

APPENDIX III  
LABORATORY REPORT FOR CHLOROPICRIN

# California Environmental Protection Agency

---

# Air Resources Board

## Trichloronitromethane (Chloropicrin) Analytical Results for Application Air Monitoring Samples

**DATE: May 2005  
Revision 1**

**Prepared by  
Michael Orbanosky  
Air Pollution Specialist**

**Special Analysis Section  
Northern Laboratory Branch  
Monitoring and Laboratory Division**

**Reviewed and Approved by**

**Russell Grace, Manager  
Special Analysis Section**

**Project Number: P-04-002**

This report has been reviewed by staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board, nor does mention of trade names of commercial products constitute endorsement or recommendation for use.

## Table of Contents

<b>1.0 INTRODUCTION .....</b>	<b>1</b>
<b>2.0 METHOD DEVELOPMENT .....</b>	<b>1</b>
2.1 OVERVIEW .....	1
2.2 CALIBRATION CURVE .....	1
2.3 METHOD DETECTION LIMIT (MDL).....	1
2.4 METHOD DEVELOPMENT.....	2
<b>3.0 CHLOROPICRIN APPLICATION AIR MONITORING SAMPLE RESULTS. ....</b>	<b>2</b>
<b>4.0 ANALYTICAL QUALITY CONTROL SAMPLES .....</b>	<b>2</b>
4.1 SYSTEM BLANKS .....	2
4.2 METHOD BLANKS .....	2
4.3 LABORATORY CONTROL SAMPLES (LCS).....	3
4.4 CONTINUING CALIBRATION VERIFICATION STANDARDS (CCV).....	3
4.5 LABORATORY DUPLICATES .....	3
<b>5.0 FIELD, TRIP, AND LABORATORY SPIKES AND TRIP BLANKS .....</b>	<b>3</b>
5.1 LABORATORY SPIKES .....	3
5.2 TRIP SPIKES .....	3
5.3 FIELD SPIKES.....	3
5.4 TRIP BLANKS .....	4
<b>6.0 DISCUSSION.....</b>	<b>4</b>
<b>TABLE 1: STRUCTURAL APPLICATION AIR MONITORING RESULTS FOR           CHLOROPICRIN .....</b>	<b>6</b>
<b>TABLE 2: QC SAMPLE RESULTS.....</b>	<b>13</b>

## 1.0 INTRODUCTION

The Department of Pesticide Regulation (DPR) requested the Air Resources Board (ARB) to conduct structural application air monitoring for trichloronitromethane (chloropicrin). This report covers the analytical and quality assurance results for a chloropicrin structural application occurring over a six (6) day period in Nevada County. DPR requested a method estimated quantitation limit (EQL) of  $0.1 \mu\text{g}/\text{m}^3$ . The EQL achieved during this project was  $0.14 \mu\text{g}/\text{m}^3$ .

## 2.0 METHOD DEVELOPMENT

### 2.1 Overview

XAD-4 cartridges are used for application air sampling. Sample cartridges are stored at or below four (4) degrees centigrade ( $^{\circ}\text{C}$ ) before extraction. Sample cartridges are extracted with three (3) milliliters (ml) of methylene chloride (DCM) and desorbed in an ultrasonic bath. Sample extracts are analyzed using a gas chromatograph/mass selective detector (GC/MSD), which is operated in the selected ion-monitoring mode (SIM). Sample analysis and quantitation used the external standard method. The estimated quantitation level for this method, based on 0.144 cubic meters ( $\text{m}^3$ ) of air collected, and a final extract volume of three (3) ml, is  $0.14 \mu\text{g}/\text{m}^3$ .

### 2.2 Calibration Curve

Laboratory staff used standard concentrations of approximately 5, 10, 20, 50, 100, and 150 ng/ml to produce a six (6) point calibration curve. All calibration curves performed had a  $r^2$  (variance) greater than or equal to 0.995. Laboratory staff performed calibrations at the beginning of the monitoring program, after instrument maintenance, after remaking of internal standard, and whenever the continuing calibration verification standard (CCV) did not fall within  $\pm 20$  percent (%) of the expected value.

