



California Environmental Protection Agency

AIR RESOURCES BOARD

**FIELD OPERATION OF THE
CALIFORNIA AMBIENT DIOXIN AIR MONITORING PROGRAM (CADAMP)
SAMPLING NETWORK**

OPERATIONS PLANNING AND ASSESSMENT SECTION
QUALITY MANAGEMENT BRANCH
MONITORING AND LABORATORY DIVISION

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Revision 1.0

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Document Approval

Title: Field Operation of the California Ambient Dioxin Air Monitoring Program (CADAMP) Sampling network

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Approval: The following document has been reviewed and approved by the Monitoring and Laboratory Division.

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1.0 INTRODUCTION

1.0.1 OBJECTIVE

The mission of the California Ambient Dioxin Air Monitoring Program (CADAMP) is to quantify the average ambient concentrations of airborne dioxins, furans and dioxin-like polychlorinated biphenyls (PCBs) in the San Francisco Bay Area and the South Coast Air Basin over a two-year period. This document addresses the field activities of the CADAMP. Background and programmatic details can be found in the Quality Assurance Project Plan for the CADAMP.

1.0.2 ACRONYMS

The following terms and acronyms are used throughout this document:

AQSB – Air Quality and Surveillance Branch

ARB – Air Resources Board

BAAQMD- Bay Area Air Quality Management District

CADAMP – California Ambient Dioxin Air Monitoring Program

CFR – Code of Federal Regulations

HAP – Hazardous Air Pollutant

MLD – Monitoring and Laboratory Division

OEHHA – Office of Environmental Health Hazard Assessment

PCB – Polychlorinated biphenyls

PUF – Polyurethane Foam

PUF/XAD/PUF - Sampling media consisting of PUF, XAD and PUF layers

QA – Quality Assurance

QC – Quality Control

QFF- Quartz Fiber Filter

QMB – Quality Management Branch

SCAQMD – South Coast Air Quality Management District

SOP- Standard Operating Procedures

SSD – Stationary Source Division

TAC – Toxic Air Contaminant

TO-9A – Compendium Method 9A, Determination of Polychlorinated, Polybrominated and Brominated/Chlorinated Dibenzo-p-Dioxins and Dibenzofurans in Ambient Air, U. S. EPA, January 1999

U.S. EPA– United States Environmental Protection Agency

XAD- XAD-2 resin

2.0 SAMPLING ACTIVITIES ROLES AND RESPONSIBILITIES

2.0.1 ARB MONITORING AND LABORATORY DIVISION (MLD)

Within the MLD, the Quality Management Branch (QMB) and the Air Quality Surveillance Branch (AQSB) will be involved with the field operations for the CADAMP. The following list summarizes roles and responsibilities associated with the sampling activities. Refer to the Quality Assurance Project Plan for more detailed lists of programmatic roles and responsibilities. Specific contacts are indicated below in bold print. Refer to Figure 2.0.1 for general contact names and phone numbers.

Quality Management Branch will:

- ◆ Coordinate the CADAMP
- ◆ Prepare and update the Quality Assurance Project Plan (QAPP) for the CADAMP
- ◆ Prepare and update this "Field Operations" document
- ◆ Act as the field sampling activities coordinator and contact between MLD and the AQMD and ARB sampling personnel (**Contact: Kevin Mongar, (916) 322-2449, for all sampling, procedural, scheduling, or laboratory related issues**)
- ◆ Act as the manager for the contract laboratory
- ◆ Coordinate with the lab and field personnel in regard to sample media shipments prior to each sampling event (and any other lab issues)
- ◆ Provide training for ARB and air district technicians on "Field Operations" related issues (i.e., CADAMP specific procedures)
- ◆ Receive and review field sample report forms, charts, etc.,
- ◆ Contact site operators to clarify any sample collection issues
- ◆ Log field information into the CADAMP database
- ◆ Validate samples based on field QC information
- ◆ Provide analysis instructions to the laboratory
- ◆ Coordinate with AQSB staff to resolve any sampler issues
- ◆ Conduct sampler flow rate audits (**Contact: Mike Werst, (916) 327-4757**)
- ◆ Provide site reports on the MLD website
- ◆ Calibrate orifice transfer standards (**Contact: Brian Spreadborough, (916) 324-1845**)

Air Quality Surveillance Branch will:

- ◆ Prepare a Standard Operating Procedure for the dioxin sampler
- ◆ Purchase equipment and supplies specific to field sampling, including samplers, sampler parts, PUF glass sleeves, freezers, refrigerators, gloves,

charts, 3/4" Teflon tape, etc. **(Contact: John Roll, (916) 445-0616, for parts and supplies)**

- ◆ Perform acceptance testing on purchased equipment
- ◆ Develop sites as necessary for monitoring, ensure compliance with siting criteria, and install all sampling equipment
- ◆ Perform sampler calibrations at all sites **(Contact: Jose Arguelles, (626) 459-4321, for all South Coast sites and Matt Quok, (916) 445-2555, for all Bay Area sites)**
- ◆ Perform sampler repairs for all sites **(Contact: Jose Arguelles, (626) 459-4321, for all South Coast sites and Matt Quok, (916) 445-2555, for all Bay Area sites)**
- ◆ Provide training for ARB and air district technicians on sampler SOP related issues
- ◆ Perform sample collection for the Boyle Heights and Wilmington sites

2.0.2 AXYS ANALYTICAL SERVICES, LTD will:

- ◆ Provide QFF and PUF/XAD sampling media which has been cleaned and QC checked to meet detection limit criteria
- ◆ Ship pre-spiked sampling media, with sample labels, custody seals, and chain of custody documents to field locations
- ◆ Notify the ARB Operations Planning and Assessment Section (OPAS) staff within 48 hours of receipt of all samples in a sample delivery group
- ◆ Perform analysis of samples for PCDD, PCDF and PCBs as per the methods and SOPs specified in the CADAMP Quality Assurance Program Plan
- ◆ Prepare and deliver data report to OPAS staff within 30 days of sample receipt
- ◆ Correct any errors or deficiencies in reports as requested by OPAS staff

2.0.3 BAY AREA AIR QUALITY MANAGEMENT DISTRICT (BAAQMD)

The BAAQMD will operate samplers and collect dioxin samples as follows:

- ◆ Operate and maintain equipment at the Oakland-Fruitvale, Crockett (John Swett High School), Richmond, San Jose and Livermore sites in accordance with the requirements of the sampler SOP and these field operating procedures
- ◆ Comply with the requirements of the ARB/BAAQMD Roles and Responsibilities memo (see Appendix A of CADAMP QAPP) **Contacts: See Figure 2.0.1**

2.0.4 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)

The SCAQMD will operate samplers and collect dioxin samples as follows:

- ◆ Operate and maintain equipment at the Rubidoux and Reseda sites in accordance with requirements of the SOP and this monitoring protocol,
- ◆ Comply with the requirements of the ARB/SCAQMD Roles and

Responsibilities memo (see Appendix B of CADAMP QAPP). **Contact
Stuart Campbell, (909) 396-2265**

2.0.5 CONTACTS

The primary CADAMP contacts, phone numbers, and addresses are listed in Figure 2.0.1. Additional contacts are listed below:

Mr. Jeffrey P. Cook, Chief
Quality Management Branch, ARB
(916) 322-3726

Mr. Kenneth Stroud, Chief
Air Quality Surveillance Branch, ARB
(916) 445-3745

Mr. Webster Tasat, Manager
Operations Planning and Assessment Section, QMB
(916) 327-7055
wtasat@arb.ca.gov

Mr. Reggie Smith, Manager
Operation Support Section, AQSB
(916) 327-1238
rsmith@arb.ca.gov

Mr. Curtis Schreiber, Manager
Air Monitoring South Section, AQSB
cschreiber@arb.ca.gov

