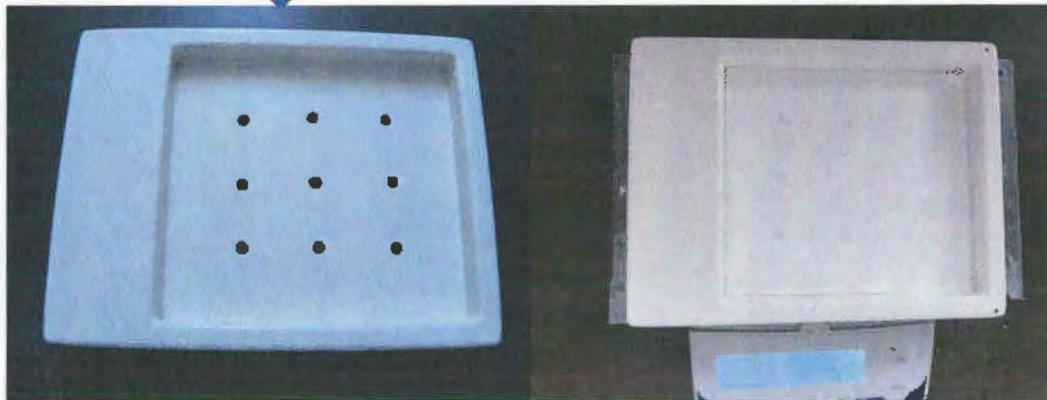


## Protocol: Wicking Experiments

### Using a Plexiglass Desiccator Cabinet (12 in by 12 in by 18 in)

1. Weigh the clean tray for the initial weight.
2. Insert the filter paper (Whatman # 4 filter) into the plastic dust dispersion tray and weigh the tray.

Tray specifications: 14.5 cm by 19.25 cm by 2.54 cm o.d. with a 4.6 cm by 14.5 cm front ledge and 13.6 cm by 12.3 cm by 1.34 cm i.d. with nine 6.35-mm ( $\frac{1}{4}$ -in) diameter holes. Trays are available from Vandiver Enterprises.



3. Fill the tray with the rock dust sample (with or without anti-caking additives) as per the general sample preparation procedures.
  - Place approximately 400 g of dust in a 3.8 L (1 gallon) plastic bag. Seal the bag and shake vigorously for 1 minute.
  - Place the tray on a larger pan and, with a spoon, fill it with dust. Overfill the tray.
  - Starting at the front of the tray (large ledge) using a 20-cm (8-in) wide drywall knife at an approximate 20° angle, scrape off the excess dust so that the dust is level with the top of the tray. Repeat this step for the second time in the same direction. Carefully remove any dust from the rims and ledge.
4. Weigh the filled tray.



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5. Place each plastic water tray (9.65 cm by 8.3 cm by 1.5 cm; available from Vandiver Enterprises) inside the desiccator. Fill the bottom-most desiccator tray with distilled water to ensure high humidity within the desiccator cabinet.

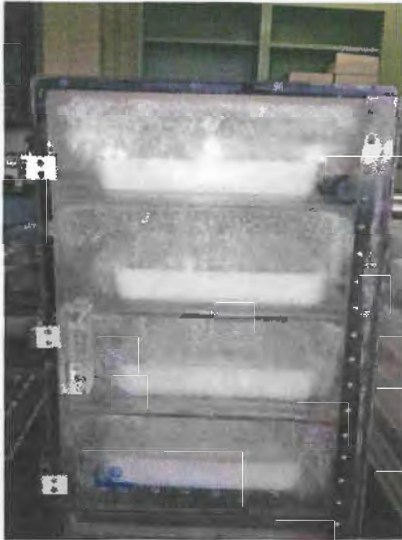


6. Place each dust tray inside a water tray. Then place each tray inside the desiccator cabinet.



7. Carefully pour 800 ml (do not overfill) of distilled water into each water tray. The 800 ml of added water should reach nearly to the top of the sample trays.

8. Place compact temperature/humidity data loggers in the desiccator cabinet to monitor the temperature and relative humidity (RH). The humidity should be at least 95% RH after a day of storage.



9. Leave the tray samples in the desiccator cabinet for the desired storage time (7 days, 14 days, 21 days, 1 month and 3 months).
10. After the storage time is complete, remove each dust tray from the water tray. Wipe clean the bottom of the dust tray with a paper towel, and let it air dry on a bench top until all the wicked water evaporates (24 -48 hours or until the pre-wicking weight is almost equal to the post-wicking weight ). Follow the general dispersion test procedure for the dispersion chamber tests.