### 2.3 Method Detection Limit (MDL)

The MDL calculation follows the United States Environmental Protection Agency procedures for calculating MDL's. Using the analysis of seven low-level matrix spikes (5.0 ng/ml), the MDL and EQL for a three (3) ml extract is calculated as follows:

*s* = the standard deviation of the concentration calculated for the seven replicate spikes.  
For Chloropicrin: *s* = 0.4204 ng/ml

$$MDL = (3.14) \times (s) = (3.14) \times (0.4204) = 1.32 \text{ ng/ml.}$$

$$EQL = (5) \times (MDL) = (5) \times (1.32) = 6.60 \text{ ng/ml}$$

$$EQL \text{ for total ng/sample} = 19.80 \text{ ng/sample}^*$$

\* assuming a 3 ml final extract volume

Based on a total collection volume of 0.144 m<sup>3</sup> the EQL would be 0.14 µg/m<sup>3</sup>. Staff report results above the EQL to three (3) significant figures. Results below the EQL but greater than or equal to the MDL are reported as detected (DET). Results less than MDL are reported as <MDL.

#### 2.4 Method Development

Instrument reproducibility, collection and extraction efficiency, storage stability and breakthrough studies were performed and reported in the document "Air Sampling Cartridge Method Development and Analysis Results for Application Monitoring of Trichloronitromethane (Chloropicrin)" dated January 28, 2002. No additional method development was required for this structural application project.

### 3.0 CHLOROPICRIN APPLICATION AIR MONITORING SAMPLE RESULTS.

The laboratory received 179 application samples plus two (2) field spikes, and two (2) ARB-Sacramento spikes, one (1) trip blank, and four (4) trip spikes on July 25, 2004. Table 1 presents the results of the analysis of the chloropicrin application air samples by sampler location.

### 4.0 ANALYTICAL QUALITY CONTROL SAMPLES

#### 4.1 System Blanks

Laboratory staff analyzes a system blank with each analytical batch, after each CCV, after every tenth sample and after samples containing high levels of chloropicrin or co-extracted contaminants. Staff defines the analytical batch as all the samples extracted together, but not to exceed twenty (20) samples. The system blank is run to insure the solvent and instrument do not contribute interferences to the analysis, and to minimize carryover from high level samples. All system blanks were less than the MDL.

#### 4.2 Method Blanks

Laboratory staff analyzed a method blank with each analytical batch. This is an XAD-4 cartridge prepared and analyzed as described for the application samples. Laboratory

staff analyzed fifteen (15) method blanks during this project. All method blank results were less than the MDL.

#### 4.3 *Laboratory Control Samples (LCS)*

Laboratory staff analyzed a LCS with each analytical batch. A LCS is an XAD-4 cartridge spiked with 228 ng of chloropicrin. The stock standard used to prepare the LCS did not come from a different lot number than the stock standard used for method calibration. Different staff prepared the LCS and calibration standards on different days. The LCS is extracted and analyzed as described for the samples. The LCS recoveries averaged 95.78% with a standard deviation of 3.99%.

#### 4.4 *Continuing Calibration Verification Standards (CCV)*

Following standard lab procedures, laboratory staff analyzed a CCV after every calibration curve, after every tenth (10) sample and at the end of an analytical batch. The CCV must be within  $\pm 20\%$  of the expected value. If any of the CCVs are outside this limit, the affected samples are re-analyzed. The CCV target value for this project was 19.8 ng/ml. All CCV's were within  $\pm 20\%$  of the expected value.

#### 4.5 *Laboratory Duplicates*

No laboratory duplicates were run with this project.

### **5.0 FIELD, TRIP, AND LABORATORY SPIKES AND TRIP BLANKS**

During the application project, four (4) trip, two (2) field spikes, and two (2) spikes collected at ARB-Sacramento, along with four (4) laboratory spikes and one (1) trip blank were analyzed. Laboratory staff prepared all spikes at 228 ng/sample of chloropicrin.

