

Appendix E Sub-Contract Agreements

CONTRACT ORDER AND PRE-EVALUATION
DPR-017 (Rev. 4/98)

Current Contract No	Contracts Use Only
	99-0241

TYPE OF CONTRACT OR SERVICE NEW AMENDMENT

Branch: Environmental Monitoring and Pest Management Date: 4/6/00

Title of Requestor: Assoc. Env. Research Sci. Telephone Number: 324-4297

Authorized Signature: *[Handwritten Signature]*

Name of Contractor: UC Davis Trace Analytical Lab - Dept. Env. Tox. Telephone Number: (530) 752-2402

Address: One Shields Ave. City: Davis State: CA Zip Code: 95616

ADVERTIZED IN STATE REGISTER? YES NO

DIGEST OF CONTRACT (Set forth service to be rendered by Contractor, amount to be paid to Contractor, time for performance or completion, and attach plans and specifications, if any.)

Contractor to analyze air samples collected for an ambient air monitoring study in Lompoc, CA. Contractor will be paid at a rate of \$730 per sample. The study design calls for 8 to 10 weeks of sampling with either 3 or 4 samples per week at 3 or 4 sample sites (plus the potential of an additional collocation site). The total number of samples ranges from 192 - 230 ambient air samples (including 96 quality control samples) or \$140,160 - \$167,900. Development of the method and method validation will cost \$25,000. Additional requests may be made for analysis for an additional chemical or unknown chemicals which would cost \$7,100. Total costs would be \$200,000 plus addition 10% administrative overhead (total = \$220,000).

REASON FOR CONTRACT (Identify specific problem, administrative requirement, program need or other circumstances making the contract necessary.) 5/1/00 - 4/30/00

Has an Interagency Agreement be considered? YES NO

In 1997, the Department of Pesticide Regulation (DPR) formed the Lompoc Interagency Work Group (LIWG) to evaluate possible causes of respiratory illnesses in Lompoc, CA. Ambient air monitoring will be conducted in Lompoc during the highest pesticide use periods. The laboratory must have the ability to analyze as many of the pesticides of use as possible from each sample. The contractor has agreed to analyze at least 25 compounds of concern to DPR personnel.

Term Contact: *Cheryl Mower*

SUMMARY OF BIDS

- A. List bidders and amount of bid; and
- B. Explain the following:

1. Award of contract if to other than low bidder.
2. IF SOLE SOURCE, WHAT IS JUSTIFICATION?
3. If only one bid was received or sole source, basis for concluding reasonableness of contract rate or price.

RECEIVED
DEPARTMENT OF
PESTICIDE REGULATION
SUNSHINE SERVICES
00 APR 10 PM 3:33

99-0241

JUSTIFICATION FOR CONTRACT (Check One)

- This contract is to be executed to achieve cost savings pursuant to State Contracting Manual Section 7.05; outlines the requirements for cost savings to the State and requires the State Personnel Board Approval (justification for not using civil service.)
- This contract is to be executed pursuant to civil service considerations contained in Government Code Section 19130(b); pertains to cost reimbursement (subvention), and must identify classification and salary.
- Other (personal services are not part of this contract.)

PROGRAM/FUNDING

Appropriation Type (Check One)

- State Operation
- Local Assistance
- Capital Outlay

Authority (Check One)

- Budget Act
- Other (Chapter or Statutes)

Program Cost Account (PCA): 7359

Object Code: 382-01

	Amount to be Encumbered	Fiscal Year
S	360,000 220,000	99-00
S	0	00-00 00-01
S		

Note: If funding covers services provided in two fiscal years, indicate amounts to be expended or reimbursed for each fiscal year.

STATE OF CALIFORNIA
STANDARD AGREEMENT
 STD 113 (NEW 02/91)

AGREEMENT NUMBER 99-0241	AMENDMENT NUMBER
-----------------------------	------------------

1. This Agreement is entered into between the State Agency and the Contractor named below
- STATE AGENCY'S NAME
 DEPARTMENT OF PESTICIDE REGULATION
- CONTRACTOR'S NAME
 REGENTS OF THE UNIVERSITY OF CALIFORNIA, DAVIS
2. The term of this Agreement is: **MAY 1, 2000 THROUGH APRIL 30, 2001**
3. The maximum amount of this Agreement is: **220000** **Two Hundred Twenty Thousand Dollars**

4. The parties agree to comply with the terms and conditions of the following exhibits which are by this reference made a part of the Agreement:
- | | | | |
|---|----------------|----------|-------------|
| Exhibit A - Scope of Work | <u>11</u> | Pages(s) | |
| Exhibit B - Budget Detail and Payment Provision | <u>2</u> | Pages(s) | |
| * Exhibit C - General Terms and Conditions | <u>GIA2/98</u> | | <u>2/98</u> |
| | (Number) | | (Dated) |
| Exhibit D - Special Terms and Conditions | <u>N/A</u> | Pages(s) | |
| Exhibit E - Additional Provisions | <u>N/A</u> | Pages(s) | |

**Approved by Secretary/CEO
 Per memorandum dated
 Oct. 28, 1994**

*View at www.dgs.ca.gov/contracts

IN WITNESS WHEREOF, this Agreement has been executed by the parties hereto.

