed DPR's target level of 0.21 parts-per-million TWA at the resident buffer zone distance (100 to 200 feet). All canister results are presented for completeness (Table 1), but only the canisters operating in the linear range are used in the regression.

The linear regression of SUMMA canisters versus charcoal tubes (Figure 1) is

$$\text{Charcoal} = -0.00619 + 1.011 \text{ SUMMA}$$

N = 7, R = 0.9768, R² = 0.9541, adj R² = 0.9449.

Table 1. Ambient methyl bromide air concentrations for co-located charcoal tube and SUMMA canister samples.

Sampler Media		Methyl Bromide(ppm) for each sampling interval					
		Irt. 1 6 Hour	Irt. 2 6 Hour	Irt. 3 12 Hour	Irt. 4 12 Hour	24-Hour ¹ TW A	24-Hour ² TW A
1	Charcoal Tube	0.101	ND	0.040	ND	0.047 ³	0.021
	Canister	NS	0.006	0.034	0.009	0.044 ⁴	0.022
3	Charcoal Tube	0.050	0.024	0.060	0.028	0.048	0.044
	Canister	NS	0.069 ⁵	lost	0.047	0.060 ⁴	0.053 ⁴
5	Charcoal Tube	ND	0.014	0.025	0.010	0.017 ³	0.017
	Canister	NS	0.037	lost	0.017	0.023 ⁴	0.021 ⁴
18	Charcoal Tube	NS	0.116	0.066	0.055	0.063 ³	0.060
	Canister	NS	0.120	0.070	0.110	0.066 ⁴	0.090

¹ the peak 24-hour time-weighted average is derived from intervals 1,2 & 3.

² the peak 24-hour time-weighted average is derived from intervals 3 & 4.

³ indicates that the 24-hour average includes an interval of no detectable amount, 0.0025 ppm (12-hr sample) or 0.005 ppm (6-hr sample) was used to obtain the 24-hour average.

⁴ indicates that the 24-hour average includes an interval of no detectable amount; the charcoal tube value was used to obtain the 24-hour average.

⁵ Strikeout values had final canister pressure below linear range.

* Sampler was relocated to shorter distance after first sampling period.

ND = No detectable amount; reporting limit = 0.010 ppm for 6-hr samples and 0.005 ppm for 12-hr samples.

lost = Sample lost due to sampler malfunction or laboratory error; charcoal tube value used to calculate 24-hour average.

NS = Not sampled; charcoal tube value used to calculate 24-hour average .

Figure 1. Comparison of SUMMA Canisters and Charcoal Tube with Linear

Regression.