#### 5.1 *Laboratory Spikes*

Table 2 presents the results of the laboratory spikes. The average chloropicrin recovery was 88.10% with a standard deviation of 5.21%.

#### 5.2 *Trip Spikes*

Table 2 presents the results of the trip spikes. The average recovery for chloropicrin was 83.86% with a standard deviation of 1.33%.

#### 5.3 *Field Spikes*

Table 2 presents the results of the field spikes. The field spikes were sampled twenty-four (24) hours prior to pesticide application. Two (2) field spikes were collected at the

Grass Valley site (C006, C007). In addition to the field spikes, two (2) spiked cartridges were used to collect samples at ARB-Sacramento (FS7261, FS7262). Unspiked collocated samples were collected along with the spiked samples collected at the Grass Valley site. The average recovery for the field spikes and the ARB-Sacramento spikes was 79.98% with a standard deviation of 7.97%. Since breakthrough occurred during spike sampling the average value includes the values from both the front and back cartridge sections. The chloropicrin quantitations for the samples run concurrently with the field spikes showed values less than the EQL. Therefore, background correction was not made to the field spike data.

#### 5.4 Trip Blanks

Table 2 presents the results of the trip blanks. One (1) trip blank, with result less than the MDL, was received during this project.

## 6.0 DISCUSSION

During the project, 179 application samples were analyzed. Ninety-eight (98) samples had results greater than or equal to the EQL of 19.8 ng/sample. The concentrations ranged from 19.8 to 10681 ng/sample. Forty-three (43) samples had results reported as detected.

After initial analysis, six (6) samples had results above the high calibration point. These samples (26,28,157,158,172 and 173) were diluted and the results reported in Table 1. Because of the elevated level in the above samples, the secondary beds were extracted and analyzed for possible breakthrough. Four (4) samples (157, 158, 172, 173) had chloropicrin in the secondary beds at levels that required dilution. These results are reported in Table 1 with the suffix B added to the log number.

The field spikes collected from the two (2) locations had some variation in recoveries. The spikes collected at the ARB Sacramento site had results that averaged 19% lower than the field spikes collected at the Grass Valley site. The low recoveries for the ARB-Sacramento spikes lead staff to believe that breakthrough may have possibly occurred during sample collection. The secondary bed of the two field spikes, the two ARB-Sacramento spikes and the associated LCS and laboratory spike were analyzed for breakthrough. Chloropicrin was detected in the secondary beds indicating breakthrough had occurred. The levels recovered ranged from 13% to 28%. These results are reported in Table 2 with the suffix B added to the laboratory identification number. Chloropicrin was not detected in the secondary bed of the laboratory spike analyzed with the field spikes.

To evaluate if breakthrough occurred during the collection of the remaining samples, a subset of samples (12) had their secondary beds analyzed. The primary bed concentrations ranged from 72 to 681 ng/sample. Chloropicrin was not detected in these secondary beds.

Sample breakthrough is not a concern as confirmed by the random analysis of twelve (12) samples in which no breakthrough was observed. No discernable reason is obvious for the breakthrough observed in the field spikes and the ARB Sacramento spikes.

LCS spiked at 228 ng/sample and processed in the same way as field samples had recoveries that averaged 95.78%. Based on three (3) standard deviations from the mean, the acceptable recovery range was 83.81% to 107.75%. All LCS fell within this range.

No other anomalous events occurred during the extraction and analysis of these samples.