	CALIFORNIA Department of General Services Use Only
CONTRACTOR'S NAME (If other than an individual, state whether a corporation, partnership, etc.) REGENTS OF THE UNIVERSITY OF CALIFORNIA, DAVIS	
BY (Authorized Signature)	DATE SIGNED
PRINTED NAME AND TITLE OF PERSON SIGNING	
ADDRESS ONE SHIELDS AVENUE DAVIS CA 95616	
STATE OF CALIFORNIA	
AGENCY NAME DEPARTMENT OF PESTICIDE REGULATION	
BY (Authorized Signature)	DATE SIGNED
PRINTED NAME AND TITLE OF PERSON SIGNING RONALD J. OSHIMA, ASSISTANT DIRECTOR	
ADDRESS 830 K STREET, ROOM L-3 SACRAMENTO, CA 95814-3510	

Exempt per

Protocol for Analysis of Lompoc Air Samples

Trace Analytical Laboratory
Department of Environmental Toxicology
University of California, Davis
March 29, 2000

I. Proposed Chemicals for Analysis

Table 1 Contains the proposed list of compounds whose physicochemical properties may be compatible with a single sample multiresidue air sampling/analysis scheme using XAD-4 resin as a trapping medium. The compounds chosen in this table have the air sampling criteria of an airflow rate of 15 liters per minute (lpm) for a 24-hour sampling period, under normal weather conditions of the Lompoc region. Due to limited laboratory resources, the maximum number of compounds that could be analyzed this year will be confined to this list. The final list of compounds to be analyzed during Phase II will be determined after the method development phase is completed. The final list will be at least 25 compounds, and determined by TAL and DPR personnel.

Table 1: List of Candidate Compounds for a Multiresidue Air Sampling Scheme.

Compound	Trapping Experiments Completed	Storage Stability	Compatibility with single sample multiresidue analysis using XAD-4
Chlorpyrifos	X	X	X
Diazinon	X	X	X
Diazinon oxon			X
Malathion			X
Chlorpyrifos oxon			X
Fonofos	X	X	X
Fonofos oxon			X
Malathion oxon			X
Chlorthal-dimethyl			X
PCNB			X
Trifluralin			X
Dimethoate	X	X	X
Mefenoxam			X
Chlorothalonil	X	X	X
Dimethoate oxon			X
Anilazine			
Ethalfuralin			
Dicloran			
Dicofol			
Metolachlor			
Iprodione			
Simazine			
Cycloate			
Permethrin	X	X	X
Naled	X	X	X
Propyzamide			
Thiodicarb			
Vinclozolin			
Thiophanate-methyl			
EPTC			
Sulfur			

II. Proposed Analytical Method

The analytical method that will be used consist of the following:

Sample Extraction

Remove Teflon cap and screen from resin cartridge and pour resin into an appropriate wide mouth jar. Carefully rinse cartridge with 75 mL of ethyl acetate and add the solvent to the jar. Cap the jar with a Teflon lined lid.

Prepare three laboratory concurrent resin fortification samples by adding 30 mL of clean XAD-4 resin to an appropriate jar and fortifying the resin with a standard mixture of a known concentration and an appropriate syringe. Fortifications will be between 1 - 5 times the EQL. Add 75 mL of ethyl acetate and cap the jar.

Swirl for one hour, on a rotary platform shaker, at a moderate speed.

Sample Work up

Quantitatively transfer a 37.5 mL aliquot to a 100 mL round bottom flask and evaporate the solvent to dryness using a rotary evaporator.

Add 2.0 mL of ethyl acetate to the flask, cap and swirl.

Transfer an aliquot from the flask to a GC vial and inject on the GC/FPD and the GC/MSD analytical systems.

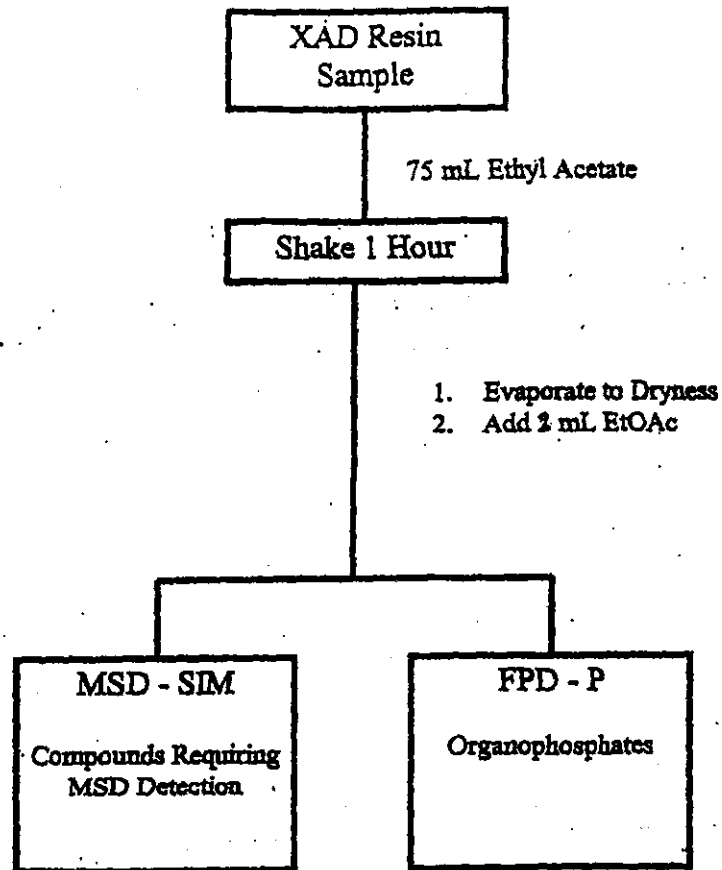
Inject 3 μ L of sample for GC/FPD and 2 μ L of sample for GC/MSD, along with the appropriate standard concentrations for each of the compounds listed in Table 1 into the gas chromatographs. If the peak height/area for the compound of interest is larger than the highest standard, dilute the sample with ethyl acetate and re-inject.

