

UCD CSN Standard Operating Procedure #901

Long-Term Archiving of Filters

*Chemical Speciation Network
Air Quality Research Center
University of California, Davis*

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Prepared By: *Morgan*

Date: 10/16/17

Reviewed By: *Lab*

Date: 10/16/2017

Approved By: *Nicole Hoyer*

Date: 10/16/17

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1. PURPOSE AND APPLICABILITY

This standard operating procedure (SOP) describes the process for archiving samples (Teflon and quartz filters, and extracts of nylon filters) analyzed under the EPA Chemical Speciation Network (CSN) contract.

2. SUMMARY OF THE METHOD

Filter samples collected for the CSN network are archived under specific conditions for potential reanalysis. This method describes the documentation and sample handling practices necessary to maintain sample integrity.

3. DEFINITIONS

- **Chemical Speciation Network (CSN):** EPA's PM_{2.5} sampling network, with sites located principally in urban areas.

4. HEALTH AND SAFETY WARNINGS

Not applicable.

5. CAUTIONS

Not applicable.

6. INTERFERENCES

Not applicable.

7. PERSONNEL QUALIFICATIONS, DUTIES, AND TRAINING

The AQRC laboratory staff assigned to this project all have advanced training in laboratory practices. All have direct experience through recent involvement in similar sample handling and archiving activities for IMPROVE.

8. ARCHIVING CONDITIONS

8.1 Quartz Filters

Quartz filters are archived for the life of the contract in petri-slide holders. Full petri-slide trays of quartz filters are placed in heavy-duty plastic zippered bags and plastic boxes for storage in a refrigerator or cold room maintained at or below 4°C (but not below freezing).

Quartz filters from previous CSN contracts are stored by UC Davis (off-campus at cold storage facility in Sacramento). For the current contract, quartz filters are stored by the carbon analysis laboratory subcontractor (Desert Research Institute; Reno, Nevada).

8.2 Teflon Filters

Teflon filters are archived for the life of the contract, sorted by *ContractorBatchNumber*, *IntendedUseDate*, *ContractorSetNumber*, and *ContractorFilterAnalysisID* into petri-slide trays. Full trays are placed in heavy-duty plastic zippered bags and plastic boxes (36 trays per box) for storage in a refrigerated room. Individual filters are located by box number, batch number, tray number and *ContractorFilterAnalysisID*.

Teflon filters from the current and previous CSN contracts are stored on-campus at UC Davis. For the first five years, Teflon filters are stored at or below 4°C (but not below freezing), and are housed in the UC Davis Food Sciences building. After that time, samples are stored at room temperature in the UC Davis storage facility (Cobalt Building).

8.3 Nylon Filter Extracts

Nylon filter extracts are archived for six months in extraction vials. They are grouped in laboratory batches, and placed in heavy-duty plastic zippered bags and plastic bins for refrigerated storage maintained at or below 4°C (but not below freezing).

Filter extracts are stored by the ions analysis laboratory subcontractor (Desert Research Institute; Reno, Nevada).

9. PROCEDURE FOR ARCHIVING FILTERS

9.1 Sample Shipping and Receiving

Refer to DRI SOP and UCD TI for shipping and receiving:

DRI SOP #2-117: Filter Pack Sample Shipping, Receiving and Chain –of-Custody

UCD TI #302B: Receiving and Inventorying of CSN Samples

9.2 Teflon Filters – Archive Labels

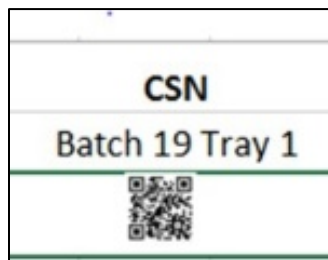
Filter Labels: Filter labels are generated by Amec and correspond to the *ContractorFilterAnalysisID*. Labels have a barcode and text (Figure 1), and may be located on the front or back of the petri slide.

Figure 1. Filter label (same as *ContractorFilterAnalysisID*).



Petri Tray Labels: The operator prints unique petri tray labels after inventory. The labels include the *ContractorBatchID*, tray number, and QR barcode for each petri tray (Figure 2). Only the last two digits of the *ContractorBatchID* are used for the label (e.g. A0000019).

Figure 2. Petri tray label.