**Table 1: Structural Application Air Monitoring Results for Chloropicrin**

Site	Log Number	Sample ID	Date Received	Date Analyzed	Chloropicrin amount (ng/sample)
East	9	E-C-B	7/25/04	7/27/04	<MDL
	22	E-C-1	7/25/04	7/28/04	5.93E+01
	35	E-C-2	7/25/04	7/29/04	4.44E+01
	48	E-C-3	7/25/04	7/30/04	5.72E+01
	61	E-C-4	7/25/04	7/30/04	3.85E+01
	74	E-C-5	7/25/04	8/4/04	3.26E+01
	87	E-C-6	7/25/04	8/5/04	2.38E+01
	100	E-C-7	7/25/04	8/5/04	DETECT
	113	E-C-8	7/25/04	8/9/04	1.12E+02
	128	E-C-9	7/25/04	8/10/05	2.27E+01
	141	E-C-10	7/25/04	8/11/04	<MDL
	154	E-C-11	7/25/04	8/12/04	DETECT
	169	E-C-12	7/25/04	8/13/04	<MDL
	184	E-C-13	7/25/04	8/16/04	DETECT
North	10	N-C-B	7/25/04	7/27/04	<MDL
	19	N-C-1	7/25/04	7/28/04	1.22E+02
	32	N-C-2	7/25/04	7/29/04	9.82E+01
	45	N-C-3	7/25/04	7/30/04	1.02E+02
	58	N-C-4	7/25/04	7/30/04	DETECT
	71	N-C-5	7/25/04	8/4/04	4.73E+01
	84	N-C-6	7/25/04	8/5/04	DETECT
	97	N-C-7	7/25/04	8/5/04	DETECT
	110	N-C-8	7/25/04	8/9/04	1.41E+02
	125	N-C-9	7/25/04	8/10/05	3.35E+01
	138	N-C-10	7/25/04	8/11/04	<MDL
	151	N-C-11	7/25/04	8/12/04	DETECT
	166	N-C-12	7/25/04	8/13/04	<MDL
	181	N-C-13	7/25/04	8/16/04	DETECT

**Table 1: Structural Application Air Monitoring Results for Chloropicrin**

Site	Log Number	Sample ID	Date Received	Date Analyzed	Chloropicrin amount (ng/sample)
Northeast Inner	21	NEI-C-1	7/25/04	7/28/04	9.34E+01
	34	NEI-C-2	7/25/04	7/29/04	3.24E+01
	47	NEI-C-3	7/25/04	7/30/04	1.03E+02
	60	NEI-C-4	7/25/04	7/30/04	DETECT
	73	NEI-C-5	7/25/04	8/4/04	5.51E+01
	86	NEI-C-6	7/25/04	8/5/04	DETECT
	99	NEI-C-7	7/25/04	8/5/04	2.31E+01
	112	NEI-C-8	7/25/04	8/9/04	1.23E+02
	127	NEI-C-9	7/25/04	8/10/05	3.02E+01
	140	NEI-C-10	7/25/04	8/11/04	<MDL
	153	NEI-C-11	7/25/04	8/12/04	DETECT
	168	NEI-C-12	7/25/04	8/13/04	<MDL
	183	NEI-C-13	7/25/04	8/16/04	DETECT
Northeast Outer	20	NEO-C-1	7/25/04	7/28/04	2.81E+01
	33	NEO-C-2	7/25/04	7/29/04	DETECT
	46	NEO-C-3	7/25/04	7/30/04	2.21E+01
	59	NEO-C-4	7/25/04	7/30/04	<MDL
	72	NEO-C-5	7/25/04	8/4/04	DETECT
	85	NEO-C-6	7/25/04	8/5/04	<MDL
	98	NEO-C-7	7/25/04	8/5/04	<MDL
	111	NEO-C-8	7/25/04	8/9/04	3.16E+01
	126	NEO-C-9	7/25/04	8/10/05	DETECT
	139	NEO-C-10	7/25/04	8/11/04	<MDL
	152	NEO-C-11	7/25/04	8/12/04	<MDL
	167	NEO-C-12	7/25/04	8/13/04	<MDL
	182	NEO-C-13	7/25/04	8/16/04	<MDL