Mr. Gary Kendall
Director, Technical Services Division
Bay Area Air Quality Management District
(415) 749-4985

Mr. Stan Yamaichi, Supervising Air Quality Instrument Specialist
BAAQMD
(408) 295-5019
(415)740-6870 cell
syamaichi@baaaqmd.gov

Mark Stoelting, Principal Air and Meteorological Monitoring Specialist
BAAQMD
415-749-4619 voice
415-749-5082 FAX
mstoelting@baaqmd.gov

Mr. Rudy Eden
Senior Enforcement Manager
South Coast Air Quality Management District
(909) 396-2391

Mr. Rene Bermudez, Principal Air Quality Instrument Specialist
South Coast Air Quality Management District:
(909) 396-2136
rbermudez@aqmd.gov

Figure 2.0.1 CADAMP Primary Contacts

Project Coordinators:

| | | |
|--------------|---|--|
| Kevin Mongar | Air Resources Board Monitoring & Laboratory Division Sacramento, CA 94512 1927 13 th Street | (916) 322-2449 (916) 445-9371 - fax kmongar@arb.ca.gov |
| Kathy Gill | Air Resources Board Monitoring & Laboratory Division Sacramento, CA 94512 1927 13 th Street | (916) 445-9483 (916) 445-9371 - fax kgill@arb.ca.gov |

Laboratory:

| | | |
|----------------|--|--|
| Diane Luszniak | AXYS Analytical Services, Ltd. 2045 Mills Road Sidney, British Columbia V8L3S8 Canada | (250) 655-5800 (250) 655-5811 - fax dluszniak@axys.com |
|----------------|--|--|

Site Contacts and Shipping Addresses:

Boyle Heights and Wilmington (operated by ARB personnel):

| | | |
|---|--|--|
| Jose Arguelles <i>(primary contact and site operator for Boyle Heights and Wilmington)</i> | California Air Resources Board 9528 Telstar Ave. El Monte, CA 91731 Attn: Jose Arguelles <i>(shipping address)</i> | (626) 459-4321 jarguell@arb.ca.gov |
|---|--|--|

Rubidoux and Reseda (operated by SCAQMD personnel):

| | | |
|--|---|--|
| Stuart Campbell <i>(primary contact)</i> | South Coast AQMD 21865 East Copley Drive Diamond Bar, CA 91765-4182 Attn: Stuart Campbell <i>(shipping address)</i> | (909) 396-2265 scampbell@aqmd.gov |
| Keith Brown <i>(site operator for Rubidoux)</i> | South Coast AQMD 21865 East Copley Drive Diamond Bar, CA 91765-4182 | (909) 396-3312 kbrown@aqmd.gov |
| Richard Rodgers <i>(site operator for Reseda)</i> | South Coast AQMD 21865 East Copley Drive Diamond Bar, CA 91765-4182 | (909) 397-6104 rodgers@aqmd.gov |

Figure 2.0.1 (cont.):

Site Contacts and Shipping Addresses

Oakland, Crockett, Richmond, Livermore, San Jose (operated by BAAQMD personnel):

| | | |
|---|--|--|
| Michelle Kuslits <i>(contact and site operator for Oakland)</i> | Federal Express World Center 115 Center Avenue Pacheco, CA 94553 Attn: Michelle Kuslits (Hold for Pickup) <i>(shipping address)</i> | (415) 740-6878 mkuslits@baaqmd.gov |
| Bob Franicevich <i>(contact and site operator for Crockett and Richmond)</i> | Federal Express World Center 1637 E. Francisco Blvd. San Rafael, CA 94901-5504 Attn: BAAQMD/Bob Franicevich (Hold For Pickup) <i>(shipping address)</i> | (510) 235-7890 <i>(office)</i> (415) 740-6861 <i>(cell)</i> rfranicevich@baaqmd.gov |
| Gary Zoppo <i>(contact and site operator for Livermore)</i> | BAAQMD Federal Express World Center 7275 Johnson Drive Pleasanton, CA 94588 Attn: Gary Zoppo (Hold for Pickup) <i>(shipping address)</i> | (925) 455-1554 gzoppo@baaqmd.gov |
| Tony Larsen <i>(contact and site operator for San Jose)</i> | BAAQMD 158 Jackson Street, Suite B San Jose, CA 95112 Attn: Tony Larsen <i>(shipping address)</i> | (408) 295-0692 tlarsen@baaqmd.gov |

For Sampler Calibrations/Repairs for All South Coast Air Basin Samplers:

Jose Arguelles, AQS/ARB
(626) 459-4321
jarguell@arb.ca.gov

For Sampler Calibrations/Repairs for All Bay Area Samplers:

Matt Quok, AQS/ARB
(916) 445-2555
mquok@arb.ca.gov

For Sampler Parts or Sampling Supplies:

John Roll, AQS/ARB
(916) 445-0616
jroll@arb.ca.gov

3.0 MONITORING LOCATIONS

A total of nine sites have been selected for dioxin monitoring in the network. Five sites are located in the San Francisco Bay Area and four sites are located in the South Coast air basin.

The San Francisco Bay Area sites include Oakland-Fruitvale, Crockett, San Jose, Livermore and Richmond.

The South Coast Air Basin sites include Boyle Heights, Wilmington, Rubidoux and Reseda.

Additional site information can be found in the CADAMP Quality Assurance Project Plan, and at www.arb.ca.gov/aaqm/qmosopas/dioxins/dioxins.htm.

4.0 STUDY PERIOD AND SAMPLING SCHEDULE

A typical sampling moment for the CADAMP consists of 24 days of sampling over a 28-day period. The weekly schedule consists of six days of continuous sampling followed by one day with the sampler off for sample change-out. Sampling begins at midnight (12:00 a.m.) on the scheduled start day. On the inactive day each week, the exposed QFF must be collected and replaced with an unexposed QFF. At the end of the fourth week, both the QFF and glass cartridge containing the PUF are retrieved.

Sampling at all sites began on December 20, 2001. An example of the first sampling moment is shown in Figure 4.0.1. The monthly schedule for sampling and field blank collection for CADAMP can be found at: www.arb.ca.gov/aaqm/qmosopas/dioxins/dioxins.htm.

**Figure 4.0.1
 Example Dioxin Sampling Schedule**

| December 2001 | | | | | | |
|---------------|-------|---------------|--------------------------------------|---|-----|-----|
| Sun | Mon | Tue | Wed | Thur | Fri | Sat |
| | | | | | | 1 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20-Begin New Sampling Moment 12:00 am | 21 | 22 |
| 23/30 | 24/31 | 25 Holiday | 26 QFF Change: Sampler Idle | 27- Sampling Resumes 12:00 am | 28 | 29 |

| January 2002 | | | | | | |
|--------------|-----|--------------|---|---|-----|-----|
| Sun | Mon | Tue | Wed | Thur | Fri | Sat |
| | | 1 Holiday | 2 QFF Change: Sampler Idle | 3 Sampling Resumes 12:00 am | 4 | 5 |
| 6 | 7 | 8 | 9 QFF Change: Sampler Idle | 10 Sampling Resumes 12:00 am | 11 | 12 |
| 13 | 14 | 15 | 16 QFF and PUF Recovery: Sampler Idle | 17 Begin New Sampling Moment 12:00 am | 18 | 19 |
| 20 | 21 | 22 | 23 QFF Change: Sampler Idle | 24 Sampling Resumes 12:00 am | 25 | 26 |
| 27 | 28 | 29 | 30 QFF Change: Sampler Idle | 31 Sampling Resumes 12:00 am | | |

5.0 SAMPLING PROCEDURES

All sampling for the CADAMP will be conducted in accordance with the procedures stated in the ARB's Standard Operating Procedure (SOP) for the Thermo Andersen PUF Sampler-Special and the CADAMP specific procedures outlined in this document. Refer to Figure 5.0.3 for a diagram of the sampler.