Archive Box Labels: The archive box label includes the box name, the range of trays, and QR barcode (Figure 3). The box range is indicated as *Batch XX Tray XX – Batch XX Tray XX*.

Figure 3. Archive box label.



9.3 Teflon Filters – Full Trays

Once a tray is full, the *TrayID* is associated with the box number. Thirty-six trays are assigned to each box number, and a list of trays (including archive date and operator initials) is generated for each box (Figure 4).

Filters remain in trays in the archive boxes until they are logged out or removed (e.g. returned to a state, turned over to EPA, etc).

Figure 4. Tray list.

Archived List			
BOX	Batch/Tray	Date Archived	Initials
5	Batch 11 Tray 15	1/19/2017	MGN
5	Batch 11 Tray 16	1/19/2017	MGN
5	Batch 11 Tray 17	1/19/2017	MGN
5	Batch 11 Tray 18	1/19/2017	MGN
5	Batch 11 Tray 19	1/19/2017	MGN
5	Batch 11 Tray 20	1/19/2017	MGN
5	Batch 11 Tray 21	1/19/2017	MGN
5	Batch 11 Tray 22	1/19/2017	MGN
5	Batch 11 Tray 23	1/19/2017	MGN
5	Batch 11 Tray 24	1/19/2017	MGN
5	Batch 11 Tray 25	1/19/2017	MGN
5	Batch 11 Tray 26	1/19/2017	MGN
5	Batch 11 Tray 27	1/19/2017	MGN
5	Batch 11 Tray 28/ Batch 12 Tray 1	1/19/2017	MGN
5	Batch 12 Tray 2	1/19/2017	MGN
5	Batch 12 Tray 3	1/19/2017	MGN
5	Batch 12 Tray 4	1/19/2017	MGN
5	Batch 12 Tray 5	1/19/2017	MGN
5	Batch 12 Tray 6	1/19/2017	MGN
5	Batch 12 Tray 7	1/19/2017	MGN
5	Batch 12 Tray 8	1/19/2017	MGN
5	Batch 12 Tray 9	1/19/2017	MGN
5	Batch 12 Tray 10	1/19/2017	MGN
5	Batch 12 Tray 11	1/19/2017	MGN
5	Batch 12 Tray 12	1/19/2017	MGN
5	Batch 12 Tray 13	1/19/2017	MGN
5	Batch 12 Tray 14	1/19/2017	MGN
5	Batch 12 Tray 15	1/19/2017	MGN
5	Batch 12 Tray 16	1/19/2017	MGN
5	Batch 12 Tray 17/ Batch 13 Tray 1	1/19/2017	MGN
5	Batch 13 Tray 2	1/19/2017	MGN
5	Batch 13 Tray 3	1/19/2017	MGN
5	Batch 13 Tray 4	1/19/2017	MGN
5	Batch 13 Tray 5	1/19/2017	MGN
5	Batch 13 Tray 6	1/19/2017	MGN
5	Batch 13 Tray 7	1/19/2017	MGN
5	Batch 13 Tray 8	1/19/2017	MGN

10. PROCEDURE FOR REMOVING FILTERS FROM ARCHIVING

10.1 Identify Samples

- Search the database to identify the *ContractorFilterAnalysisIDs* of the filters.
- In the records, find the box number, batch number, tray number, and the position number for the specific sample (Figure 5).

Figure 5. Information needed to retrieve archived sample.

POS	Box #	Batch/Tray	ContractorFilterAnalysisID
50	4	Batch 10 Tray 15	F019620
47	4	Batch 10 Tray 16	F020808
8	4	Batch 10 Tray 18	F020202

10.2 Locate Samples

- Locate the archive bin(s) containing the sample(s).
- Within the archive bin, locate the tray containing the sample(s).
- Within the tray, locate and remove the individual samples to be removed.

10.3 Return Samples to Archive

- Return the samples to archive by placing the samples in the correct box, tray, and position. Check the database for the information needed.
- Insert appropriate notes/comments (if needed) about sample integrity.

11. EQUIPMENT AND SUPPLIES

Archival of samples makes use of petri slides, slide trays, and archive bins. These holders are available commercially from multiple scientific product vendors.

12. QUALITY ASSURANCE AND QUALITY CONTROL

Not Applicable.

13. REFERENCES

Not Applicable.