**Table 1: Structural Application Air Monitoring Results for Chloropicrin**

Site	Log Number	Sample ID	Date Received	Date Analyzed	Chloropicrin amount (ng/sample)
Northwest Inner	17	NWI-C-1	7/25/04	7/28/04	3.41E+02
	18	NWI-C-1C	7/25/04	7/28/04	3.01E+02
	30	NWI-C-2	7/25/04	7/29/04	2.75E+02
	31	NWI-C-2C	7/25/04	7/29/04	2.57E+02
	43	NWI-C-3	7/25/04	7/30/04	2.70E+02
	44	NWI-C-3C	7/25/04	7/30/04	2.08E+02
	56	NWI-C-4	7/25/04	7/30/04	6.32E+01
	57	NWI-C-4C	7/25/04	7/30/04	7.21E+01
	69	NWI-C-5	7/25/04	8/4/04	1.24E+02
	70	NWI-C-5C	7/25/04	8/4/04	1.25E+02
	82	NWI-C-6	7/25/04	8/5/04	6.77E+01
	83	NWI-C-6C	7/25/04	8/5/04	6.43E+01
	95	NWI-C-7	7/25/04	8/5/04	3.48E+01
	96	NWI-C-7C	7/25/04	8/5/04	3.36E+01
	108	NWI-C-8	7/25/04	8/9/04	4.16E+02
	109	NWI-C-8C	7/25/04	8/9/04	2.89E+02
	123	NWI-C-9	7/25/04	8/10/05	5.78E+01
	124	NWI-C-9C	7/25/04	8/10/05	5.59E+01
	136	NWI-C-10	7/25/04	8/11/04	<MDL
	137	NWI-C-10C	7/25/04	8/11/04	<MDL
149	NWI-C-11	7/25/04	8/12/04	2.30E+01	
150	NWI-C-11C	7/25/04	8/12/04	2.34E+01	
164	NWI-C-12	7/25/04	8/13/04	DETECT	
165	NWI-C-12C	7/25/04	8/13/04	DETECT	
179	NWI-C-13	7/25/04	8/16/04	2.14E+01	
180	NWI-C-13C	7/25/04	8/16/04	DETECT	

Northwest Outer	16	NWO-C-1	7/25/04	7/28/04	2.69E+01
	29	NWO-C-2	7/25/04	7/29/04	6.17E+01
	42	NWO-C-3	7/25/04	7/30/04	DETECT
	55	NWO-C-4	7/25/04	7/30/04	<MDL
	68	NWO-C-5	7/25/04	8/4/04	DETECT
	81	NWO-C-6	7/25/04	8/5/04	<MDL
	94	NWO-C-7	7/25/04	8/5/04	<MDL
	107	NWO-C-8	7/25/04	8/9/04	DETECT
	122	NWO-C-9	7/25/04	8/10/05	DETECT
	135	NWO-C-10	7/25/04	8/11/04	<MDL
	148	NWO-C-11	7/25/04	8/12/04	<MDL
	163	NWO-C-12	7/25/04	8/13/04	<MDL
	178	NWO-C-13	7/25/04	8/16/04	<MDL

**Table 1: Structural Application Air Monitoring Results for Chloropicrin**

Site	Log Number	Sample ID	Date Received	Date Analyzed	Chloropicrin amount (ng/sample)
South	8	S-C-B	7/25/04	7/27/04	<MDL
	12	S-C-1	7/25/04	7/28/04	1.98E+01
	25	S-C-2	7/25/04	7/29/04	1.63E+02
	38	S-C-3	7/25/04	7/30/04	8.17E+01
	51	S-C-4	7/25/04	7/30/04	1.29E+02
	64	S-C-5	7/25/04	8/4/04	5.21E+01
	77	S-C-6	7/25/04	8/5/04	8.30E+01
	90	S-C-7	7/25/04	8/5/04	3.37E+01
	103	S-C-8	7/25/04	8/9/04	2.35E+01
	118	S-C-9	7/25/04	8/10/05	3.86E+01
	131	S-C-10	7/25/04	8/11/04	2.46E+01
	144	S-C-11	7/25/04	8/12/04	DETECT
	159	S-C-12	7/25/04	8/13/04	DETECT
174	S-C-13	7/25/04	8/16/04	<MDL	