NOTE: The PUF sampling media has been modified and will consist of a layer of PUF, XAD-2 resin, and a second PUF layer (Figure 5.0.1). Throughout this document it will be referred to only as PUF.

5.0.1 SAMPLING SUPPLY RECEIPT

Approximately one week prior to each sampling moment operators will receive a shipment from AXYS Analytical Services via Federal Express (Fed Ex) containing the following sampling media and supplies (per sample/site):

1. One glass cartridge with 1 PUF sorbent trap (sample). Refer to Figure 5.0.1.
2. *One glass cartridge with 1 PUF sorbent trap (blank).**
3. *One wide mouth glass jar to hold the PUF blank.**
4. Four petri dishes which will be used to hold exposed QFF's (*4 more if collecting blanks**).
5. One pair of clean Teflon rings.
6. Five QFF's (1 is an extra) individually wrapped in foil. (*4 more if collecting blanks**).
7. Blue ice.
8. Sample labels and chain of custody seals.
9. Chain of Custody Form (Figure 6.0.1).
10. Solvent rinsed aluminum foil.
11. Un-cleaned aluminum foil.
12. Forceps.
13. One jar of water (temperature blank).
14. Pre-addressed Fed Ex air waybill for sample shipment.

NOTE: **Supplies for field blanks will not be included with every shipment. Collection of field blanks will be rotated among the various sites.*

Upon receipt of this shipment, the contents shipping container should be opened and checked for completeness and damage. If any of the contents are missing or damaged, contact Kevin Mongar at (916) 322-2449 or Kathy Gill at (916) 445-9483 immediately. Place the PUF cartridge in a refrigerator until ready for installation on the sampler. The blue ice should be put into a freezer so that it will be frozen when needed for shipment of samples to the laboratory. Place the temperature blank in the refrigerator until ready to return with samples to the laboratory. Store the remaining items at room temperature. These items may remain in the shipping cooler for storage.

NOTE: Do **not** freeze the cartridge prior to sampling. Freezing may cause the XAD-2 resin beads to break making them ineffective at collecting the gaseous sample.

5.0.2 SAMPLING SUPPLY SHIPPING LOCATIONS

The laboratory has been instructed to ship sampling supplies to the addresses listed in Figure 2.0.1

5.0.3 SAMPLER OPERATION

Routine operation of the Thermo Andersen PUF sampler for the CADAMP program consists of initial setup, interim QFF collection, and sample recovery. The CADAMP Field Sample Report form (Figure 5.0.4) will be used for sampling documentation. Refer to Figures 5.0.1, 5.0.2 and 5.0.3 for a diagram of the media, sampling head, and sampler, respectively. (Attachment 1 of this document provides a step-by-step summary of CADAMP sampling activities.)

1. *Initial Set-up: Pre-Run Blank Collection Procedure*

Field blanks are not collected at every site for each sampling moment. Field blank collection will be rotated throughout the sites resulting in one field blank collected at each site once every four to five months.

If a field blank is to be collected, perform the following steps to collect PUF and filter blanks **prior** to performing any flow checks or procedures listed in the "Pre-Run Procedures" of the SOP:

- a. While wearing disposable, powder-less, latex gloves, remove the foil from the glass cartridge containing the PUF blank.
- b. Insert the PUF blank glass cartridge into the cartridge holder of the sampling head.

NOTE: The screened end of the PUF cartridge is the bottom. The cartridge is inserted into the sampling head bottom first.

- c. Place the Teflon gasket on top of the filter support base. Using forceps, remove a QFF blank from the petri dish and place it on top of the gasket. Place the second gasket on top of the filter.

NOTE: One side of the filter will be smooth and the other will be slightly textured with a cross-hatch pattern. The filter should be positioned with the patterned side facing down. Place the filter retaining ring on top of the filter and gaskets and attach it to the filter support base with the three thumb screws. Load the sampling head into the sampler. Do not turn the sampler "on" at this time.

- d. Remove the sampling head from the sampler. Remove the retaining ring and top gasket. With the forceps, remove the filter from the support base and place it back into the petri dish. Place the petri dish with the exposed blank QFF onto the upper shelf of the sampler. Do not replace the lid of the petri dish at this time.
- e. Remove the cartridge holder and remove the PUF cartridge blank. Place the cartridge blank into the PUF blank jar. Place the PUF blank jar on the shelf of the sampler with the lid off.
- f. Perform the “Initial Procedure” and the “Loading the Sampler” as described in Section 2 (*Initial Set-up: Loading the Sampler*) below. After these procedures are completed, replace the lids on the cartridge blank jar and the petri dish. The blank cartridge jar will remain on the sampler shelf throughout the duration of the entire sampling moment. The petri dish with the blank QFF must be sealed with Teflon tape, wrapped in foil, labeled, placed in a ziplock bag, sealed with a custody seal, and placed in a freezer.

2. *Initial Set-up: Loading the Sampler*

Prior to the start of initial sampling, the field technician should perform a leak check with no sampling media installed. Complete the Field Sample Report by entering the site information, sample and blank ID information, sampler calibration information, start and stop times, flow check information, Magnehelic readings, and elapsed time meter reading. Record the initial ambient temperature and barometric pressure on the field sample report form.

Conduct the flow check and load the cylindrical glass PUF cartridge and the QFF into the sampling head as follows:

- a. Open the top cover and the front access door to the sampler. Unscrew the upper portion of the sampling head.
- b. While wearing gloves, remove the bubble wrap from the PUF cartridge. Remove and discard the foil wrapping from the cylindrical glass PUF cartridge.
- c. Place an O-ring around the top of the PUF cartridge to ensure a proper seal. Load the PUF cartridge into the sampling head. Reassemble the upper sampling head.

NOTE: The screened end of the PUF cartridge is the bottom. The cartridge is inserted into the sampling head bottom first.

- d. Loosen the three thumbscrews on the top of the sampling head and remove the protective plate and retaining rings. While still wearing the gloves and using forceps, load the "dummy" QFF sandwiched between the "dummy" Teflon rings using forceps. Reinstall the retaining ring and tighten the thumbscrews. The protective plate may be stored away at this time.

NOTE: The "dummy" QFF and Teflon rings are used to prevent contamination of the field samples. They are identical to the QFFs and rings used for actual sampling but are used only for performing flow checks. They are not returned to the laboratory but are stored and kept for future use.

- e. Perform the flow check with the calibrated orifice transfer standard as described in the SOP using the sampler Magnehelic calibration set-point. Record information on the Field Sample Report (Figure 5.0.4, Item 2, Monthly Checks: Verify flow rate). Use the orifice calibration data, barometric pressure and temperature to calculate the standard flow rate. The flow rate should be 240 slpm \pm 10% (216 to 264 slpm).

NOTE: If greater than \pm 10% from 240 slpm, recalibration by AQSB staff is required. Notify Jose Arguelles or Matthew Quok at ARB (see contacts, Section 2.0.5) to schedule calibration. Recalibration must be performed within one week in order to salvage the sampling moment.

- f. Remove "dummy" QFF and "dummy" Teflon rings using forceps. Place in ziplock bag and store for next monthly flow check. Do not return to laboratory. Retain any unused QFFs as spares for flow checks only, as needed.
- g. Using the clean forceps supplied by the lab, install the sample QFF sandwiched between the Teflon rings.
- h. After loading the media into the sampler and reassembling the sampling head, manually turn on the sampler (refer to the SOP for warm-up period) and record the initial Magnehelic reading on the field sample report form. Reset to the sampler magnehelic calibration set-point, if necessary.
- i. Place a new seven-day chart into the Dickson recorder and set the Dickson chart to the current time. Refer to the SOP for operational procedures for the Dickson recorders. Ensure there is contact between the pen and the chart and that there is enough tension on the pen to make a trace.

