**TSP Filter Handling SOPs**

**1. Receipt**

* The Environmental Department will receive an annual shipment of 8X10 inch TSP filters from EPA OAQPS.
* Annual shipments may be coordinated through EPA Region 6.
* Upon receipt, the filters will be removed from the original shipping container by the Environmental Specialist and inspected for damage (pinholes, rips, wrinkles, etc.).
* Packing slips, shipping forms, and chain-of-custody forms will be filed by the Environmental Data Analysis Manager. Filters should only be handled while wearing powder free, anti-static gloves to prevent the possible contamination of the filters.
* Each filter will be placed in its own clean, unused 8.5X11 inch envelope by the Environmental Specialist. Each envelope will be receive a label for recording vital filter information such as filter ID, scheduled run date, site ID, sampler ID, and total volume sampled.

**2. Log-In**

* Upon receipt, each filter will be logged into the TSP Filter Daily Operation Logbook (see copy attached) and the electronic Lead in TSP Database by the Environmental Data Analysis Manager.
* Information to be recorded includes: filter ID, scheduled run date, site ID, and sampler ID.

**3. Storage**

* Pre-sample filters will be stored together, within their respective glassine envelopes, in the storage closet (vault) at the Environmental Department Environmental Office.
* Pre-sample filters will be organized in chronological order.
* Post-sample filters will not be stored with pre-sample filters.

**4. Deployment**

* TSP filters will be deployed on a weekly basis by the Environmental Specialist in order to satisfy EPA’s designated nationwide 1-in-6 day sampling schedule.
* The appropriate pre-sample filters will be removed from storage and transported to TSP sampler locations within their respective pre-labeled 8.5X11 inch glassine envelopes.
* Once onsite, after collecting TSP samples from the prior filter run, pre-sample filters will be removed from their envelopes (wearing gloves) and carefully placed in the correct TSP sampler filter harness.
* Pre-sample filters should be handled in such a way that minimizes the possibility of contamination or damage to the filter.
* Empty filter envelopes will be returned to the Environmental Department Environmental Office.

**5. Collection**

* TSP filters will be collected on a weekly basis by the Environmental Specialist.
* Upon arriving onsite with the empty filter envelopes, each post-sample filter will be inspected for damage of any kind (rips, pinholes, wrinkles, tears, etc.) Damage will be noted on the filter envelope.
* The filter will be carefully removed from the TSP sampler filter harness (wearing gloves) so as to preserve the integrity of the sample.
* The post-sample filter should be folded lengthwise before being placed in its respective glassine envelope. This will minimize the potential for particles to become dislodged from the filter by shearing forces as the filter surface moves against the inside of the envelope.
* The enveloped post-sample filters should be handled with care to minimize the dislodging of particles from the filter. The total volume sampled will be recorded on the pre-labeled filter envelope.
* Filter glassine envelopes will be returned to the Environmental Department Environmental Office where the Environmental Data Analysis Manager will record the total volume sampled in the TSP Filter Daily Operations Logbook and the electronic Lead in TSP Database.
* Post-sample filters will be stored in the storage closet (vault) separate from pre-sample filters.

**6. Shipment**

* The Environmental Specialist will ship post-sample filters to Inter-Mountain Labs (IML) at the beginning of each month via Fed-Ex. Each monthly shipment will contain approximately 10 filters.
* Filters will be shipped to IML within their respective glassine envelopes. Each glassine envelope will be folded in half lengthwise (without folding the TSP filter a second time) so as to minimize filter movement within the envelope during shipment.
* The envelopes will be bundled with a loose fitting rubber band and placed inside an appropriately sized Fed-Ex box along with a completed and signed chain of custody form (see example attached). The Environmental Department will file a photocopy of each completed and signed chain of custody form sent to IML.
* IML will receive the monthly shipments, inspect the integrity of the package, ensure completeness and accuracy of the chain of custody form, log the filters into their information management system, and analyze the filters for Lead in TSP according to EPA approved FEM (EQL -0310-189).
* IML will handle the filters in such a way that minimizes the dislodging of particles from the filter.