Southeast Inner	23	SEI-C-1	7/25/04	7/28/04	1.07E+02
	36	SEI-C-2	7/25/04	7/29/04	3.37E+02
	49	SEI-C-3	7/25/04	7/30/04	1.75E+02
	62	SEI-C-4	7/25/04	7/30/04	3.33E+02
	75	SEI-C-5	7/25/04	8/4/04	1.09E+02
	88	SEI-C-6	7/25/04	8/5/04	1.81E+02
	101	SEI-C-7	7/25/04	8/5/04	5.54E+01
	114	SEI-C-8	7/25/04	8/9/04	3.53E+02
	129	SEI-C-9	7/25/04	8/10/05	8.12E+01
	142	SEI-C-10	7/25/04	8/11/04	2.60E+01
	155	SEI-C-11	7/25/04	8/12/04	2.47E+01
	170	SEI-C-12	7/25/04	8/13/04	DETECT
	185	SEI-C-13	7/25/04	8/16/04	DETECT

Southeast Outer	24	SEO-C-1	7/25/04	7/28/04	DETECT
	37	SEO-C-2	7/25/04	7/29/04	DETECT
	50	SEO-C-3	7/25/04	7/30/04	DETECT
	63	SEO-C-4	7/25/04	7/30/04	DETECT
	76	SEO-C-5	7/25/04	8/4/04	DETECT
	89	SEO-C-6	7/25/04	8/5/04	DETECT
	102	SEO-C-7	7/25/04	8/5/04	DETECT
	115	SEO-C-8	7/25/04	8/9/04	2.55E+01
	130	SEO-C-9	7/25/04	8/10/05	DETECT
	143	SEO-C-10	7/25/04	8/11/04	<MDL
	156	SEO-C-11	7/25/04	8/12/04	<MDL
	171	SEO-C-12	7/25/04	8/13/04	<MDL
	186	SEO-C-13	7/25/04	8/16/04	<MDL

**Table 1: Structural Application Air Monitoring Results for Chloropicrin**

Site	Log Number	Sample ID	Date Received	Date Analyzed	Chloropicrin amount (ng/sample)
Southwest Inner	13	SWI-C-1	7/25/04	7/28/04	1.98E+01
	26	SWI-C-2	7/25/04	7/30/04	7.62E+02
	39	SWI-C-3	7/25/04	7/30/04	2.00E+02
	52	SWI-C-4	7/25/04	7/30/04	4.19E+02
	65	SWI-C-5	7/25/04	8/4/04	1.50E+02
	78	SWI-C-6	7/25/04	8/5/04	2.93E+02
	91	SWI-C-7	7/25/04	8/5/04	7.18E+01
	104	SWI-C-8	7/25/04	8/9/04	3.77E+01
	119	SWI-C-9	7/25/04	8/10/05	3.26E+01
	132	SWI-C-10	7/25/04	8/11/04	4.88E+01
	145	SWI-C-11	7/25/04	8/12/04	DETECT
	160	SWI-C-12	7/25/04	8/13/04	5.30E+01
	175	SWI-C-13	7/25/04	8/16/04	DETECT

Southwest Outer	14	SWO-C-1	7/25/04	7/28/04	<MDL
	27	SWO-C-2	7/25/04	7/29/04	3.05E+02
	40	SWO-C-3	7/25/04	7/30/04	5.34E+01
	53	SWO-C-4	7/25/04	7/30/04	1.56E+02
	66	SWO-C-5	7/25/04	8/4/04	4.28E+01
	79	SWO-C-6	7/25/04	8/5/04	1.11E+02
	92	SWO-C-7	7/25/04	8/5/04	DETECT
	105	SWO-C-8	7/25/04	8/9/04	<MDL
	120	SWO-C-9	7/25/04	8/10/05	<MDL
	133	SWO-C-10	7/25/04	8/11/04	3.39E+01
	146	SWO-C-11	7/25/04	8/12/04	<MDL
	161	SWO-C-12	7/25/04	8/13/04	3.23E+01
	176	SWO-C-13	7/25/04	8/16/04	DETECT

