

**DRAFT**  
**Standard Operating Procedure for Long-Term  
Archiving of PM<sub>2.5</sub> Filters and Extracts**

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NOTE: This Archiving SOP will remain a draft until RTI's archiving facility is completed.

## **1.0 Scope and Application**

This SOP, which will remain a draft until RTI's freezer and refrigeration facility is built, describes the procedures to be used in the archiving of samples (Teflon and quartz filters and extracts of nylon filters) collected under EPA's laboratory support contract for Chemical Speciation of PM<sub>2.5</sub> Filter Samples. All mention of a database in this SOP refers to RTI's Speciation Program Information Management System (SPIMS).

## **2.0 Archiving Conditions**

### **2.1 Quartz Filters**

Quartz filters will be archived for up to 5.5 years in petri-slide holders, sorted by location into petri-slide trays, and sorted by sampling date within a tray. Full trays of quartz filters will be placed in heavy-duty plastic zippered bags and placed in plastic bins in a freezer maintained at or below -15°C. Individual filters will be located by Archive Bin ID, Tray ID, and Aliquot ID.

### **2.2 Teflon Filters**

Teflon filters will be archived for up to 5.5 years in petri-slide holders, sorted by location into petri-slide trays, and sorted by sampling date within a tray. Full trays of Teflon filters will be placed in heavy-duty plastic zippered bags and placed in plastic bins in a refrigerator or cold room maintained at or below 4°C (but not below freezing). Individual filters will be located by Archive Bin ID, Tray ID, and Aliquot ID.

### **2.3 Filter Extracts**

Filter extracts (nylon or teflon) will be archived for 6 months in extraction vials, grouped in lab batches, which will be placed in heavy-duty plastic zippered bags in plastic bins in a refrigerator or cold room maintained at or below 4°C (but not below freezing). Individual extracts will be located by Archive Bin ID, Batch ID, and Aliquot ID.

## **3.0 Procedure for Archiving Quartz and Teflon Filters**

### **3.1 Print Labels for Archiving**

Labels for individual samples (Section 2.1.1) are printed on demand at the beginning of the archiving process; labels for trays and bins (Sections 2.1.2 and 2.1.3) can be printed in batches in advance and used as needed.

3.1.1 Filter Sample Labels: Print in human-readable form on a 1.875" x 0.75" label for each filter sample containing (at a minimum) the following information:

Location ID of the sampler,

Sampling Date of the sample, and

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Aliquot ID of the filter.

- 3.1.2 Tray Labels: Print in human-readable and bar code form a series of unique Tray ID numbers on 1.875" x 0.75" (or larger) labels.
- 3.1.3 Archive Bin Labels: Print in human-readable and bar code form a series of unique Archive Bin ID numbers on 1.875" x 0.75" (or larger) labels.
- 3.1.4 Sampling Location Labels: Print, in human-readable and bar code, form one or more labels for the Location ID of each sampler (and other location information as space on the label allows).

### **3.2 Sort Filters by Location ID and by Scheduled Sampling Date**

- 3.2.1 Scan (into a text file or a database application) the Aliquot ID bar code on each petri-slide holder in a lab batch of filters to be archived.
- 3.2.2 Print (via a database software application) labels (in the order the aliquot ID's were scanned) for all of the filters in the lab batch.
- 3.2.3 Affix each label (printed in the same order as the petri-slide holders in the batch) to the appropriate petri-slide holder by visually verifying that the Aliquot ID on the label matches the Aliquot ID on the petri-slide holder.
- 3.2.4 Manually sort the filters by Location ID and then by date (both in human-readable form per Section 2.1.1).

### **3.3 File Filters in Petri slide Trays by Location ID and Scheduled Sampling Date**

- 3.3.1 Place a Tray ID label and a Location ID label on a petri-slide tray for each Location ID for which filters are to be archived.
  - 3.3.1.1 Each tray will have a unique Tray ID and will be used to archive filters from only one Location ID.
  - 3.3.1.2 More than one tray will be required to archive all of the filters from a single Location ID.
  - 3.3.1.3 After an initial group of filters has been sorted and archived, Tray ID and Location ID labels will be placed on new trays as the original trays are filled and moved to Archive Bins or as new Location ID's are added.