- j. Turn the sampler off.
- k. Set the mechanical timer to turn on and off according to the sampling schedule. Samplers will turn on and off at midnight (12:00 am) Pacific Standard Time on the days specified in the schedule.
- l. Record the elapsed time meter reading on field report form ("Start" reading, Event 1).
- m. If collecting a field blank place the lid on the petri dish containing the blank QFF. Using $\frac{3}{4}$ " Teflon tape, seal the opening and secure the top to the bottom of the petri dish by taping around the circumference of the lid.
- n. Wrap the field blank petri dish with aluminum foil. Cover all sides to keep out light. Attach the sample label to a smooth area on the aluminum foil. Place the field blank petri dish in a ziplock bag. Seal the bag with a signed custody seal and place in the freezer. Replace the lid on the jar containing the blank cartridge.

3. *Interim Run Procedure*

The following procedures will be conducted at the end of week one, two, and three. The sampler must be serviced on the seventh day. The interim run procedure consists of retrieving the exposed QFF and Dickson chart and loading an unexposed QFF and new chart. The PUF will not be changed at this time.

- a. Prior to removing any sampling media, complete the "Stop" portion for Sample Week 1 of the Field Sample Report form by entering the temperature, barometric pressure, Magnehelic reading and elapsed time reading.

NOTE: It will be necessary to manually turn on the sampler and allow it to run for the amount of time specified in the SOP before recording the final magnehelic reading and elapsed time.

- b. While wearing gloves, open the cover of the sampler, loosen the thumbscrews and remove the retaining ring from the sampling head. If a field blank is scheduled to be collected, remove the field blank QFF from the foil and place it in an uncovered petri dish on the sampler shelf. Remove the cover of the jar containing the blank PUF cartridge. The jar containing the blank PUF cartridge and the petri dish with the blank QFF will remain uncovered as long as the sampler is being serviced.

- c. Using forceps, remove the QFF from the sampler. Place the exposed QFF in an empty petri dish. Seal the petri dish with Teflon tape and wrap the dish in foil which has not been solvent rinsed. Place a sample label on the foil and place the petri dish in a plastic ziplock bag. Place a custody seal over the opening of the ziplock bag.

NOTE: Foil will be received in two packages. One will be labeled "clean" which indicates it has been solvent rinsed and one will be labeled "un-cleaned" which indicates it has not been solvent rinsed. See items 10 and 11 of the Sample Supply Receipt section of this document.

- d. With the forceps, load a new unexposed QFF into the sampling head, reassemble the retaining ring, and hand tighten the thumbscrews. Do not overtighten.
- e. Remove the seven-day chart from the Dickson recorder. Review the recorded trace for any problems. Note any anomalies or problems detected on the chart and on the field sample report. Install a new chart and set the chart to the current time as indicated in the SOP.
- f. Record the elapsed time reading. Turn on the sampler, allow to run for the warm-up period and adjust the Magnehelic gauge to the calibration set point. Record the initial temperature and barometric pressure on the field sample report form.
- g. When servicing the sampler has been completed, replace the cover of the petri dish containing the sample blank QFF. Seal the petri dish with Teflon tape. Wrap the petri dish containing the field blank QFF with foil, label and seal in the same manner as the exposed QFF. Replace the lid of the jar containing the blank PUF cartridge.
- h. Place the collected sample QFFs in the freezer as-soon-as-possible.

5.0.4 SAMPLE RECOVERY

After the fourth week of sampling, the sampling run is concluded. The sample is retrieved by the following procedure:

1. Prior to removing any sampling media, complete the "Stop" portion for Sample Week 4 on the field sample report form by entering the temperature, barometric pressure, Magnehelic reading and elapsed time reading. It will be necessary to manually turn on the sampler and allow it to warm-up before recording the final magnehelic reading.

2. Open the sampler cover and front access door.
3. If a blank is being collected, open the lid to the jar containing the blank PUF cartridge.
4. Loosen the thumbscrews on the sampling head and remove the retaining ring. Using forceps remove the QFF from the sampler and place it in the petri dish. Seal the petri dish using Teflon tape and wrap and label in the manner previously described.
5. Unscrew the lower portion of the sampling head. Remove the glass PUF cartridge. Remove the O-ring from the glass PUF cartridge and set aside for future use. Wrap the cartridge in the solvent rinsed foil. Place a sample label on the foil then place the glass cartridge back in the ziplock bag. Seal the opening of the bag with a custody seal.
6. Remove the blank PUF cartridge from the jar. Wrap, label, and seal the blank PUF cartridge in the same manner as the sample PUF.
7. Remove the seven-day chart from the Dickson recorder. Mail all four charts with field sample report and a copy of the completed chain of custody to Kevin Mongar using the pre-addressed/pre-paid envelopes.
8. Remove the blue ice from the freezer and place into the shipping container (use all of the blue ice delivered from the lab with the media). Pack the following items securely into the shipping container:
 - *Sample PUF cartridge* wrapped in bubble wrap
 - *4 sample QFFs* in individual petri dishes, with teflon rings, sealed with teflon tape, placed inside ziplock bag, wrapped individually in bubble wrap
 - *Field blank PUF cartridge* wrapped in bubble wrap
 - *Field blank QFFs* in individual petri dishes, sealed with teflon tape, placed inside ziplock bag, wrapped individually in bubble wrap
 - *Forceps*
 - *Temperature blank jar* (retrieve from refrigerator)

Use enough bubble wrap when packing to prevent any movement of the contents and to protect the items from breakage. Use all of the blue ice provided by the laboratory to maintain temperature during shipping.
9. Seal the container with packing tape. Place the Fed Ex shipping label (supplied by the lab) onto the container and ship it (overnight delivery) to the analytical lab.

5.0.5 SAMPLE LABELING

The PUF cartridges and the petri dishes containing the sample QFFs will be

labeled using the following naming convention:

Site Abbreviation - Sampler Type - Start Date - Media - Sample Type

The stations will be abbreviated in the following manner:

| | | | |
|----------------|-----|-------------|-----|
| San Jose: | SJ | Livermore: | LIV |
| Oakland: | OAK | Richmond: | RIC |
| Crockett: | CRO | Reseda: | RES |
| Rubidoux: | RUB | Wilmington: | WIL |
| Boyle Heights: | BHT | | |

The sampler types are abbreviated as follows:

| | |
|-----------------------------|----|
| CADAMP (mod TO-9A) sampler: | TO |
| CADAMP collocated sampler: | CO |
| Connecticut head sampler: | CN |

Start Date is the date the sampler begins running (not the PUF/filter install date) and is in the format mmddyy. For field blanks, the 'start date' is the date the PUF or QFFs are collected.

Media Type is abbreviated in the following manner:

| | |
|----------------|---|
| PUF cartridge: | P |
| QFF filter: | F |

Sample Type is abbreviated in the following manner:

| | |
|--------------|---|
| Sample: | S |
| Field Blank: | B |

The following are examples for the naming conventions:

