

SAMPLE HANDLING OPERATIONS

2024 POAO Training
February 27 - 28, 2024



Agenda

- [Introduction](#)
- Duties / Responsibilities
- Challenges / Common Issues
- Recent Changes
- Potential or Anticipated Changes
- Conclusion

Sample Handling Team

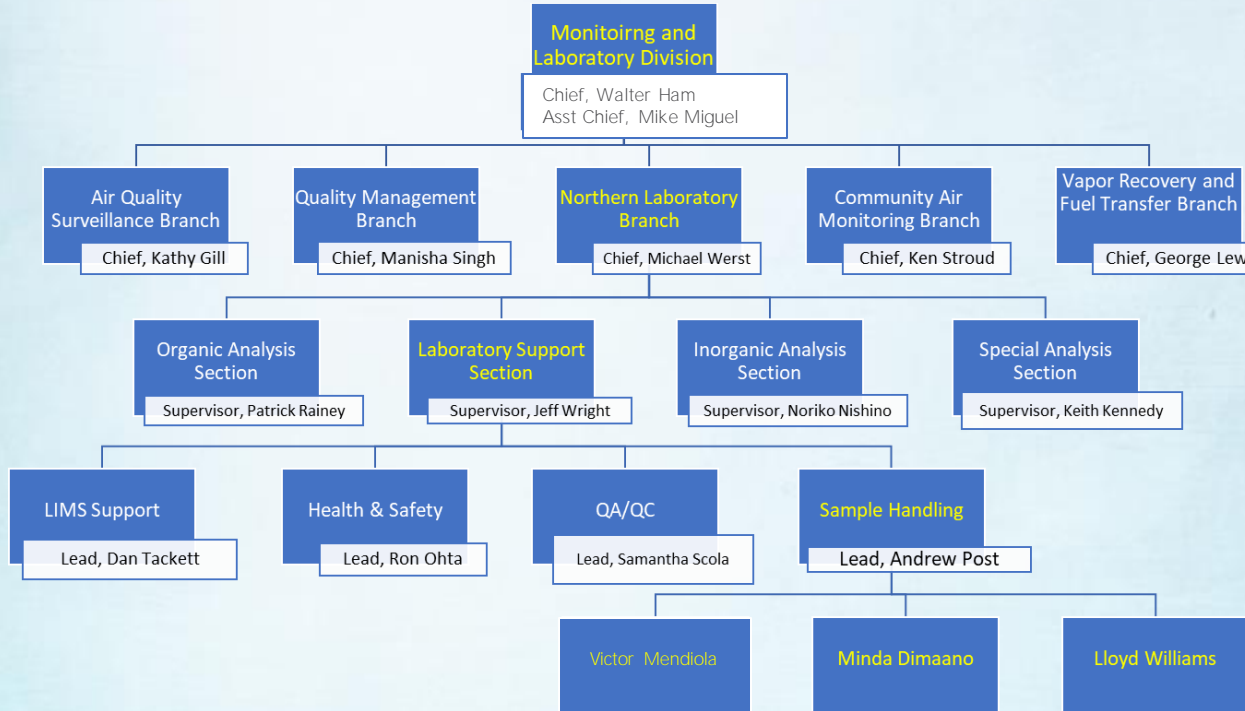
- Jeff Wright – *Air Resources Supervisor I*
- Andrew Post – *Air Pollution Specialist*
- Luzviminda (Minda) Dimaano – *Air Resources Technician II*
- Lloyd Williams – *Air Resources Technician II*
- Victor Mendiola – *Air Resources Technician II*

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Introduction

MLD – Modified Organizational Chart



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Duties / Responsibilities

Support Inorganic, Organic, and Special Analysis Laboratories

- PM2.5
 - PM10
 - SASS
 - Xonteck 924/T-SASS
 - Canisters – Xonteck 901
 - Pesticides
 - Consumer Products
 - Special Studies (e.g. SNAPS, SD-HexChrome)
- Annual: ~ 4000 ambient air samples (2023)