Calculate the mass of the compound in μ g, based on the linear regression curve from TurboChrom® (FPD) or Microsoft® Excel (MSD) and the appropriate dilution factors.

Concentration (μ g/mL) x Dilution Factor (mL)/Sample = μ g/sample.

A schematic of the sample analysis is given in Figure 1.

Figure 1. Method Schematic of Analysis for Lompoc Phase I Air Samples



Quality Assurance

For each set of samples analyzed, at least three laboratory concurrent fortified samples will be run to validate the set. The concurrent fortified samples will consist of control XAD-4 resin, resin that has been cleaned but not exposed to any chemicals, fortified in triplicate at one to five times the EQL. A control resin sample will also be analyzed with every set of air samples.

Selected samples, as mutually agreed to by TAL and the Department of Pesticide Regulation (DPR), will be confirmed with the Mass Selective Detector operated in selective ion monitoring mode (SIM). Confirmation of Table 1 compounds, in selected air samples, will include retention time and visual inspection of a set number of ions for a given compound. Further confirmation may include full spectrum scans and spectral library searches and/or comparison of ion ratios with standards and fortified resin samples. Spectral library searches will depend on the degree of background in the sample and the concentration of the compound of interest. Confirmation will be qualitative not quantitative.

The quality assurance unit (QAU) of the TAL will provide one set of blind samples for each week of sampling. The blind set will consist of three samples spiked at a concentration known only to TAL's QAU personnel, and a control resin sample. The concentration of these fortified samples will be 2 to 5 times the EQL, and may be increased depending on monitoring results. Each set will be fortified and analyzed during the period of time that air sampling is conducted in the Lompoc region. TAL personnel will report the amount in each sample as the total mass of that sample.

TAL's QAU will do at least one critical phase inspection of the ongoing analysis during the analytical phase of the project.

III. Estimation Of Detection Limits And Limit Of Quantitation.

The estimated quantitation limit (EQL) can not be determined until the method detection limit for each compound is determined during the method development phase of the project. However, using data generated for the ten compounds in Phase 1, a predicted estimated quantitation limit would be in the range of approximately 3 to 6 ng/m³ for organophosphates and 6 to 20 ng/m³ for compounds that require the use of a MSD for detection. This is based on a air flow rate of 15 lpm and a sampling period of 24 hours. The EQL and the MDL for non-organophosphates will vary more because the detector sensitivity is dependent on the ionization potential of each compound. Aromatic chlorinated compounds have a higher ionization potential than an aliphatic compound. The EQL and MDL for each of the Phase 1 compounds are given in the method development section, Table 3.

IV. Method Development

Preliminary work

While trapping efficiency, storage stability and method detection limit determination has been done for approximately a third of the compounds in Table 1, they must be done for the remaining compounds listed. Also, instrument parameters, including column liquid phase, oven temperatures, flow rates and quantitation ions, must be optimized to insure separation from potential interferences.

The preliminary laboratory effort will include the following: 1) Procurement and preparation of standards; 2) The preparation of air sampling medium; 3) optimization of analytical systems employed for the analysis of the compounds listed in Table 1.; 4) Initiation of a freezer storage stability study; 5) The determination of the method detection limit (MDL) according to USEPA guidelines (40CFR 136); 6) determine the trapping efficiencies for those compounds not cited in the literature or not been determined in Phase 1 of the Lompoc study.

1. Preparation of Standards

Prepare standards for preliminary work using standards from the existing laboratory repository (both GLP and non-GLP). Initiate procurement of certified standards for GLP analysis of air samples from the Lompoc air project. Stock solutions of each compound, in the appropriate solvent will be prepared. Fortification standard mixtures, dilutions of compatible compounds will also be prepared.

2. Preparation of XAD - 4 Resin Air Sampling Medium

Bulk commercial grade XAD-4 resin is not sufficiently clean enough for multiresidue air sampling. The laboratory purification procedure of commercial grade XAD-4 resin used for air sampling is outlined in Appendix A. An adequate supply of resin will be precleaned from a single batch and screened for potential interferences prior to the start of the sampling phase of the project.

