

Section 508 Compliant ☐ Yes ☒ No

Pre-Sample Chamber Prep
UCD TI #260D, Version 1.0
September 30, 2026
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UCD IMPROVE Technical Information #260D

Pre-Sample Chamber Prep

*Interagency Monitoring of Protected Visual Environments
Air Quality Research Center
University of California, Davis*

*September 30, 2026
Version 1.0*

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DOCUMENT HISTORY

Revision	Release Date	Initials	Section/s Modified	Brief Description of Modifications
1.0	09/30/2025	RMA	All	Procedure separated from TI 251J v3.0, becoming new document TI 260D. New figures and procedural steps added to reflect new equipment and updates to the lab app.

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1. PURPOSE AND APPLICABILITY

The purpose of this technical information document (TI) is to describe the procedures used to prepare unexposed 25 mm Teflon filters for weighing prior to sampling. These procedures are used for every site in the IMPROVE network.

2. SUMMARY OF THE METHOD

Unexposed Teflon filters are placed into carriers and then placed onto the camera system's base, where an image of the filter's barcode and carrier codes are captured. The carrier code and the filter's barcode are temporarily linked together in the MTL database. This link ensures that pre-weights will be assigned to the correct filter even if the filter serial code is illegible. The carriers are then ready to be placed into an automatic weighing chamber to obtain a pre-sample mass.

3. DEFINITIONS

- **Carrier:** A small metal item that holds a filter as it is analyzed in the MTL automatic weighing chambers.
- **Filter Serial Code:** An alphanumeric code printed on a Teflon filter. Typically referred to as a barcode.
- **Gravimetric Analysis:** A method of analysis where filters are weighed. In this case, in an automatic weighing chamber.
- **IMPROVE Filter Processing Application:** Proprietary laboratory software for processing IMPROVE samples in the Sample Handling Lab. Can also be referred to as the lab app.

4. CAUTIONS

The containers of carriers are heavy and prone to shifting around. Use plastic dividers to hold carriers in place as necessary. Handle these boxes with caution.

5. EQUIPMENT AND SUPPLIES

- Bins
- Camera connected to PC with the lab app
- Carriers
- Dividers for bin that holds carriers
- Forceps
- IMPROVE Filter Processing Application (lab app)
- Unexposed Teflon filters

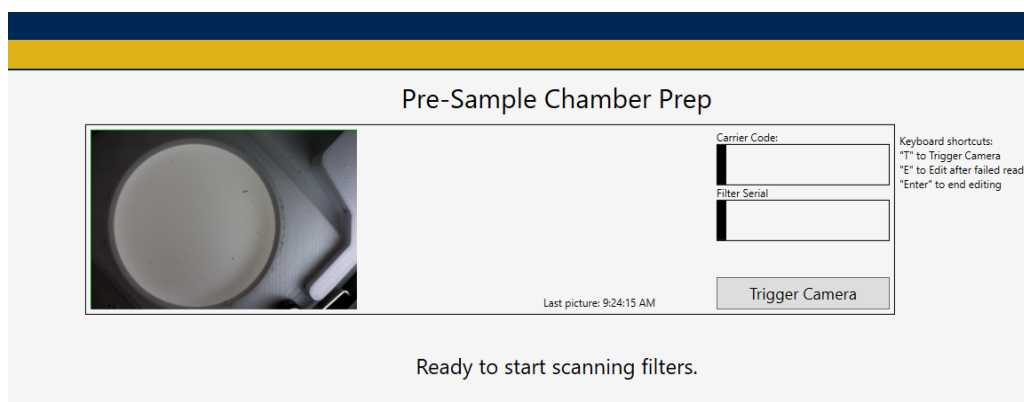
6. PROCEDURAL STEPS

6.1 Navigating the Lab App and Onscreen Information

This procedure can be completed at any PC with the lab app installed and a camera system connected.

From the lab app main menu, select Pre-Sampling, then Chamber Prep. The lab app does not require user initials to start this process. The lab app will display the Pre-Sample Chamber Prep page upon selecting **Chamber Prep**. Upon opening the station, the lab app should display a live image of the camera view, and blank “Carrier Code” and “Filter Serial” fields. If it does not, see section 6.4.

Figure 1. Pre-Sample Chamber-Prep Page Upon Opening.



6.2 Operating the Camera System

Unexposed Teflon filters are prepared for weighing in the MTL Autohandler Chambers by placing each filter into a carrier and scanning into the lab app. Once filters have been scanned and appear on the list of scanned filters, their information is saved, even if the lab app is closed or shuts down unexpectedly. The task does not require the use of a submit button upon completion. The number of filters prepared for weighing varies day to day.

1. Retrieve unexposed Teflon filters from designated lab staff, these will typically be unopened boxes. Locate a bin of empty carriers, these can be found at multiple stations in the SHL.
2. Place a single Teflon filter into an MTL carrier barcode side up, ensuring that neither barcode is covered by the black filter-holding protrusions of the carrier. (Figure 2)

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Figure 2. Properly Placed Filter in Carrier.

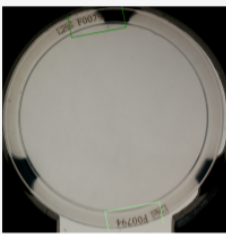


3. Place the loaded carrier onto the camera pedestal with the opening facing forwards.
4. Push the loaded carrier all the way back and depress the trigger, this will trigger the camera and capture a picture of the carrier and filter. A successful trigger will result in the carrier code and filter serial fields being automatically filled in, and the live camera feed being replaced with a static image of the filter. (Figure 3)
 - Repeat this process if both fields are not captured. If repeat fails, see section 6.3.

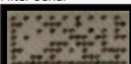
Figure 3. Successful Capture.

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Pre-Sample Chamber Prep



Carrier Code:
 <A000514>

Filter Serial:
 F00794

Trigger Camera

Keyboard shortcuts:
"T" to Trigger Camera
"E" to Edit after failed read
"Enter" to end editing

Count: 1

Time: 7/14/2025 9:28:52 AM

FilterSerial: F00794

CarrierCode: <A000514>

Saved: 

5. Place the loaded carrier into the bin labeled "Unexposed filters ready for Pre-Weigh." Place the lid on the bin when done.
6. Repeat the loading and capturing process until the agreed upon number of filters is prepped for weighing.

Electronic documents are official. Paper copies are for reference only.

7. Exit the screen when finished.

Filters with visible holes or damage should not be used for pre-weigh chamber prep, place these in the container labeled for unexposed damaged filters. Filters dropped, touched or contaminated in any way are not acceptable for pre-weigh chamber prep, place these filters in a container labeled for unexposed dropped filters. Return any unused, new in box filters to designated lab staff.

6.3 Troubleshooting Individual Filters

1. Reposition the filter with the forceps if both filter barcodes are not already visible
2. Try turning on the light next to the station.
3. Manually enter the filter barcode into the **Filter Serial** field. Click the **Edit** button (circled red in figure 5) to do so. The barcode can be found on screen in the box to the left of the **Trigger Camera** button.
 - If the barcode is not there, the camera system may not have autodetected it. Move one of the green rectangles (circled in green) to change the zoomed in view. (Circled in yellow.)

Figure 4. Editing Barcode.



6.4 Troubleshooting the Camera System

The camera feed can appear blank or frozen. When this happens, try the following:

1. The camera may have become disconnected. Unplug and re-plug all cords connected to the camera system.
2. If that does not work, try closing and reopening the lab app in use. Contact a senior staff member if the above steps fail.
3. Contact a senior staff member if the above steps fail.
4. A senior staff member may close all instances of the lab app open.