**Table 1: Structural Application Air Monitoring Results for Chloropicrin**

Site	Log Number	Sample ID	Date Received	Date Analyzed	Chloropicrin amount (ng/sample)
West	11	W-C-B	7/25/04	7/27/04	<MDL
	15	W-C-1	7/25/04	7/28/04	3.08E+01
	28	W-C-2	7/25/04	7/30/04	6.56E+02
	41	W-C-3	7/25/04	7/30/04	1.16E+02
	54	W-C-4	7/25/04	7/30/04	4.09E+02
	67	W-C-5	7/25/04	8/4/04	7.07E+01
	80	W-C-6	7/25/04	8/5/04	2.77E+02
	93	W-C-7	7/25/04	8/5/04	3.02E+01
	106	W-C-8	7/25/04	8/9/04	DETECT
	121	W-C-9	7/25/04	8/10/05	<MDL
	134	W-C-10	7/25/04	8/11/04	DETECT
	147	W-C-11	7/25/04	8/12/04	<MDL
	162	W-C-12	7/25/04	8/13/04	DETECT
177	W-C-13	7/25/04	8/16/04	<MDL	
Vent Extra	116	XN-C-8	7/25/04	8/9/04	DETECT
	117	XNE-C-8	7/25/04	8/9/04	DETECT
North Inside	157	Nin-C-1	7/25/04	8/17/04	9.76E+03
	157B	Nin-C-1	7/25/04	8/18/04	4.50E+02
	172	Nin-C-2	7/25/04	8/17/04	6.30E+03
	172B	Nin-C-2	7/25/04	8/18/04	5.10E+02
South Inside	158	Sin-C-1	7/25/04	8/17/04	1.07E+04
	158B	Sin-C-1	7/25/04	8/18/04	1.09E+03
	173	Sin-C-2	7/25/04	8/17/04	7.14E+03
	173B	Sin-C-2	7/25/04	8/18/04	4.91E+02

### Table 1 Notes: Application Monitoring Results,

If analytical result is  $\geq$  MDL and  $<$  EQL it is reported in the table as detected (DET). Levels at or above the EQL are reported as the actual measured value and are reported to three significant figures.

ng = nanogram

Sample ID (Sample identification) numbers followed by the letter C are collocated samples for the samples with the corresponding number.

Sample ID numbers followed by the letter B are samples whose back sections were analyzed and reported.

Site location identification:

E:	East
N:	North
NEI:	Northeast Inner
NEO:	Northeast Outer
NWO:	Northwest Outer
NWI:	Northwest Inner
S:	South
SEI:	Southeast Inner
SEO:	Southeast Outer
SWO:	Southwest Outer
SWI:	Southwest Inner
W:	West
XNE:	Vent Extra Northeast
XN:	Vent Extra North
Nin:	North Inside
Sin:	South Inside

**Table 2: QC Sample Results  
Chloropicrin Application**

Quality Control Type	Laboratory ID	Date Analyzed	Chloropicrin amount (ng/sample)	Percent Recovery*
Lab Spike (228 ng)	LS7261	7/27/04	183.36	80.42
	LS7272	7/28/04	209.31	91.80
	LS7293	7/30/04	203.85	89.41
	LS7304	8/4/04	206.91	90.75

Trip Spike (228 ng)	GC002	7/27/04	190.17	83.41
	GC003	7/27/04	188.49	82.67
	GC004	7/27/04	195.54	85.76
	GC005	7/27/04	190.62	83.61

Field Spike (228 ng)	GC006	7/27/04	159.93	70.14
	GC006B	8/23/04	29.88	13.11
	GC007	7/27/04	166.02	72.82
	GC007B	8/23/04	26.34	11.55

ARB-Sacramento Spike (228 ng)	FS7261	7/27/04	128.31	56.28
	FS7261B	8/23/04	63.81	27.99
	FS7262	7/27/04	110.25	48.36
	FS7262B	8/23/04	44.91	19.70

Trip Blank	GC001	7/27/04	<MDL	
------------	-------	---------	------	--

Notes:

- \* Field spike valves are not corrected for background levels.
- B Secondary bed of XAD-4 cartridge
- ID Identification
- <MDL Less than method detection limit
- ng Nanograms