3. Optimization of analytical systems

The intended analytical instruments for multiresidue analysis of the compounds listed in Table 1, will consist of gas chromatographs equipped with either flame photometric detectors using phosphorus mode, or Mass Selective Detectors (MSD), operated in selective ion monitoring mode (SIM). Due to the complexity of the analysis, a Hewlett Packard (HP) 5890 Series II gas chromatographs equipped with flame photometric detector (FPD) and phosphorus filter (526 nm), will be employed for the analysis of organophosphates and their oxons. The FPD has a high degree of sensitivity and selectivity when operated in the phosphorus mode. Furthermore, the FPD is very stable for long periods of time, which lends itself well for the analysis of large analytical sets (runs).

For the analysis of compounds other than organophosphates, two gas chromatographic mass spectrometer systems (GC/MS) will be employed. Both GC/MS systems will be a Hewlett Packard 6890 gas chromatograph with a 5972 mass selective detector (MSD) and a 6890 gas chromatograph with a 5973 MSD. These systems will be used for analysis and selective confirmation of Table 1 compounds in air sample extracts.

All systems will be optimized with columns of varying liquid phases for optimal separation of the compounds of interest from potential interferences and other compounds.

4. Storage Stability

A storage stability study will be initiated approximately six weeks prior to the start of air sampling and terminated four weeks there after. The study will be initiated by fortifying 20 replicates of resin samples, 30 mL each, with all compounds that have no storage stability history. Eight of the replicates will be extracted initially and analyzed. The remaining storage samples will be stored at approximately -20 °C for four weeks. At that time, four replicates will be analyzed while the remainder will stay in storage for the duration of the study and only analyzed if needed.

5. Determination of method detection limit

The method detection limit (MDL) will be determined for each of the compounds where there is no previously reported MDL. The MDL will be determined either by fortifying the resin directly and analyzing without pulling air through the resin. The study will include eight replicates fortified at 0.20 µg each. The results of a MDL experiment for Phase 1 compounds are listed in Table 2 while the EQL in ng/m³ is given in Table 3. The MDL for alachlor was calculated as follows:

MDL = t x s, where t is students' t-values at the 99 percent confidence level and s is the standard deviation of the eight replicate samples analyzed.

$$\text{MDL} = 2.998 \times 4.70 = 14.1 \text{ pg}/\mu\text{L}$$

And the estimated quantitation limit (EQL) is five times the MDL, or

$$\text{EQL} = 5 \times \text{MDL} = 70.5 \text{ pg}/\mu\text{L}$$

Table 2. Pesticide Method Detection Limits and Estimated Quantitation Limits.

Sample Number	Alachlor (pg/ul)	Chlorothalonil (pg/ul)	Chlorpyrifos (pg/ul)	Diazinon (pg/ul)	Dimethoate (pg/ul)	Disulfoton (pg/ul)	Fenamiphos (pg/ul)	Fonofos (pg/ul)	Oxydemeton (ng/ul)	Permethrin (pg/ul)
MDL-1a	33.4	36.0	23.6	19.1	21.4	26.4	32.4	16.0	47.8	29.4
MDL-2a	41.7	38.9	23.7	18.1	19.0	24.1	30.2	15.0	47.1	37.1
MDL-3a	36.0	31.2	23.8	19.0	20.9	26.2	29.9	15.1	47.2	32.4
MDL-4a	35.8	33.6	27.9	23.4	24.3	29.7	34.0	20.1	51.4	34.9
MDL-5a	28.5	34.4	22.8	17.6	20.0	26.0	31.8	15.1	46.7	27.6
MDL-6a	29.6	34.9	24.4	19.3	21.5	27.0	32.3	16.1	47.3	30.3
MDL-7a	29.9	32.9	25.2	20.7	23.2	28.0	33.4	16.9	50.5	33.3
MDL-8a	28.4	29.1	23.3	18.8	20.6	26.8	31.3	16.4	48.6	31.1
Average	32.9	33.9	24.3	19.5	21.4	26.8	31.9	16.3	48.3	32.0
Stdev	4.70	2.99	1.62	1.81	1.72	1.63	1.44	1.68	1.74	3.07
MDL	14.1	8.95	4.87	5.44	5.16	4.89	4.32	5.03	5.21	9.21
EQL	70.5	44.7	24.3	27.2	25.8	24.5	21.6	25.1	26.1	46.1

Based on the 4.0 mL extraction volume and assuming a sample volume of 28.8 m³ (30 lpm for 24 hours) the ambient concentration of the pesticide at the EQL is:

$$\frac{70.5 \frac{\text{ng}}{\text{mL}} \times 4.0 \text{ mL}}{28.8 \text{ m}^3} = 9.79 \frac{\text{ng}}{\text{m}^3}$$

Table 3. Ambient Concentration of Pesticides at the Estimated Quantitation Limit for Phase 1 Compounds.

Alachlor (ng/m ³)	Chlorothalonil (ng/m ³)	Chlorpyrifos (ng/m ³)	Diazinon (ng/m ³)	Dimethoate (ng/m ³)	Disulfoton (ng/m ³)	Fenamiphos (ng/m ³)	Fonofos (ng/m ³)	Oxydemeton (ng/m ³)	Permethrin (ng/m ³)
9.79	6.21	3.38	3.78	3.58	3.40	3.00	3.49	3.62	6.40

It is assumed that the candidate compounds listed in Table 1, will have roughly the same MDL and EQL

range as for those compounds previously determined.