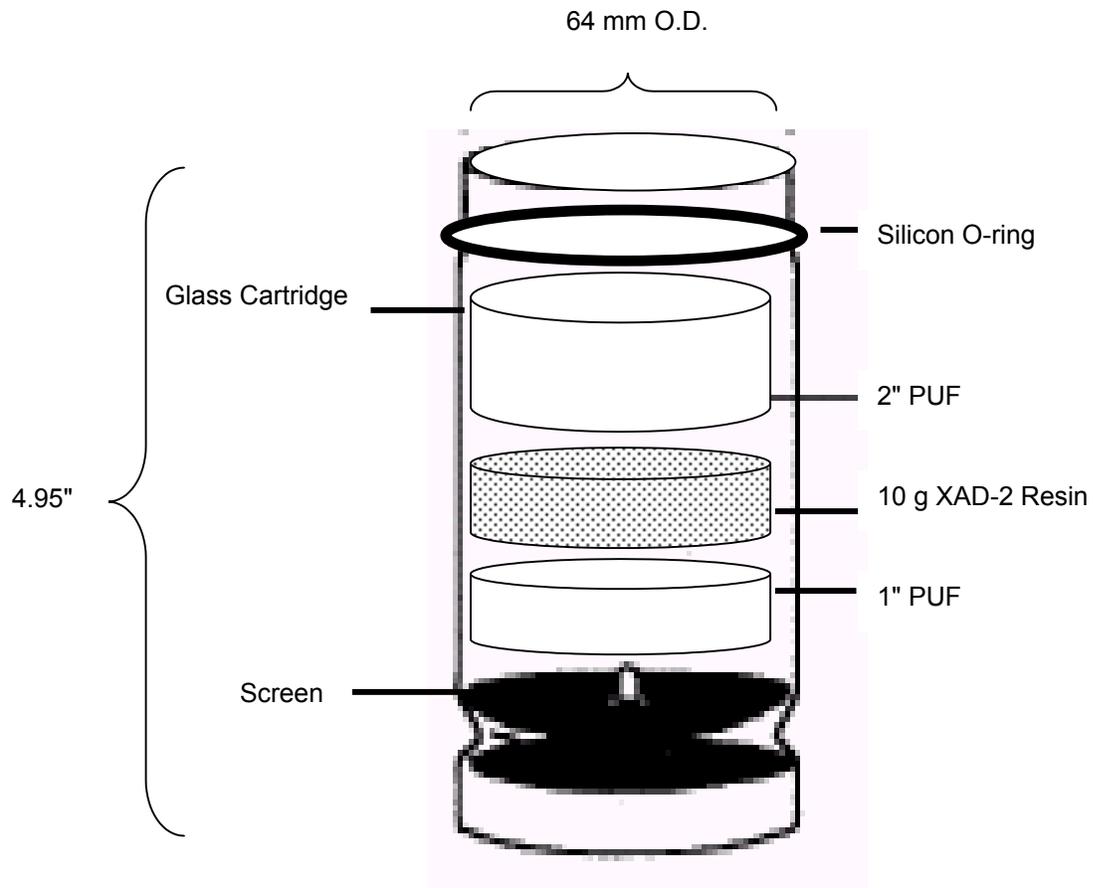
PUF Sample:
BHT-TO-122001-P-S

Filter Sample:
BHT-TO-122001-F-S

PUF Blank:
BHT-TO-011602-P-B
(1/16/02 collection date)

Filter Blank:
BHT-TO-121901-F-B
(12/19/01 collection date)

Figure 5.0.1
PUF Sampling Cartridge



**Figure 5.0.2
Sampling Head**

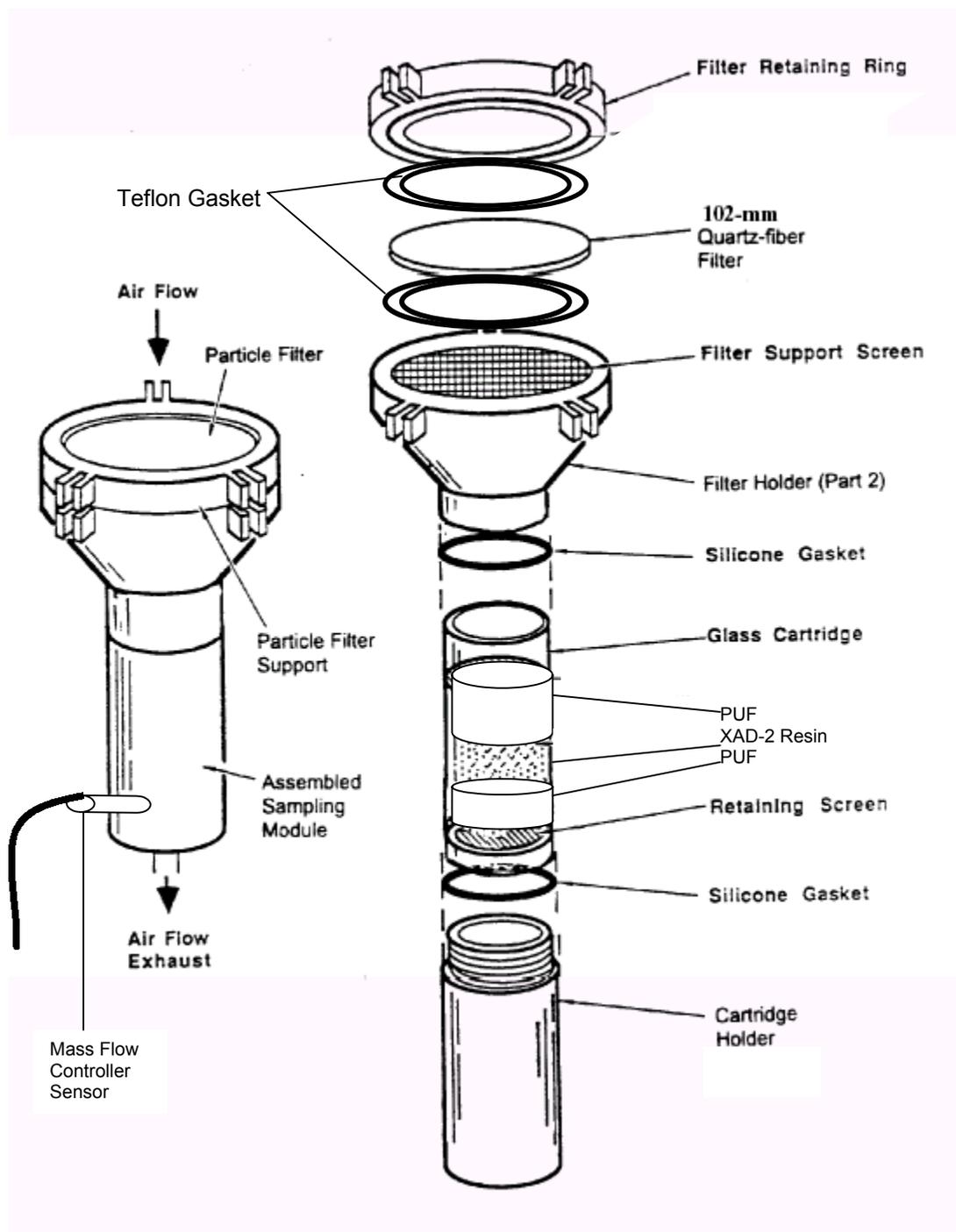
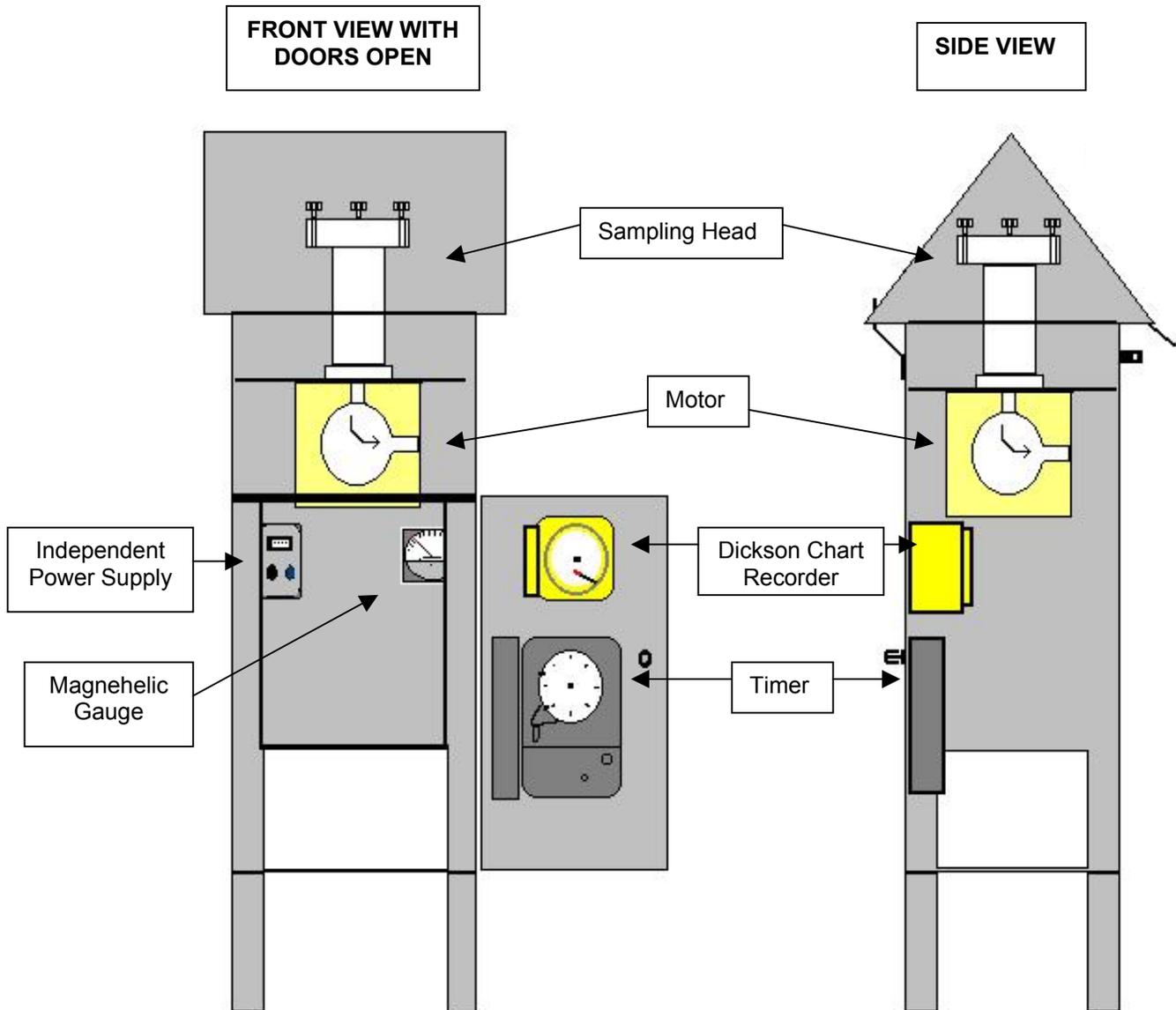