APPENDIX IV  
FUMIGATION LOG

# STANDARD STRUCTURAL FUMIGATION LOG

ADDRESS OF PROPERTY <b>13016 Somerset Dr.</b>		CITY <b>Groves Valley</b>	DATE OF FUMIGATION <b>7-19-04</b>
BRANCH CO. AND ADDRESS (SUBCONTRACTOR) <b>OR-CAL PEST CONTROL 1946 Watt Ave., Suite 31 North Highlands CA 95660</b>		PEST CONTRACTOR NAME AND ADDRESS <b>Bear River Termite 10556 Comble Rd. #622 Auburn, Ca 95602</b>	
OWNER/AGENT NAME AND ADDRESS <b>Mr. + Mrs. Michael Buonarati SAA</b>		FEE EXP. NOTIFIED (DATE/HOUR) <b>7-15-04 1:25pm</b>	
PROPERTY DESCRIPTION <b>Two story single family residence</b>		C.A.C. NOTIFIED (METHOD)(DATE)(HOUR) <b>Faxed 7-15-04 1:05pm</b>	
NOTES OR COMMENTS <b>N/A</b>			
SECTION 1 FUMIGANT RELEASED	TARGET PEST <b>Beetles</b>	WARNING AGENT <b>CHLOROPICKIN</b>	CUBIC FEET <b>81M</b>
FUMIGANT / E.P.A. REGISTRATION NO. <b>Ultrane EPA Reg. # 62719-4</b>		SEALING METHOD <b>Tape</b>	DATE/TIME GAS INTRODUCED <b>07-19-04</b>
WIND (M.P.H.) <b>4 mph</b>	AIR TEMP <b>92°</b>	CYLINDER SERIAL NO. <b>603443</b>	WT. BEFORE INTRO. <b>232 lbs</b>
POLICE DEPT. NOTIFIED (DATE & HOUR) <b>N/A</b>		CYLINDER SERIAL NO. <b>607117</b>	WT. BEFORE INTRO. <b>209 lbs</b>
EXTRAORDINARY PRECAUTIONS <b>N/A</b>			TOTAL POUNDS <b>202 lbs</b>
DOSAGE FACTOR <b>2/2</b>		VOLUME CALCULATOR	
TARP CONDITION <b>Good</b>		UNDER SEAL <b>Clear</b>	
SEAL CONDITION <b>Good</b>		TEMPERATURE <b>60°</b>	
WIND (MPH) <b>4 mph</b>		HOURS EXPOSURE <b>72 hr</b>	
VOLUME <b>81m</b>		MONITOR JOB (YES/NO) <b>Yes</b>	
CREW MEMBERS NAMES <b>Roger Reyes</b>		NAME AND ADDRESS OF GUARD <b>Phil Cox, Paul Strasser, Carlos Villarreal, Billy Swafford</b>	
WAS REQUIRED SAFETY EQUIP. PROVIDED? <b>YES (X) NO ( )</b>		LICENSEE RELEASING FUMIGANT SIGNATURE <b>[Signature]</b> LICENSE NO. <b>FR 26897</b>	
SECTION 2 VENTILATION COMMENCED	ABRICATION COMMENCED: DATE <b>7-22-04</b> TIME <b>1:20 pm</b>	TARP / SEAL CONDITION <b>Good</b>	
CREW MEMBERS NAMES: <b>Roger Reyes, Carlos Villarreal, Billy Swafford</b>			
WAS REQUIRED SAFETY EQUIP. PROVIDED? <b>YES (X) NO ( )</b>		LICENSEE COMMENCING VENTILATION SIGNATURE <b>[Signature]</b> LICENSE NO. <b>FR 26892</b>	
SECTION 3 RELEASED FOR OCCUPANCY	TESTING DEVICE USED <b>27 Tm Scan</b>	PROPERTY CERTIFIED SAFE FOR RE-ENTRY DATE <b>7-23-04</b> TIME <b>1:45 PM</b>	
CREW MEMBERS NAMES: <b>Roger Reyes</b>			
WAS REQUIRED SAFETY EQUIP. PROVIDED? <b>YES (X) NO ( )</b>		LICENSEE RELEASING PROPERTY FOR OCCUPANCY SIGNATURE <b>[Signature]</b> LICENSE NO. <b>FR 26892</b>	

4351-17 (NRW 5/04)