6. Trapping Efficiencies

TAL will either determine air-trapping efficiencies or provide suitable documentation of such assessing trapping efficiency using the proposed analytical procedures. Trapping efficiencies will be provided at one spiking level.

Compounds will be fortified at 50 µg on glass wool directly above two sampling cups in tandem. The first cup will serve as the primary trap while the second cup is the backup cup to check for breakthrough. There will be four replicates for each compound. The experiment will be done with sampler flow rates at approximately 30 liters per minute (lpm), twice the intended field flow rate and run for at least 24 hours.

V. Sample and Reporting Turnaround Time

Preliminary results will be reported within six weeks of receipt of samples.

VI. Laboratory Personnel

The following list is of laboratory personnel that will tentatively work on this project. The percentage of time spent on the project will be dependent on other prior assigned duties/tasks, and on the sampling duration of this project.

Chuck Mourer	TAL Laboratory Manager, Project Manager, Principal Analyst.
Matt Hengel Manager	Data Analyst, Weekly Contact Person, Assistant Project
Greg Hall	Data Analyst, Laboratory SOP Supervisor
To Be Named	Analyst, Wet Chemistry, Data Analysis
Bronson Hung	Analytical Support, Wet Chemistry, Data Analysis
Michael McChesney	Analyst, Wet chemistry
James Stokes	Standard Control Officer
Jim McFarland	GLP Officer
Riza Reyes	Research Technician

VII. Other Considerations

UC Davis reserves the right to publish any method developed at UC Davis or by University personnel, and pertinent data that supports the validation of said method.

This is to be a best-effort undertaking and unforeseen circumstances which preclude obtaining the analytical results required by DPR, after a best-effort attempt, will not negate the contract. If additional analysis for metabolites and/or breakdown products is required, then additional funding will be necessary.

VIII. Management Plan

- 1) Professor Taka Shibamoto, Mr. Charles Mourer and Mr. Michael McChesney will be responsible for the development of sampling and analytical techniques that can be applied to the selected pesticides. DPR and Air Resources Board personnel will be responsible for locating treatment sites, for collecting field samples using the techniques to be developed by Mourer and McChesney, and for transporting the samples safely to the laboratory. Once received, Mr. Mourer will be responsible for resin preparation, sample handling, work up, and analysis, under Dr. Shibamoto's supervision.
- 2) Data summaries for the initial trapping efficiencies/storage stability and MDL experiments will be provided prior to the start of the ambient air sampling phase. Data summaries will be presented after all samples are analyzed.
- 3) Progress reviews may be conducted 1-2 times during the course of the project. TAG and UCD personnel will meet for these reviews and the meetings will alternate between the Sacramento and UCD facilities.

IX. Sampling Plan and Number of Samples

DPR will monitor three to four sites in Lompoc, with possibly one site duplicated for quality control. Each site will be sampled three to four times each week for eight to ten weeks.

TAL will include eight quality control samples for each week of sampling. These samples will include four field quality control samples: one control (blank), two blind fortification samples (field spikes), and a trip spike. The samples will include four laboratory quality control samples: three fortified resin samples and a control resin sample. Validation samples will be fortified between two to five times the EQL.

TAL will analyze 20 - 24 samples each week (including quality control) for eight to ten weeks. TAL will analyze a total of 192 - 230 samples.

TAL may request additional analyses for oxydemeton-methyl, or identification of unknown chemicals. The number samples and specific analyses will be negotiated between TAL and DPR prior to the submission of samples.

X. Proposed Time line

The following is a proposed Time line to coordinate activities

Preliminary Work

+ Week Eight	All supplies ordered (solvents, glassware, GC columns). GLP standards are ordered. Cleaning of XAD-4 resin is initiated.
+ Week Seven	Standard solutions are prepared. Instrumentation optimization is initiated. Laboratory method recovery, trapping efficiencies, and a four-week freezer storage stability study are initiated. Air sampling medium preparation continues. Air trapping experiments initiated.
+ Week Two-Six	Multiresidue LOQ is determined. Laboratory method recovery, trapping efficiencies studies continue.
+ Week Two	Analysis is completed on freezer storage stability experiments. Multiresidue method undergoes final optimization. Air sampling medium preparation is terminated. TAL submits a progress report to Lompoc Technical Advisory Group (TAG). TAG/ARB finalizes the location for the ambient site samples
+ Week One	Air sampling medium is deliver (picked up) by assigned sampling personnel.

Ambient Air Sampling

Week Zero	Ambient air sampling by sampling personnel commences. At the end of the week, sampling personnel delivers samples to TAL. TAL personnel initiate analysis of ambient site sampling.
- Week One	Second week of ambient site sampling is conducted by sampling personnel; TAL personnel analyze samples.
- Week Two	Third week of ambient site sampling is conducted by sampling personnel; TAL personnel analyze samples.
- Week Three	Fourth week of ambient site sampling is conducted by sampling personnel; TAL personnel analyze samples.
- Week Four	Fifth week of ambient site sampling is conducted by sampling personnel; TAL personnel analyze samples
- Week Five	Sixth week of ambient site sampling is conducted by sampling personnel; TAL personnel analyze samples.
- Week 6 - 10	Same procedures as for Week 0 - 5.