Figure 5.0.3
CADAMP Sampler



**Figure 5.0.4
 CARB 28 Day PUF Field Sample Report**

Site Name: _____ PUF Sample I.D. _____
 (site-sampler-start date-P-S)

AIRS Site Number: _____ ARB Cartridge I.D. #: _____

Field Technician: _____

Agency: _____ PUF Field Blank I.D. _____
 (site-sampler-start date-P-B)

Sampler Property #: _____ ARB Cartridge I.D. #: _____

| | | Date | Time (PST) | Magnehelic Reading | Ambient Temp. | Ambient Pressure | Elapsed Meter Reading | Elapsed Sampling Time | |
|---|-------|------|------------|--------------------|---------------|------------------|-----------------------|-----------------------|-------------------------------|
| Sample Event 1 (Install PUF/QFF) | Start | | | | | | | | |
| | Stop | | | | | | | | |
| Sample Event 2 (Change QFF) | Start | | | | | | | | |
| | Stop | | | | | | | | |
| Sample Event 3 (Change QFF) | Start | | | | | | | | |
| | Stop | | | | | | | | |
| Sample Event 4 (Change PUF/QFF, Start new sample) | Start | | | | | | | | TOTAL Sampling Duration |
| | Stop | | | | | | | | |

OPERATOR INSTRUCTIONS:

- Weekly Checks: Change QFF.
Record sample information above.
- Monthly Checks: Change QFF and PUF.
Perform sampler leak check. Sampler magnehelic reading during leak check: _____

Verify flow rate: Calibration kit #: _____
Date Cal kit last certified: _____
Magnehelic reading: _____
Manometer Reading: _____ Flow rate (slpm): _____
- Bi-Annual: Calibrate sampler: Date last calibrated: _____
Magnehelic calibrated set-point for 240 slpm: _____

COMMENTS: _____

Contact Kevin Mongar at (916) 322-2449 or Kathy Gill at (916) 445-9483 if there are any questions regarding submitting samples to the laboratory.

6.0 SAMPLE HANDLING AND SHIPPING PROCEDURES

Sampling media will be handled in accordance with the procedures in the ARB's SOP for the Andersen PUF samplers. As stated in the SOP, non-powdered latex gloves must be worn whenever handling the glass cartridge or QFF. There should be no need to handle the PUF itself. *Please note that the PUF has been spiked with PCDD/PCDF/PCB field standards and is hazardous. Do not handle or touch the PUF.* Forceps should be used to handle the QFF. Gloves must be disposed of after each use. The forceps will be returned to the lab with each sample shipment. Additionally, the following items will be conformed to:

1. Prior to sample collection, all prepared PUF cartridges will be stored in a refrigerator at approximately four degrees Celsius (4°C).

NOTE: Do not freeze cartridges prior to collection as the XAD resin beads may break and will not be effective at retaining the gaseous sample.

2. Upon receipt, the temperature blank will be stored in a refrigerator. It will be returned to the laboratory with the exposed filters and cartridges.
3. After sampling, all samples and blanks (filters and PUF cartridges) will be stored in a refrigerator or freezer at four degrees Celsius or below.
4. The extra aluminum foil should be kept in a plastic ziplock bag and stored in the shipping container.
5. Complete all sampling information on the enclosed chain of custody form (Figure 6.0.1) before packing samples. Sign and date the chain of custody form. Place the completed *original* chain of custody in a ziplock bag. Tape the ziplock bag to the inside lid of the shipping container.

NOTE: The original Field Sample Report, a copy of the chain of custody form and the four completed seven day Dickson charts must be mailed to Kevin Mongar, ARB-MLD.

6. Wrap all sample and blank jars in bubble wrap before being packed. The glass PUF cartridges must be wrapped in solvent rinsed foil, placed in a ziplock bag with a custody seal, and wrapped with bubble wrap. Place the wrapped samples, blanks, and frozen blue ice in the shipping container. Place the temperature blank and the ziplock bag containing the forms into the shipping container. Pack the contents securely with bubble wrap to minimize shifting and damage during transit. The petri dishes are susceptible to breakage. Make sure that the petri dishes are individually wrapped with bubble wrap. All filter petri dishes and PUF cartridges should have individual custody seals.
7. Do not place custody seals on the shipping container, as they will be

broken if Customs Officials need access to inspect the contents.

NOTE: To ensure that samples are received at AXYS Analytical within 24 hours of shipping, do not ship samples on a Friday or the day before a holiday. (If shipping must occur on a Friday, indicate on the FedEx waybill that Saturday delivery is required. Immediately notify Axys Analytical that samples will be delivered on Saturday and provide the tracking number. *Saturday delivery should be avoided if at all possible.*)

8. Complete the Commercial Invoice Form and the Toxic Substance Control Act (TSCA) Certification (Figures 6.0.2 and 6.0.3). Place the completed forms and Fed Ex waybill in the window envelope on the exterior of the shipping container. Attach the Fed Ex shipping label.
9. Immediately e-mail the Fed Ex tracking number to AXYS Analytical, Kevin Mongar and to Kathy Gill at: dluszniak@axys.com, kmongar@arb.ca.gov, and kgill@arb.ca.gov, respectively.

