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Long-Term Archiving of Filters
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UCD CSN Technical Information #901A

Long-Term Archiving of Filters

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

*October 31, 2022
Version 1.2*

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DOCUMENT HISTORY

Revision	Release Date	Initials	Section/s Modified	Brief Description of Modifications
1.1	5/26/21	LMK	9.2, 9.4, 9.5	Small editing changes, update URL.
1.2	10/31/22	LMK, ML	8, 9, 10	Rewording for clarity. Added step by step procedure for generating archive. Re-named document from "901TI" to 901A for consistency with other documents

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1. PURPOSE AND APPLICABILITY

The subject of this technical information (TI) document is the long-term archiving of samples collected for the Chemical Speciation Network (CSN). The scope is to ensure good laboratory practice of long-term archiving of samples in the CSN Data Management Site and storing filters under specific conditions.

2. SUMMARY OF THE METHOD

The operator will archive CSN samples electronically and physically move filters to designated storage locations on the UC Davis campus. The CSN Data Management Site is used for archiving filters electronically and serves as an electronic catalog for locating filters.

3. DEFINITIONS

- **Chain-of-custody (COC) form:** The form received with the samples including the list, amount, sample type etc.
- **Chemical Speciation Network (CSN):** EPA's PM_{2.5} sampling network, with sites located principally in urban areas.
- **ContractorBatchID (Batch Number):** WOOD PLC assigns a batch number to each shipment of filters, e.g. A0000001.
- **ContractorFilterAnalysisID (Barcode ID):** WOOD PLC assigns a barcode to each sample format F#####, e.g. F000002.
- **CSN Data Management Site (CSN web app):** User interface web application for the CSN database (*csn.agrc.ucdavis.edu*).
- **EPA:** Environmental Protection Agency.
- **Laboratory Technician:** Authorized personnel responsible for processing CSN samples; must receive prior approval from the Lab Manager. The laboratory technician shall have access to the lab where the CSN refrigerators are located.

4. HEALTH AND SAFETY WARNINGS

Not applicable.

5. CAUTIONS

Not applicable.

6. INTERFERENCES

Not applicable.

7. PERSONNEL QUALIFICATIONS, DUTIES AND TRAINING

Only trained lab personnel designated by the laboratory manager may archive CSN samples.

8. EQUIPMENT AND SUPPLIES

Archive Bins

9. PROCEDURAL STEPS

9.1 Sample Shipping and Receiving

Refer to UCD SOP and RTI SOP for shipping and receiving:

UCD CSN SOP #904: Receiving and Inventorying of CSN Samples

RTI SOP: Determination of Anions and Cations Extracted from Nylon Filters by Ion Chromatography (IC)

9.2 Generating Archive

The CSN Archive list is an electronic list of Petri trays assigned to a box. The Archive list is filter type specific and includes the following information for each sample; the position number, FilterID, BarcodeID, Intended Use Date, Set, Batch, type, Purpose, Null code, and Manufacturer number (for Teflon filters only).

9.2.1 Archiving Filter Boxes

1. Write down the Batch and Tray numbers ready for archive. Samples are typically archived following analysis.
2. Log-in to the CSN web app at <https://csn.aqrc.ucdavis.edu/> Request permissions from Data Management group and/or IT support, if necessary.
3. From the CSN web app main menu select “Inventory.” The list will default to Teflon. This will open the list of all generated inventory boxes for Teflon filters. Select the Quartz tab to view all inventory boxes for quartz filters.
4. Find the box containing the Batch and Tray numbers written down in step one, click on details to view the Batch and Trays numbers, see figure 1. Boxes with an older created date will usually be archived first, as they will contain an older Batch.

Figure 1. Inventory box list.

Teflon Quartz

Add Box

Year	Box Number	BoxLabel	StorageTrays	Created	ArchivedDate
2022	72	CSN Box 72	17	9/14/2022 12:18:29 PM	Details
2022	71	CSN Box 71	20	8/10/2022 12:39:23 PM	Details
2022	70	CSN Box 70	20	7/13/2022 1:09:14 PM	Details
2022	69	CSN Box 69	20	6/15/2022 1:35:49 PM	Details

5. Within the Box Details screen, click on edit in the top right, figure 2.

Figure 2. Box details screen.

Box Details

SetYear 2022
Box Number 69
BoxLabel CSN Box 69
BoxFilterType Teflon

Created 6/15/2022 1:35:49 PM
CreatedBy lkline6
ArchivedDate
ArchivedBy
ArchiveLocation

[Edit](#) [Delete](#)


Trays

Tray number	Tray label	Filters
1	CSN Batch 90 Tray 25	25 Details
2	CSN Batch 91 Tray 1	50 Details
3	CSN Batch 91 Tray 2	50 Details
4	CSN Batch 91 Tray 3	50 Details
5	CSN Batch 91 Tray 4	50 Details
6	CSN Batch 91 Tray 5	50 Details
7	CSN Batch 91 Tray 6	50 Details
8	CSN Batch 91 Tray 7	50 Details
9	CSN Batch 91 Tray 8	50 Details
10	CSN Batch 91 Tray 9	50 Details

6. The Edit Box screen, allows the user to edit the fields shown in figure 3. The archived date, Archive by and Archive location should all be updated when archiving a box, then click save.

Figure 3. Edit box.

Edit Box

SetYear	<input type="text" value="2022"/>
Box Number	<input type="text" value="69"/>
BoxLabel	<input type="text" value="CSN Box 69"/>
ArchivedDate	<input type="text"/> 
ArchivedBy	<input type="text"/>
ArchiveLocation	<input type="text"/>

[Back to Box](#)

7. Once the archive information for a box is completed, the box will move from the inventory screen to the archive screen.
8. If a box is erroneously archived in the CSN web app, go to the archive tab and find the box. Click on details and then edit. Clear the archived date, archive by and archive location and click save. The box will then move back to the inventory screen. Do not use the delete button, this will delete the entire box from the web app.