Post Air Sampling

- Week 11	Laboratory analytical/confirmation work finalized.
- Week 12 - 13	Analytical Data is review and summarized.
- Week 14	Final data package is submitted to the Study Director.

Appendix A. Preparation of XAD-4[®] Resin

1. Add 10-14 liters of XAD-4 resin to a 61 x 29 cm cylindrical Pyrex container (~ 40 L), or equivalent.
2. Wet the resin with one gallon of methanol (Resi-grade or equivalent. [Caution: The resin will expand in the presence of organic solvents.]).
3. Remove fines by overfilling the container with deionized water with the hose placed at the bottom of the container and stirred vigorously.
4. Add two liters of 0.25 N hydrochloric acid and stir for 30 minutes.
5. Add water to the top of the vessel and decant off the fines and excess water.
6. re-filled with DI water and stir.
7. Repeat steps #5 and 6 were until the water above the resin was clear and the pH is that of the deionized water.
8. Transfer with methanol to gallon bottles.
9. Transfer resin to a large Soxhlet extractor and extract resin with methanol for 24 hours.
10. Add fresh methanol and extract for another 24 hours.
11. Extract resin with ethyl acetate for 24 hours. Add fresh ethyl acetate and extract for an additional 24 hours.
12. Dry the resin in a vacuum oven (25 in. Hg) for 3-4 days at 65°C or until all traces of ethyl acetate is gone from the resin.
13. Store resin in clean dry jars with Teflon[®] lined lids. Store at room temperature until time of use.

BUDGET DETAIL AND PAYMENT PROVISIONS

1. **INVOICING AND PAYMENT:** Invoices shall clearly reference this Agreement and are to be mailed to:

Department of Pesticide Regulation
Environmental Monitoring and Pest Management
Attention Ms. Cindy Roberts
830 K Street
Sacramento, CA 95814-3510

2. **BUDGET CONTINGENCY CLAUSE:** It is mutually agreed that if the Budget Act of the current year and/or any subsequent years covered under this Agreement does not appropriate sufficient funds for the program, this Agreement shall be of no further force and effect. In this event, the State shall have no liability to pay any funds whatsoever to Contractor or to furnish any other considerations under this Agreement, and Contractor shall not be obligated to perform any provisions of this Agreement.

If funding for any fiscal year is reduced or deleted by the Budget act for purposes of this program, the State shall have the option to either, cancel this Agreement with no liability occurring to the State, or offer an Agreement amendment to Contractor to reflect the reduced amount.

Payment under this agreement shall be monthly, in arrears, upon submission and approval of an itemized invoice, identified with Agreement Number sent to the above address. Timely submission of invoices must be received by the Department no later than the twentieth of the following month.

3. **PAYMENT:** Costs for this Agreement shall be computed in accordance with State Administrative Manual Section 8752 and 8752.1.

Nothing herein contained shall preclude advance payments pursuant to Article 1, Chapter 3, Part 1, Division 3, Title 2 of the Government Code of the State of California.

XI. Budget

Method development (Section IV)	\$25,000
- method optimization	
- method detection limit determination	
- storage stability	
- trapping efficiency	
Routine analysis for 25 - 30 pesticides (Section IX)	167,900
\$730/sample X (192 - 230 samples)	
Special analysis (Section IX)	7,100
- identification of unknown chemicals	
- analysis for oxydemeton-methyl	
Administrative overhead (10%)	20,000
TOTAL	\$220,000

CONTRACT ORDER AND PRE-EVALUATION

DPR-017 (Rev. 4/98)

Current Contract No	Contracts Use Only

TYPE OF CONTRACT OR SERVICE **NEW** **AMENDMENT**

Branch Environmental Monitoring & Pest Management	Date 5/05/00
Title of Requestor Associate Env. Research Scientist	Telephone Number (916) 324-4082
Authorized Signature	

Name of Contractor Battelle Memorial Institute	Telephone Number (614) 424-6424
--	---

Address	Street	City	State	Zip Code
	505 King Avenue	Columbus	OH	43201-2693

ADVERTIZED IN STATE REGISTER? **YES** **NO**

DIGEST OF CONTRACT (Set forth service to be rendered by Contractor, amount to be paid to Contractor, time for performance or completion, and attach plans and specifications, if any.)

Contractor to analyze air samples collected for ambient air monitoring study in Lompoc, CA. Development of the method & method validation for a target list of 11 analytes will occur from May through September at a cost of \$62,800. The contractor agrees to complete method development & validation by 9/1/00 & to provide progress reports every 2 weeks during this phase. The study design calls for 3 weeks of sampling with 4 samples/week at 4 sites + 1 sample/week at 1 colocation site for 3 wks. The total number of samples is 63, including 12 quality control field samples. The contractor will provide 15% of the field samples for internal quality control: 9 samples (3/week--2 spikes, 1 blank). Analysis of 63 field samples and report generation cost \$37,099. Total contract costs are \$99,899 from May 15, 2000 to June 30, 2001.

REASON FOR CONTRACT (Identify specific problem, administrative requirement, program need or other circumstances making the contract necessary.)