**7. Inventory**

* IML will provide the Environmental Department with electronic data reports on a monthly basis. The electronic data reports will provide a mass of Lead, in micrograms, for each TSP filter ID (g/filter). Data reported by IML will also be correlated to sample run date, in addition to filter ID.
* The Environmental Data Analysis Manager will ensure that monthly electronic data reports are stored in the appropriate folder on the Environmental Department Environmental Office server. Data reports will also be printed and filed in hard copy form by the Environmental Data Analysis Manager.

**8. Final Disposition**

* IML will inventory the remnants of analyzed TSP filters and will return these filters to the Environmental Department on an annual basis. The Environmental Department will determine the final disposition of the filter samples.

**TSP Sampler Operation SOP’s**

The Environmental Department will operate each of the Ecotech HiVol 3000 TSP Samplers in accordance with Operations Manual (see copy attached). Pages 29-49 of the manual outlines standard operation procedures for the TSP samplers.

**TSP Sampler Flow Verifications SOP’s**

The Environmental Department will perform one-point flow verifications for each of the Ecotech HiVol 3000 TSP Samplers on a monthly basis in accordance with pages 51-57 of the TSP Sampler Operations Manual.

**TSP Sampler Calibration SOP’s**

The Environmental Department will perform annual calibrations for each of the Ecotech HiVol 3000 TSP Samplers in accordance with pages 51-57 of the TSP Sampler Operations Manual.

**TSP Filter Exchange SOP’s**

1. Check the time and date on the Main Screen.
2. Record the Total Volume Sampled.
	1. Press SELECT, Cursor will be on Status Menu, Press SELECT, Record the value for “Total Vol M3”, it should be between 1650 and 1750. Press EXIT to return to the Main Screen.
3. Turn the motor ON and check the flow rate
	1. Press SELECT, Arrow Down to the Manual Menu, Press SELECT, Cursor will be on Manual Mode, Press SELECT, Arrow Up to change the NO to a YES, Press ENTER.
	2. The motor will turn on, Press EXIT to return to the Main Screen, Allow the motor to warm-up for a few minutes, Record the Flow rate from the Main Screen, It should hoover around 70.0 (69.5-70.5).
4. Turn the motor OFF.
	1. Press SELECT, Arrow Down to the Manual Menu, Press SELECT, Cursor will be on Manual Mode, Press SELECT, Arrow Up to change the YES to a NO, Press ENTER. The motor will turn off. Press EXIT to return to the Main Screen.
5. Open the sampler hood (loosen the 2 thumb screws).
6. Exchange the dirty filter for a new, clean filter.
7. Close the sampler hood (tighten the 2 thumb screws as evenly as possible).
8. Turn the motor ON and check the flow rate (repeat Step 3 for new filter).
9. Turn the motor OFF (repeat Step 4 for new filter).
10. Clear the previous sample volume from the datalogger.
	1. Press SELECT, Arrow Down to the Setup Menu, Press SELECT, Arrow Down to the Logger Setup Menu, Press SELECT, Arrow Down to “Clear Accum.”, Press SELECT, “Are You Sure?” message will appear , Press SELECT, Arrow Up to change the NO to a YES, Press ENTER to clear the previous sample volume. Press EXIT to return to the Main Screen.
	2. From the Main Screen, Press SELECT, Cursor will be on Status Menu, Press SELECT, Verify that the “Total Vol M3” is now reset to 0, Press EXIT to return to the Main Screen.
11. Return to the Main Screen and check the “Next Sampling Day”.

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| **Site:\_\_\_\_\_\_\_\_ TSP Sampler #\_\_\_\_ Filter Record Form** |  |  |  |  |  |
| **Filter ID** | **Run Date** | **Initial Flow (m3/hr)** | **Final Flow (m3/hr)** | **Total Volume (m3)** |   |  |  |  |  |
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