### **3.4 Log Full Trays of Filters into Archive Bins**

- 3.4.1 When a tray has been filled with filters from a given Location ID, log the tray into the Archive Bin set aside for or already containing filters from that Location ID.
- 3.4.2 Tray ID's are associated with Archive Bin ID's as trays are filled at the end of the sorting process.

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- 3.4.1.1 All of the trays for a Location ID will be grouped in one or more Archive Bins.
- 3.4.1.2 An Archive Bin may contain trays of filters from more than one Location ID.
- 3.4.3 Filters will remain in trays in archive bins until they are either logged out (individually) and returned to the requesting State or turned over (en masse) to EPA's sample custodian at the end of the contract.

#### **4.0 Procedure for Archiving Filter Extracts**

##### **4.1 Print Labels for Archiving**

Labels for individual samples are already on the vials as received from the laboratory; labels for tube trays and bins (Sections 3.1.1 and 3.1.2) can be printed in batches in advance and used as needed.

- 4.1.1 Tube Tray Labels: Print in human-readable and bar code form a series of unique Tray ID numbers on 1.875" x 0.75" (or larger) labels.
- 4.1.2 Archive Bin Labels: Print in human-readable and bar code form a series of unique Archive Bin ID numbers on 1.875" x 0.75" (or larger) labels.

##### **4.2 Log Extracts into Tube Tray by Aliquot ID**

- 4.2.1 Place a Tray ID label on a tube tray in which extracts are to be archived.
- 4.2.2 Log each extract into the tube tray by associating the Aliquot ID of the extract with the Tube Tray ID.

##### **4.3 Log Full Tube Trays of Extracts into Archive Bins**

- 4.3.1 When a tray has been filled with extracts, log the tube tray into an archive bin by associating the Tube Tray ID with the Archive Bin ID.
- 4.3.2 Tube Tray ID's are associated with Archive Bin ID's as tube trays are filled with extracts.
- 4.3.3 Extracts will remain in tube trays in archive bins until they are either logged out (individually) and returned to the requesting State or discarded at the end of the 6-month archiving period.

#### **5.0 Procedure for Removing Samples from Archiving**

##### **5.1 Identify Samples**

- 5.1.1 Search the database to identify the Aliquot ID's of the filters or extracts to be found.

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- 5.1.2 Extract from the database the Archive Bin ID, Tray ID, Location ID, sampling date and any other useful information for each aliquot to be found.

## **5.2 Locate Samples**

- 5.2.1 Locate the archive bin containing one or more of the samples.
- 5.2.2 Within the archive bin, locate the tray containing one or more of the samples.
- 5.2.3 Within the tray, locate and remove the individual samples to be removed.

## **5.3 Log Out Samples**

- 5.3.1 Verify each sample by scanning the Aliquot ID bar code.
- 5.3.2 Compare the Location ID, sampling date, and any other useful information with the information expected from Section 4.1.2.
- 5.3.3 Change the status of the sample in the database from Archived to Returned or Destroyed, as appropriate.

## **5.4 Exceptions**

- 5.4.1 Extracts are to be destroyed at the end of a 6-month archiving period.
  - 5.4.1.1 Search the database for Tube Tray ID's that contain no extracts less than 6-months old.
  - 5.4.1.2 Locate all tube trays (as in Section 4.2) that meet the criteria in Section 4.4.1.1.
  - 5.4.1.3 Identify and pull from the tube trays any extracts that are to be returned to a State.
  - 5.4.1.4 Change the status of the pulled samples in the database from Archived to Returned, and ship the samples to the appropriate addresses.
  - 5.4.1.5 Change the status of all remaining samples in the tube trays from Archived to Destroyed.
- 5.4.2 Change the status of all remaining samples at the end of the contract from Archived to Returned when they are transferred to EPA's designated sample custodian.