Has an Interagency Agreement be considered? **YES** **NO**

In 1997, the Department of Pesticide Regulation formed the Lompoc Interagency Work Group to evaluate possible causes of respiratory illnesses in Lompoc, CA. Ambient air monitoring will be conducted in Lompoc during the highest possible use periods. The laboratory must have the ability to analyze as many of the 11 target analytes as possible from each sample, with the requested minimum detection limits. The contractor has agreed to develop methods by September 1, 2000 for as many of the target analytes as possible, and to provide progress reports every two weeks.

SUMMARY OF BIDS

- A. List bidders and amount of bid; and
- B. Explain the following:
 - 1. Award of contract if to other than low bidder.
 - 2. IF SOLE SOURCE, WHAT IS JUSTIFICATION?
 - 3. If only one bid was received or sole source, basis for concluding reasonableness of contract rate or price.

requirements for cost savings to the State and requires the State Personnel Board Approval (justification for not using civil service.)

This contract is to be executed pursuant to civil service considerations contained in Government Code Section 19130(b); pertains to cost reimbursement (subvention), and must identify classification and salary.

Other (personal services are not part of this contract.)

PROGRAM/FUNDING

Appropriation Type (Check One)

State Operation

Local Assistance

Capital Outlay

Authority (Check One)

Budget Act

Other (Chapter or Statutes)

Program Cost Account (PCA): 17358

Object Code: 418

Amount to be Encumbered	Fiscal Year
\$ 27,500	1999-2000
\$ 72,399	2000-2001
\$	

Note: If funding covers services provided in two fiscal years, indicate amounts to be expended or reimbursed for each fiscal year.

Budget

FY 1999-2000

Method development*

- method optimization
- method detection limit determination
- storage stability
- trapping efficiency

Salaries (with overhead burdens)	\$22,200	
Instrument Use Rate	3,300	
Purchased Materials	2,000	\$ 27,500

FY 2000-01

Method development (continued)*

- method optimization
- method detection limit determination
- storage stability
- trapping efficiency

Salaries (with overhead burdens)	29,000	
Instrument Use Rate	5,300	
Purchased Materials	1,000	35,300

Analysis of 63 field samples for as many of the 11 analytes as possible and Report Generation

Salaries (with overhead burdens)	32,700	
Instrument Use Rate	3,800	
Purchased Materials	599	<u>37,099</u>

TOTAL

\$99,899

*Note: During the method development phase (approximately May 15, 2000 through September 1, 2000), the contractor will provide a progress report (via e-mail or in writing) to Randy Segawa (rsegawa@cdpr.ca.gov) every two weeks for each target analyte and its status as regards method optimization, method detection limit determination, storage stability, and trapping efficiency. The contractor agrees to complete the method development and validation portion of the project by September 1, 2000, and will be ready to analyze field samples for analysis shortly thereafter.



505 King Avenue
Columbus, Ohio 43201-2693
Telephone (614) 424-6424
Facsimile (614) 424-5263

April 11, 2000

Proposal No. CP044388

Dr. Randy Segawa
Senior Environmental Research Scientist
California Department of Pesticide Regulation
830 K Street
Sacramento, CA 95814-3510

Dear Dr. Segawa:

Battelle is pleased to respond to your request for the development of methods for the extraction and analysis of air samples for selected pesticides collected on XAD. We propose a study that will focus on the analysis of the "High Priority" pesticides, as outlined in your e-mail to me on March 24, 2000. As funding permits, the methods for the "Medium Priority" pesticides will be developed as well. We propose to use a Soxhlet extraction method for the XAD cartridges, followed by analysis utilizing liquid chromatography - electrospray/tandem mass spectrometry (LC-ESI/MS/MS).

The initial informal survey you sent out in September 1999 indicated that the CA-DPR is responsible for the preparation of the sampling media, field sampling, preparation of field blanks and spikes, sampling times and location, etc. Battelle therefore takes the position that the selection of the best sampling methods falls outside the scope of this methods development effort. It is also assumed that the identification of the specific sampling media and air sampling parameters (i.e., air sample volumes) will be provided to Battelle prior to the method development effort, to aid in the selection of the best extraction techniques and determine method detection limits.

Task 1. Method Development for Analysis of Selected Pesticides

The table below shows the current target analyte list, as per your March 24, 2000 e-mail you sent to Battelle.

Target Analyte List	
High Priority Analytes	Medium Priority Analytes
Benomyl Methomyl Oxamyl Thiodicarb Thiophanate-methyl	Acephate Anilazine DDVP Ethephon Maneb Methamidophos

The method development effort will focus on the "high priority" analytes. If time and funding permit, methods for the "medium priority" analytes will be developed as well. Low priority analytes (analytes in your original list but not in the table above) will not be part of this method development effort due to the limited funds available.

The method development and validation will include the following sub-tasks:

- Determine "best" ionization mode and conditions for analytes
- Obtain MS/MS spectrum for each target analyte
- Select 2 - 3 precursor/fragment ion transitions for selected ion monitoring experiments
- Develop chromatographic method using selected ion transitions
- Determine laboratory detection limits and quantitation limits using the EPA Method (40 CFR, Part 136, Appendix B)

At the end of this task, Battelle will contact the CA-DPR and mutually establish the target list that will be used for the subsequent tasks. Issues to be discussed include modes of ionization (which directly relate to number of analyses per sample to capture all of the target analytes) and laboratory detection limits.