**Figure 6.0.2
 COMMERCIAL INVOICE**

| | | | | | | |
|--|-------------------------------|--|---------------------------------|---|-----------------------------|--|
| Invoice Number | | Purpose of Shipment Environmental samples for analysis | Currency U.S. Dollars | Ultimate Destination British Columbia, Canada | | |
| Date of Exportation | | Air Waybill Number | | Number of Packages 1 | | |
| Shipper/Exporter Kevin Mongar (916) 322-2449 Air Resources Board MLD 1927 13 th Street Sacramento, CA 95814 United States | | Consignee Diane Luszniak (250) 655-5800 Axys Analytical Services 2045 Mills Road Sidney, BC V8L3S8 Canada | | Importer Same as Consignee | | |
| Number | Country of Manufacture | Description of Goods | Weight (lbs) | Quantity | Unit Value (US \$) | Commodity Value (US \$) |
| 1 | USA | Environmental Air Samples including: polyurethane foam, polycarbonate resin, glass cartridge, paper filter, glass jar | 1.0 | | 10.00 | |
| | | | | | | Total Commodity or Customs Value: |
| | | | | | Terms of Sale: FOB | |
| | | | | | Freight Charges: 0.00 | |
| | | | | | Insurance Charges: 0.00 | |
| | | | | | Tax/Misc: 0.00 | |
| | | | | | Total Invoice Value: | |
| I declare all information in this invoice to be true and correct. | | | | | | |
| Signature of Shipper/Exporter: _____. | | | | | | |
| Date:_____. | | | | | | |

Figure 6.0.3

TOXIC SUBSTANCE CONTROL ACT (TSCA) CERTIFICATION

Date: _____

(check one section only)

POSITIVE CERTIFICATION:

"I certify that all chemical substances in this shipment comply with all applicable rules or orders under TSCA and that I am not offering a chemical substance for entry in violation of TSCA or any applicable rule or order thereunder." **Contents to be used for research purposes only.**

NEGATIVE CERTIFICATION:

"I certify that all chemicals in this shipment are not subject to TSCA."

Company Name: California Air Resources Board

E.I.N.: _____

Company Address: Monitoring and Laboratory Division
1927 13th Street
Sacramento, CA 95814
USA

Authorized Name: _____

Authorized Signature: _____

Title: _____

Federal Express Air Waybill Number: _____

If the certifier is unsure their chemical substance is subject to TSCA Compliance or has any other questions, contact the U.S. Environmental Protection Agency, TSCA Assistance Information Service, 401 M Street S.W., Washington DC, 20450 tel (202) 554-1404 / fax (202) 554-5603 e-mail tsca-hotline@epamail.epa.gov

7.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

An overview of the CADAMP QA/QC program can be found in Sections 5.0, 6.0, and 7.0 of the CADAMP QAPP.

7.0.1 SITING CRITERIA

Siting of dioxin air samplers will be conducted in accordance with Title 40, of the Code of Federal Regulations, Part 58 (40CFR, Part 58), Ambient Air Quality Surveillance and ARB's QA Manual Volume II Reference Section regarding siting and placement of samplers.

7.0.2 FLOW AUDITS

Audits will be scheduled and conducted by the Quality Assurance Section staff. Flow audits will be conducted annually at each site for each sampler.

7.0.3 FIELD DATA VALIDATION

Validation of the sampler operation will be done each month by Quality Management Branch staff prior to sample analysis and will be based on information collected in the field. The various factors affecting the validity of the sample collected include:

- Instrument calibration
- Weekly start and end magnehelic readings
- Flow checks
- Elapsed sampling time
- Total sample volume
- Confirmation of stable flow rate
- Condition of sample upon receipt at laboratory

The field data validation report can be found in the CADAMP QAPP along with the specific validation criteria. If a sample is deemed invalid, the laboratory will be notified and sample extraction and analysis will not be performed.

8.0 SAMPLER MAINTENANCE

Refer to the SOP for details of routine sampler maintenance. In addition to procedures described in the SOP, on a monthly basis, after sample collection, the screen on the bottom of the motor box that covers the cooling air inlet needs to be cleaned of any obstructions (i.e., dust, fibers, soot, etc.) to prevent overheating and motor shutdown. Cleaning can be performed quickly with a stiff brush.

Attachment 1
Summary of CADAMP Sampling Activities

This summary has been provided as a reference to be kept at the monitoring site after having reviewed the complete 'Field Operations' document.

California Ambient Dioxin Air Monitoring Program Summary of Sampling Activities

Sampling Materials:

For each sample the following items should be found in the cooler:

- ◆ 1 glass cartridge with PUF/XAD resin/PUF sampling media
- ◆ 5 quartz fiber filters (QFF), individually wrapped
- ◆ 4 petri dishes
- ◆ blue ice
- ◆ 1 temperature blank (small glass jar with water)
- ◆ 4 pieces of aluminum foil (not cleaned – for petri dishes)
- ◆ 1 piece of aluminum foil (specially cleaned and marked as such – for PUF cartridge)
- ◆ 5 custody seals
- ◆ chain of custody form
- ◆ 5 labels
- ◆ 2 pair of forceps
- ◆ 2 Teflon gaskets
- ◆ Fed Ex return label and waybill
- ◆ Bubble wrap

For each field blank the above items will be received along with 1 glass jar with lid (to hold field blank cartridge while servicing sampler).

Upon Receipt of Sampling Material from Laboratory:

1. verify receipt of all items above
2. place glass cartridge and temperature blank in a refrigerator
3. place blue ice in freezer
4. store remaining items at room temperature (all items may remain in cooler for storage)

On DAY 1 of sampling: (leak & flow rate check, start cartridge and 1st QFF). When collecting field blanks, perform items in italics in addition to numbered items in the following order:

Take the following items to the field:

- ◆ 1 sample cartridge
- ◆ 1 QFF
- ◆ forceps
- ◆ latex gloves
- ◆ flow check equipment
- ◆ field data forms

If collecting field blank, also include:

- ◆ 1 field blank cartridge (remove from refrigerator and unwrap)
- ◆ 1 field blank jar with lid
- ◆ 1 field blank petri dish
- ◆ 1 field blank QFF
- ◆ $\frac{3}{4}$ " Teflon tape
- ◆ sample label
- ◆ sheet of aluminum foil ('uncleaned')
- ◆ zip lock bag for petri dish

1. Initiate Field Sample Report form.

If collecting a field blank perform the following (wearing gloves and using forceps to handle the QFF):

- a. Unwrap field blank PUF cartridge and install. (Discard foil but retain ziplock bag for future use.)
 - b. Unwrap QFF and Teflon gaskets. Discard foil. Install QFF sandwiched between Teflon rings using forceps.
 - c. Install QFF retaining plate.
 - d. Remove QFF, place in petri dish on upper shelf with lid off. Retain Teflon gaskets for field sample QFF.
 - e. Remove field blank cartridge and place in field blank jar on upper shelf. Leave top off jar. Jar with cartridge will remain on shelf throughout the sampling period. However, the lid will only be taken off during the times that the sample collection/replacement is being conducted.
2. Perform leak check **without** cartridge or QFF in place as specified in the SOP. Record magnehelic reading on Field Sample Report (item 2, Monthly Checks)
 3. Install sample cartridge.
 4. Install "dummy" QFF sandwiched between "dummy" Teflon gaskets using forceps.
 5. Perform flow check with calibration equipment. Record info on Field Sample Report (item 2, Verify flow rate). Use the orifice calibration data, barometric pressure and temperature to calculate the standard flow rate. The flow rate should be 240 slpm \pm 10% (216 to 264 slpm) at the sampler magnehelic calibration set point. If $> \pm$ 10% then notify AQSBS to perform re-calibration before collecting additional samples.
 6. Remove "dummy" QFF and "dummy" Teflon rings using forceps. Place in ziplock bag and save for next monthly flow check. Do not return to laboratory. Retain any unused QFFs as spares for flow checks only, as needed.
 7. Install sample QFF sandwiched between Teflon rings using forceps.
 8. Record elapsed time meter reading on field report form ("start" reading, Event 1).
 9. Turn on equipment and let warm-up for the time specified in the SOP.
 10. If necessary, adjust the magnehelic setting to the calibration set point. Record magnehelic reading on field report form ("start" reading, Event 1).

