


CEFAS BIOGEOCHEMICAL PROCESSES STANDARD OPERATING PROCEDURE (SOP)	
S.O.P. No. EQ-BGC-005C	Issue: 1 Page 1 of: 4

The analysis of filter papers for particulate load determination (manual version)

Production Summary

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History of Procedure

Issue	Date Issued	Changes	Changes made by
Number One	19/03/04	Original	

Introduction

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Suspended particulate results are an important part of calculating transport and fate of contaminants. **NOTE:** The weight of suspended particulate material can now be calculated as mg l^{-1} using weights of the unused filter paper, used paper and volume of sample filtered.

Scope


This SOP describes the procedure to be followed when weighing Cyclopure™ Track Etched Membrane 0.4 μm Polycarbonate (hydrophilic) 47mm diameter filter papers which have been used in the filtration of water samples for determination of suspended load. It does not include the sample collection & preparation or pre weighing procedure. For this, refer to SOP EQ-BGC-005, EQ-BGC-005A, EQ-BGC-005B, EQ-BGC-00D and EQ-BGC-005E.

Training

Operator must have been trained thoroughly in the correct use of Polonium-210 static eliminator disk before starting this procedure (for this, refer to SOP EQ-BGC-005E). It is advisable for the operator to read this procedure thoroughly before starting the process and run through the first weighing with an experienced operator.

Apparatus


1. Cyclopure™ Track Etched Membrane 0.4 μm Polycarbonate (hydrophilic) 47mm diameter filter papers (The Labsales Company product code 7060-4704)
2. Metler AT261 Delta Range Balance located in room 350 Balance room (access via room 351)
3. Polonium-210 static eliminator disk stored in key safe in room 155b. Key available from EQ-BGC nutrient chemist. (Amersham International plc 62.9MBq , 1.70 mCi Activity , 1.7 MILLICURIES nominal)
4. Millipore flat tip tweezers
5. Desiccator ref. SOP EQ-BGC-005A
6. Silica gel, self indicating, coarse (BDH prod 300627B)

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Procedure

Note

- Handle the membrane with forceps
 - Avoid touching the membrane with your fingers
 - Use membrane shiny side up (Polycarbonate membranes)
 - Do not use balance to weigh to 5 decimal places if the counter next to it is on. (5 place balance 3rd floor north extension).
1. After membrane has been used, place a layer of bright blue silica gel in the bottom of a desiccator. Place a desiccator plate over the silica gel and fill the desiccator with as many filter papers as possible.
 2. Place the lid on the desiccator and evacuate using a vacuum pump as per SOP EQ-BGC-005A.
 3. Desiccate for one week.
 4. Check the seal on the desiccator every day. It is possible that the evacuation valve may get knocked or is not left at the correct angle to maintain a good seal (the lid will come off if the seal has failed). Leave the papers for at least 7 days before the first weighing.
 5. If the silica gel changes colour significantly renew and evacuate desiccator again.
 6. To weigh the papers, first sign out the Polonium-210 static eliminator disk in the book provided.
 7. Take to balance room 350.
 8. Check the balance is correctly aligned. Making sure the oil bubble just in front of the balance plate is in the centre of the circle.
 9. Open the balance door by pressing SELECT.
 10. Using the large forceps stored beside the Metler AT261 balance. Take Polonium disk out of petri dish used for storage, DO NOT HANDLE WITH BARE HANDS, and place gently on the balance tray.
 11. Close balance door by pressing SELECT.
 12. Set the balance to weigh five decimal places
 13. Zero the balance.
 14. Break seal on the desiccator as described in SOP EQ-BGC-005A.
 15. Lift desiccator lid remove one petri dish replace desiccator lid.
 16. Open balance door.
 17. Remove rubber band. Using forceps carefully place membrane on top of polonium disk on balance plate, take care not to touch the filter and associated solids.
 18. Close balance door.
 19. Record the filter paper number or check it's whereabouts on the log sheet.
 20. Wait for balance to stabilise.
 21. Record the value in the column provided.
 22. Using forceps place membrane shiny side up back in the petri dish and secure with rubber band.
 23. Place in foil tray.

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24. Continue steps 15 to 23 till all the papers have been weighed.
25. The balance should be re-zeroed when it does not return to zero between weighing of papers.
26. Using large forceps replace polonium disk in petri dish. Return to storage cabinet in room 155 and fill in book provided.
27. To complete the weighing process, perform steps 1 to 26 at least three times desiccating for at least 7 days in between weighings.
28. Further desiccation and weighing is required if the mass of the filter has not stabilised.