Task 2. Method Development for the Extraction of Selected Pesticides From XAD

Once an analytical method is developed for the target analytes, the development of the extraction methodology will begin. A target limit of quantitation will be 5 ng/m³, noting that this is a target and not a requirement. This quantitation limit, will depend heavily upon the sampling parameters (mainly sample volume, which will be provided to Battelle by the CA-DPR). The method development and validation will include the following sub-tasks:

- Determine best extraction solvent system for extraction of XAD cartridges
- Measure extraction efficiency from spiked cartridges
- Measure extraction efficiency from spiked cartridges and pass air through the sampling tube (air volume and flow rates will need to mimic the field sampling strategy, using field sampling information provided by the CA-DPR)
- Test for degradation of pesticides while under storage - analyze spiked samples (or extracts) stored for 0, 15, and 30 days. (CA-DPR to advise Battelle whether samples or extracts are to be tested for storage stability.)

Before the end of the method development phase, Battelle will contact the CA-DPR and mutually establish the final target analyte list. The list will take into consideration the ease/difficulty of the analysis for the target analytes as well as the DPR's interest in the individual analytes.

Task 3. Analysis of Field Samples

Battelle will analyze up to 64 field samples (including field blanks and spikes) using the methods developed under this contract. The field samples are to be delivered to Battelle in batches of up to 16 samples per week for a period of 4 weeks. Battelle will analyze additional samples (blanks/spikes, up to 15%) for internal QC.

If the CA-DPR wishes to have additional field samples analyzed, Battelle will submit a cost proposal for the analysis of the additional samples.

Task 4. Reporting

At the end of the program, a report will be prepared that details the methods developed for the extraction and analysis of the target analytes from XAD. In addition, the report will detail the results of the field samples and internal QC samples.

Estimated Cost and Duration of Program

Battelle endeavors at all times to produce work of the highest quality, consistent with our contract commitments. However, because of the research and/or experimental nature of this work, we cannot assure that a successful method for all of the target analytes will result from our efforts.

Dr. Randy Segawa
Senior Environmental Research Scientist
California Department of Pesticide Regulation
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It is estimated that the methods development tasks will require 4 months to complete. It is also estimated that the cost for the methods development and analysis of field samples will be \$99,899.

This proposal is predicated upon the award of a cost incurred type contract. Battelle reserves the right to negotiate the terms and conditions and the wording of the statement of work in any contract resulting from this proposal. Because of the nature of the work proposed and the fact that Battelle is organized under a trust, the following types of terms and conditions should not apply: indemnification and hold harmless (including patent indemnification), warranty, contingent payment, and set-off. However, Battelle does agree to provide a high standard of professional service and to exert its best efforts within the time and funds available for the proposed effort.

Battelle does not endorse products or services. Therefore, the CA-DPR must agree that it will not use or imply Battelle's name for advertising, promotional purposes, raising of capital, recommending investments, or in any way that implies endorsement by Battelle.

Battelle does not undertake Projects for purposes of litigation or to assign fault or blame and does not provide expert witness services. Therefore, the CA-PDR must agree not to use any Project results in any dispute, litigation, or other legal action.

In any event, if, at any time, Battelle or its employees are required to respond to any subpoenas, orders for attendance at depositions, hearings, or trials, document requests, or other legal proceedings as a result of or relating to Battelle's work on the Project, the CA-PDR must agree to reimburse Battelle, in addition to any other amounts payable under this Agreement, Battelle's labor charges, attorney time and/or fees, travel, photocopying and other miscellaneous expenses.


This proposal shall remain valid for 60 calendar days from the date on this letter. Acceptance after these days have passed shall be at the discretion of Battelle.

If you have any questions concerning the technical information we have presented, please contact me directly at 614-424-7210 or by email at kennyd@battelle.org. If you have any contractual questions, please contact Mr. Bill Jones at 614-424-7089.

Sincerely,



Donald V. Kenny
Principal Research Scientist
Atmospheric Science and
Applied Technology Department



William Jones
Contracting Officer

DVK/WJ:llg

SCOPE OF WORK

1. This Agreement is entered into by and between the Department of Pesticide Regulation, (DPR), Environmental Monitoring and Pest Management Branch, 830 K Street, Sacramento, CA 95814-3510 and the Regents of the University of California, Trace Analytical Laboratory, Department of Environmental Toxicology, One Shields Avenue, Davis, CA 95616.
2. Contractor will analyze air samples collected for an ambient air monitoring study in Lompoc, CA and in accordance with the attached Scope of Work, and by this reference made a part hereof.
3. The project coordinators during the term of this Agreement will be:

**Department of Pesticide Regulation
Env. Monitoring & Pest Mgmt.
Attn: Ms. Pam Wofford
830 K Street
Sacramento, CA 95814
(916) 324-4297
(916) 324-4088**

**Regents of the University of CA, Davis
Dept. of Environmental Toxicology
Attn: Mr. Chuck Mourer
One Shields Avenue
Davis, CA 95616
(530) 752-2402
FAX (530) 752-8556**