11. Install and set the Dickson chart.
12. Turn sampler off and program timer.

For field blank,

- f. Place lid on petri dish containing QFF and seal petri dish with $\frac{3}{4}$ " Teflon tape.
- g. Wrap field blank petri dish with foil (uncleaned).
- h. Attach the sample label to a smooth area on the aluminum foil.
- i. Place field blank petri dish in ziplock bag.
- j. Seal bag with custody seal and place in freezer.
- k. Replace lid on jar containing the field blank cartridge.

On DAY 7 of sampling: (collect 1st QFF and start 2nd QFF)

Supplies needed:

- ◆ 1 QFF
- ◆ 1 petri dish
- ◆ forceps
- ◆ latex gloves
- ◆ field data forms
- ◆ $\frac{3}{4}$ " Teflon tape
- ◆ sample label
- ◆ sheet of aluminum foil (uncleaned, for wrapping petri dish)
- ◆ zip lock bag for petri dish

If collecting field blank also include:

- ◆ 1 field blank petri dish
- ◆ 1 field blank QFF
- ◆ sample label
- ◆ sheet of aluminum foil
- ◆ zip lock bag for petri dish

If collecting field blank:

- a. Remove lid of field blank jar containing cartridge.
- b. Place new field blank QFF in open field blank petri dish on upper shelf.
(**The PUF Cartridge and QFF are not installed on the sampler as was done on Day 1.**)

1. Sampler should be off. Turn on for the warm up period.
2. Record 6-day end magnehelic reading on field report form ("stop" reading, Event.
3. Turn sampler off.
4. Record elapsed time meter reading on field report form ("stop" reading, Event 1).
5. Calculate and record elapsed sampling time.
6. Remove sample QFF and place in sample petri dish.
7. Cover, seal, wrap and label sample QFF as follows:

- 7.1 Place lid on petri dish containing QFF and seal petri dish with $\frac{3}{4}$ " Teflon tape.
- 7.2 Wrap petri dish with foil (uncleaned).
- 7.3 Attach the sample label to a smooth area on the aluminum foil.
- 7.4 Place petri dish in ziplock bag
- 7.5 Seal bag with custody seal.
8. Place sample QFF in freezer (upon return to field office).
9. Collect and label Dickson chart. Review trace for any problems (make notes on chart). Install new Dickson chart.
10. Install new sample QFF.
11. Turn sampler on and allow to warm-up.
12. Adjust to the magnehelic calibration set point, if necessary. Record 6-day start magnehelic reading on field report form ("start" reading Event 2 (3 or 4 for subsequent starts)).
13. Record elapsed time meter reading on field report form ("start" reading, Event 2 (3 or 4 for subsequent starts)).
14. Adjust Dickson chart set-point.
15. Turn sampler off and program timer.
16. Note any problems on the field sample report form.

If collecting field blank:

- c. *Replace lid on field blank PUF cartridge jar.*
 - d. *Cover, seal, wrap and label field blank QFF petri dish as before.*
 - e. *Place field blank QFF in freezer.*
17. Complete field sample report.

Repeat DAY 7 activities for DAY 14 and DAY 21 (Events 2 and 3).

On DAY 28 of sampling: (Collect 4th QFF & cartridge; Set-up for next sampling period)

Supplies needed:

- ◆ 1 sample cartridge (remove from refrigerator and unwrap)
- ◆ 1 QFF
- ◆ 1 petri dish
- ◆ forceps
- ◆ latex gloves
- ◆ flow check equipment
- ◆ field data forms
- ◆ $\frac{3}{4}$ " Teflon tape
- ◆ 2 sample labels
- ◆ sheet of aluminum foil for petri dish
- ◆ sheet of cleaned aluminum foil for cartridge
- ◆ zip lock bags for petri dish and cartridge

If collecting field blank also include:

- ◆ 1 field blank cartridge (remove from refrigerator and unwrap)
- ◆ 1 field blank petri dish
- ◆ 1 field blank QFF
- ◆ 2 sample labels
- ◆ sheet of aluminum foil for petri dish & sheet of cleaned aluminum foil for cartridge
- ◆ zip lock bags for petri dish and cartridge

If collecting field blank:

a. Remove lid of field blank PUF cartridge jar. (There is no blank QFF collection on this day as 4 have already been collected.)

1. Sampler should be off. Turn on for the specified warm up period.
2. Record 6-day end magnehelic reading on field report form ("stop" reading, Event 4).
3. Turn sampler off.
4. Record elapsed time meter reading on field report form ("stop" reading, Event 4).
5. Calculate and record elapsed sampling time.
6. Remove sample QFF and Teflon gaskets and place in sample petri dish.
7. Cover, seal, wrap and label sample QFF. Attach label to smooth area on foil.
8. Place sample QFF in freezer until ready to ship.
9. Remove sample cartridge and wrap in precleaned foil.
10. Label sample cartridge. Attach the label to a smooth area on the aluminum foil.
11. Place cartridge in ziplock bag.
12. Seal bag with custody seal.
13. Place cartridge in freezer until ready to ship.
14. Collect and label Dickson chart. Review trace for any problems. Record observations or problems on the chart and on the field sample report.

If collecting field blank:

- b. Remove field blank cartridge from jar.
- c. Wrap field blank cartridge in precleaned foil.
- d. Label field blank cartridge. Attach label to a smooth area on the aluminum foil.
- e. Place field blank cartridge in ziplock bag.
- f. Seal bag with custody seal.
- g. Place field blank cartridge in freezer until ready to ship.
- h. Place lid on field blank cartridge jar for return to lab for cleaning.

Repeat DAY 1 sampling activities to start new sampling month.

Shipping (Shipping to be done no later than the day following Day 28 sample collection)

1. Individually wrap petri dishes and cartridge(s) in bubble wrap.
2. Line cooler with blue ice wrapped in bubble wrap.
3. Pack cooler securely so there is no movement of items. Make sure that the water jar (temp blank) is packed alongside the samples.
4. Cover packed items with layers of bubble wrap and blue ice.
5. Complete chain of custody and place in a ziplock bag.
6. Place original chain of custody in the ziplock bag. Place the bag inside the cooler.
7. Seal cooler with packing tape.
8. Complete the Fed Ex airbill (provided by the lab).
9. Complete commercial invoice (include Fed Ex #).
10. Complete TSCA certification.
11. Place airbill, commercial invoice and TSCA certification in window envelope and secure to outside of cooler.
12. Attach Fed Ex return label (provided by the lab).
13. Deliver cooler to FedEx.
14. Immediately send Fed Ex airbill (tracking) number to AXYS, Kevin Mongar and Kathy Gill via e-mail.
15. Mail field forms (in prepaid/addressed envelopes) to Kevin Mongar at ARB, Sacramento. Include original Field Sample Report, Dickson charts, and copy of chain of custody.

Laboratory shipping address: Diane Luszniak
AXYS Analytical Services, Ltd.
2045 Mills Road
Sidney, British Columbia V8L3S8
Canada

Diane Luszniak (250) 655-5800
Fax (250) 655-5811
e-mail dluszniak@axys.com

ARB address: Kevin Mongar
ARB Monitoring and Laboratory Division
P.O. Box 2815
Sacramento, CA 95812

Kevin Mongar (916) 322-2449
Fax (916) 327-8217
e-mail kmongar@arb.ca.gov

Kathy Gill 916) 445-9483
e-mail kgill@arb.ca.gov

Contact MLD for
sampling supplies: John Roll (916) 445-0616
e-mail jroll@arb.ca.gov