Duties / Responsibilities

Daily	Weekly	Annually
Creation of Chain of Custody (CoC) for Mailout	Cleaning/washing PM program material	Procurement of supplies, as needed
Prep media for shipment	Manage supply inventory for sample shipping – boxes, cassettes, sample storage bags	Update Documented Procedures
Media receipt/breakdown		
Login of sampling info into Laboratory Information Management Systems (LIMS)		
Peer-review logged sample info		
Contact Site Operators (S.O.) for missing info		
Relinquish media to Program Staff		

Duties / Responsibilities

Sample Handling

- Assembling media mail-outs
- Coordinating shipment with warehouse staff
- Receiving sampled media from warehouse staff
- Processing samples

Program

- Provides media for sampling
 - filters, clean air cans, etc.
- Receives sampled media from Sample Handling
- Follow-up on any missing field data from CoCs

Duties / Responsibilities (cont'd)

Sample Handling

- Initial follow-up with S.O. on any missing field data on CoCs
- Logging into LIMS and peer-reviewing

Program

- Invalidation determinations
- Analysis

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Field Data Reports / CoCs

Field Data Reports / CoCs

- Missing and/or incorrect data
- Illegible or unclear handwriting or sampler printouts

Shipment of Samples from the Field: Samples Returned Warm

Samples Returned Warm

- 'Warm' Samples = Received at $> 4^{\circ}\text{C}$
- Programs Where Transport Temperature is Documented
 - PM2.5 FRM*
 - PM10 Lo-Vol*
 - PM2.5 SASS
 - Mass*
 - Metals (XRF)
 - Ions
 - Woodsmoke
 - Carbon
 - Xonteck 924/T-SASS
 - Aldehydes
 - Total Metals (ICP-MS)
 - Hexavalent Chromium

*Could lead to invalidation

Samples Returned Warm

- Ramifications
 - Could automatically invalidate sample
 - Reduce number of days to post-weigh (30 to 10)
 - Not meeting Days to Post-Weigh Criteria leads to Invalidation

Samples Returned Warm

- Frequency of Occurrence
 - PM2.5 FRM: ~ 2.5% of samples are returned warm

Samples Returned Warm

- Days to PM2.5 Post-Weigh Criteria Not Met (Invalidation)
 - All samples ~ 1.7%
 - Cold samples ~ 1.0%
 - Warm samples (>4 °C) ~ 36%

Samples Returned Warm

- Steps taken and **planned**:
 - Lab
 - Warehouse: Provide for overnight shipping
 - Sample Handling: Monitor degradation of ice packs
 - Sample Handling: Process PM2.5 FRM samples quickly upon arrival
 - Sample Handling: Communicate receipt of warm samples to the lab
 - **Sample Handling: More precisely assess temperature of post-sampling filters during transport**
 - Field Recommendations:
 - Return samples as quickly as practical
 - Return samples cold
 - Proper placement of temperature strips
 - Ship samples overnight early in week (Mon-Wed)

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Recent Changes

Updated CoC Forms

CALIFORNIA AIR RESOURCES BOARD **PM2.5 Speciation** **Product**

Sample Information

Site Name / AQIS Site # / Site Name / 99-999-9999  12345678

Sample Load Date/Time: / / Filter Expiration Date: / /

Start Date/Time: / / Stop Date/Time: / /

Sample Removal Date/Time: / /

Canister #	Volume	Flow CV	Mean Flow
Ch. 1 Mass/Metal			
Ch. 2 Sols			
Ch. 3 Woodsmoke			
Ch. 4 Carbon			

Total Elapsed Time (hr:min): / /

Avg Pressure(mmHg): / /

Avg Ambient Temp(°C): / /

Invalidation Codes: (Circle one, as necessary)

AJ - Filter Damage AV - Power Failure
AN - Machine Malfunction AQ - Collection Error
AI - Insufficient Data BJ - Operator Error
AG - Sample Time out of Limits Other - Specify 2-letter AQIS code and reason in the Comments.
AK - Filter Leak

Local Condition Codes: (Circle one, as necessary)

IJ - High Winds IT - Wildfire-U.S.
IM - Prescribed Fire J - Construction
IL - Other. (Please specify in Field Comments.)

