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TECHNICAL OPERATING PROCEDURE

PROCEDURE TITLE:

Procedures for Filtering Fine Particulate Matter from Water Samples That Contain TFM

APPLICABILITY:

This procedure is applied when conducting analysis for TFM on water samples that contain colloidal clay or other fine particulate matter not removed by standard filtration. Millipore filtration (syringe) is used before all measurements of TFM concentration if the absorbance of a water sample filtered through 5µm filters (Millipore) or equivalent filter paper differs by more than .020 absorbance units from the absorbance of the same sample after filtration through a 0.45 um filter.

PRINCIPLE:

Colloidal clay and other suspended particulate matter interfere with the spectrophotometric analysis for TFM by partially blocking the passage of light through water samples. Filtration through a 5 µm filter removes most particulate matter, but water samples containing fine particles require additional filtration through a smaller pore-size filter.

SAMPLE COLLECTION AND PRESERVATION:

See TOP:018.x; Procedures for Conducting Spectrophotometric Analysis for TFM in Stream Water

EQUIPMENT REQUIRED:

Syringe with Lure-lock tip
Filter-disc holder
47 mm filter circles with 0.45 um pore size
Disposable syringe filters with 0.45 um pore size

POTENTIAL INTERFERENCES:

Water samples with heavy loads of particulate may quickly obstruct filters. Pre-filter samples through a Millipore 5 µm filter (or equivalent).
Some syringe filters (e.g.: Target brand) remove TFM from the water sample. New filters must be tested.

SAFETY:

Standard laboratory safety procedures are followed when handling reagents, otherwise no special precautions are required.

DISPOSAL:

Wastes from field laboratories are collected and emptied into the stream receiving treatment.

REAGENTS:

No special reagents required**.**

PROCEDURES:

I. Preparation of sample

A. The sample is buffered and pre-filtered according to procedures in TOP:018.x.

B. A sub-sample of about 100 mL or greater is necessary for syringe filtration.

II. Filtration of sample

A. Syringe filtration

1. New shipments of filters must be tested to detect loss of TFM to the filter.
   a. Measure absorbance of a TFM standard.
   b. Filter the standard through the new filter and again measure absorbance.
   c. Compare absorbencies to detect adsorption of TFM onto filter.
   d. Differences of >.005 absorbance units indicates unsuitability of filters.

2. Place a filter disc in the syringe filter holder and attach the holder to the syringe or attach disposable syringe filter.

3. Pour about 10 - 20 mL of pre-filtered sample into the syringe, insert the plunger, shake the syringe to rinse the sides, and slowly force the sample through the filter. Discard the filtrate.

4. Pour about 30 - 40 mL of pre-filtered sample into the syringe, insert the plunger, and slowly force the sample through the filter into a metal beaker for heating and subsequent analysis as outlined in TOP:18.x

5. Change filter discs or disposable filters between samples to avoid clogging.

REFERENCES:

None

This procedure has been reviewed and approved by the undersigned representatives of the U.S. Fish and Wildlife Service and Fisheries and Oceans Canada.

REVIEWED/APPROVED_____ DATE_____
Field Supervisor (U.S.)

REVIEWED/APPROVED_____ DATE_____
Program Manager (Canada)

Revision No.	Date	Person(s) Responsible	Description
41	2/1/21	Benson Solomon, Stephen Smith, Shawn Robertson, Chris Gagnon	Minor wording changes (no substantial updates)
42	2/12/24	Benson Solomon, Justin Oster	Minor wording changes (no substantial updates)