9.2.2 Create a New Archive Box

Archive boxes will typically not need to be created, but can be if needed. Filter boxes are usually created in the inventory screen and then moved to archive screen during the archive process.

1. The archive box screen will default to Teflon, click Quartz if generating a quartz box. From the open window, Filter Archive Box, click on **Add Box**. Select the Year, and Box Label. Select the Year the samples are collected. If boxes include samples from multiple years then select the Year of the oldest sampling date.
2. Type the box number: the box number is one number higher than the preceding box. Note the box number does not restart with a sampling year.
3. Next, The Box Label is in format CSN Box # for Teflon and Quartz CSN Box # for quartz filters.
4. Click **create** when done, then continue to “Add Trays” until there are 20 trays in the box. Once 20 trays are assigned to a given box, create a new

archive box. Refer to SOP ### Receiving and Inventorying CSN Samples for more information of creating trays.

9.3 Teflon/Carbon Filters – Labels

Petri Slide Labels

Petri slide labels are generated by Wood PLC and correspond to the Barcode ID. Labels have a barcode and text (Figure 1), and may be located on the front or back of the Petri slide.

Figure 4. Petri slide label.



Petri Tray Labels

Petri tray labels are unique labels the lab technician places on the petri tray during inventory. The labels include the Batch Number, tray number, and QR barcode for each petri tray (Figure 2). Only the last two digits of the Batch Number are used for the label (e.g. A0000019 is Batch 19). To differentiate between Teflon and Quartz trays “Quartz” is added to the tray label, e.g. Quartz- B19T1. Refer to UCD CSN SOP## Receiving and Inventorying of CSN Samples for information on generating petri tray labels.

Figure 5. Petri tray label.

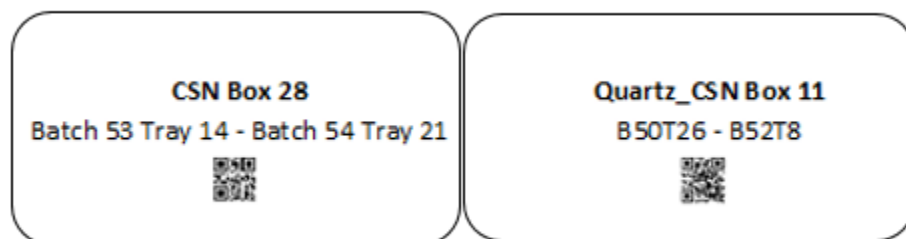


Archive Box Labels

Archive box labels include the box name, the range of trays, and QR barcode (Figure 3 is one possible version of archive box labels). The box range is indicated as *Batch XX Tray XX – Batch XX Tray XX*. To differentiate between Teflon and Quartz boxes add “Quartz” to the box label, e.g. Quartz- CSN Box 6. File for creating archives labels is located here,

U:\IMPROVE_Lab\CSN\Labels for Archiving. Select the filter type labels are being created for and fill in the requested information in the file.

Figure 6. CSN Teflon and Quartz box labels.



9.4 Transportation Conditions

Cold storage temperatures must be maintained during shipment and transportation of filter. When transporting archive boxes short distances to archival storage, pack the archive box with ice packs to keep the temperature below 4 °C. Remove the ice packs after placing the box in the archival refrigerator. When shipping filters using a carrier service, filters will be placed into appropriate sized ice-chests with sufficient ice packs to maintain cold temperature for the duration of the shipment (overnight shipping is required).

10. PROCEDURE FOR REMOVING FILTERS FROM ARCHIVE

10.1 Identify Samples

1. Open the CSN Archive Form and save a copy with today's date, "U:\IMPROVE_Lab\XRF_Epsilon5\CSN\Filter Archive\CSN_Archive_YYYYMMDD_Template.xlsx"
2. Navigate to the CSN web app <https://csn.agrc.ucdavis.edu/> and search the database to identify the Barcode ID of the filters.
3. In the records, find the box number, box location, batch number, tray number, position number, Filter ID and manufacturer number for the specific sample (Figure 8 CSN Archive Form). The box location is found on the archive screen. Record this information in the CSN Archive form. Save and print the form.

Figure 7. CSN Archive form.

Box	Box location	Batch	Tray	Position	BarcodeID	Filter ID	Manufacturer #	Date Removed from Archive	Initials	Date Returned to Archive	Initials
68	Buckeye Walk-in Freezer 1	90	5	1	F291293	294830	221401692				
68	Buckeye Walk-in Freezer 1	90	16	26	F292945	294881	221401887				

10.2 Locate Samples

- Using the printed CSN Archive form, 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 retrieve the individual samples.
- Update the following fields on the printed copy of the CSN archive form, “Date Removed from Archive” and “Initials”. Also update the same fields on the electronic copy of the CSN Archive form, save and close the form.

10.3 Return Samples to Archive

- Using the printed CSN Archive form, return the samples to archive by placing the samples in the correct box, tray, and position.
- Update the following fields on the printed copy of the CSN archive form, “Date Returned to Archive” and “Initials”. Also update the same fields on the electronic copy of the CSN Archive form, save and close the form. Once the electronic copy has been updated the paper copy does not need to be retained.

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

UCD CSN SOP #904: Receiving and Inventorying of CSN Samples

RTI SOP: Determination of Anions and Cations Extracted from Nylon Filters by Ion Chromatography (IC)