Sampler Flag Codes: (Circle one, as necessary)

F. Florate 5-min average out of spec
T. Filter Temp differential, 30 min. interval out of spec
E. Elapsed sample time out of spec

Field Comments _____

Chain of Custody (Print Name and Initial)

Relinquished By	Date	Time	Received By	Date	Time

For Laboratory Use Only


Shipping Temperature (Circle One)
T-4 45T<10 19T<20 20T<25 25T Unknown

Balance Room Conditions		Analyst	Pre-Weight	Post-Weight
Condition Start Date/Time	1/1/2023 00:00	APost		
Temperature (C)	44	Weight	1500.544	
RH (%)	77	Duplicate Weight (if Applicable)	1500.544	

Lab Comments **Sample Text**

CALIFORNIA AIR RESOURCES BOARD **Xonteck 924** **Product**

Sample Information

Site Name / AQIS Site # / Site Name / 99-999-9999  12345678

Sample Load Date/Time: / /

Start Date/Time: / / Stop Date/Time: / /

Sample Retrieval Date/Time: / /

Aldehydes (A)
Place Printout Here

Total Metals (T)
Place Printout Here

Aldehydes (A)
Place Printout Here

Invalidation Codes: (Circle one, as necessary)

AJ - Filter Damage AV - Power Failure
AN - Machine Malfunction AQ - Collection Error
AI - Insufficient Data BJ - Operator Error
AG - Sample Time out of Limits Other - Specify 2-letter AQIS code and reason in the Comments.
AK - Filter Leak

Local Condition Codes: (Circle one, as necessary)

IJ - High Winds IT - Wildfire-U.S.
IM - Prescribed Fire J - Construction
IL - Other. (Please specify in Field Comments.)

(Please specify if invalidation applies to only one channel.)

Field Comments _____

Chain of Custody (Print Name and Initial)

Relinquished By	Date	Time	Received By	Date	Time


For Laboratory Use Only

Temperature Upon Receipt in Laboratory (Circle One)
T-4 45T<10 10T<20 20T<25 25T Unknown

Lab Comments _____

CALIFORNIA AIR RESOURCES BOARD **Xonteck 901** **Toxics: Canister**

Sample Information

Site Name: _____ Site Name: _____  S99999999

Site Name: _____ Site Name: _____

AQIS Site #: 12345

Start Date/Time: / /

Stop Date/Time: / /

Canister ID Number: **12345**

Box ID: **SN-12**

Field Pressure: _____

Lab Pressure: _____

Calibrated Lab Pressure: _____

Invalidation Codes: (Circle one, as necessary)

AA - Sample Pressure out of Limits AV - Power Failure
AN - Machine Malfunction AQ - Collection Error
AS - Floor Quality Assurance Results AI - Insufficient Data
AG - Sample Time out of Limits Other - Specify 2-letter AQIS code and reason in the Comments.
BJ - Operator Error

Local Condition Codes: (Circle one, as necessary)

IJ - High Winds AV - Power Failure
IM - Prescribed Fire IT - Wildfire-U.S.
J - Construction

Field Comments _____

Chain of Custody (Print Name and Initial)

Relinquished By	Date	Time	Received By	Date	Time

For Laboratory Use Only

Lab Comments _____

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Potential or Anticipated Changes

- Reusable Min/Max Thermometers



- Updated Shipping Containers or Boxes

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Conclusion

- A lot of work goes into each and every sample!
- Accurate and complete data relies on field staff, lab analysts, and Sample Handling working together.
- Always looking for ways to streamline processes to ensure accurate data and valid samples.

Thank You

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