

STANDARD OPERATING PROCEDURE
Procedure for Preparing Background Matrix Water with Sediment

KEY WORDS

Soil, Background Water, Sediment

APPROVALS

APPROVED BY: **Original Signed by:** _____ DATE: **3/1/06**
Kean Goh Ph.D.
Environmental Monitoring Branch Management

APPROVED BY: _____ DATE: **3/1/06**
Frank Spurlock Ph.D.
Environmental Monitoring Branch Senior Scientist

APPROVED BY: _____ DATE: **3/2/06**
Carissa Ganapathy
Environmental Monitoring Branch Quality Assurance Officer

PREPARED BY: _____ DATE: **3/1/06**
Milanka Ilic
Environmental Research Student Assistant

Environmental Monitoring Branch organization and personnel, such as management, senior scientist, quality assurance officer, project leader, etc., are defined and discussed in SOP ADMN002.

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1.0 INTRODUCTION

A suspended sediment-water solution (sediment water) is used as background water to prepare matrix samples for QC purposes in pesticide analyses. In the natural environment, pesticides with a higher K_{OC} are likely to bind to sediment particles, thereby affecting analytical results. In addition, use of solvents to extract pesticides from environmental sediment-containing water samples may also remove humic co-extractives, also potentially influencing analytical results. Manufactured sediment water solutions are used in analytical method development, method validation, and on-going QC to mimic natural conditions. The usual sediment concentration is 0.5 g sediment / liter water based on typical Total Suspended Sediment results for samples of San Joaquin River water taken during a 1992 study (Ross et al., 1996). The sample average was 0.135 g/L.

1.1 Purpose

The following Standard Operating Procedure outlines the standard method to prepare sediment water.

2.0 MATERIALS

- 2.1 Soil-drying Oven
- 2.2 Balance (accuracy ~0.1g)
- 2.3 1 Liter amber bottles
- 2.4 Fine sediment
- 2.5 Weighing aluminum dish
- 2.6 Grinder
- 2.7 Water carboys
- 2.8 Water
- 2.9 Aluminum foil
- 2.10 Disposable gloves
- 2.11 Clean funnel

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3.0 PROCEDURES

3.1 Sediment Preparation

- 3.1.1 Collect sediment of interest. The Environmental Monitoring Branch collects sediment from the Sacramento River Watershed.
- 3.1.2 Collect water using water carboys or clean jugs. If possible, collect water in a location that is not influenced by agricultural runoff or is not affected by pesticide use. If such an area is not available, find an area of interest and analyze the collected sediment for pesticides to be sampled for prior to use. The Environmental Monitoring Branch currently collects American River Water, upstream of agriculture and urban areas.
- 3.1.3 Examine the sediment and remove any visible rocks or vegetation.
- 3.1.4 Dry sediment in a soil-drying oven. The sediment can be simply spread onto an aluminum foil or a cookie sheet.
- 3.1.5 Grind the dry sediment, reducing it to very fine powder.
 - 3.1.5.1 The Environmental Monitoring Branch uses the Humboldt Grinder, Model H-4199. Any brand and model of grinder intended for grinding soil may be used.

3.2 Sediment Water Preparation

- 3.2.1 While wearing gloves and using a clean funnel, fill each 1-liter Amber bottle with collected water until the bottle is approximately ninety percent full.
- 3.2.2 Weigh out 0.5 g of sediment powder in a weighing boat and add (0.5 g) to each of the bottles. Finish filling each of the bottles carefully, close the lid and shake until the sediment is evenly suspended.
- 3.2.3 Store sediment water at approximately 4 °C until ready to be used.

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4.0 REFERENCE

- 4.1** Ross, L.J., R. Stein, J. Hsu, J. White, and K. Hefner. 1996. Distribution and mass loading of insecticides in the San Joaquin River, California. Report EH 96-02, Environmental Monitoring Branch, DPR.