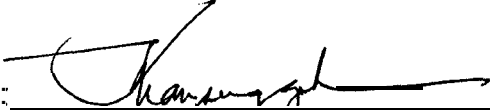


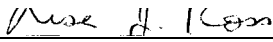
STANDARD OPERATING PROCEDURE
Instructions for Preserving Water Samples Using Hydrochloric Acid (HCL)

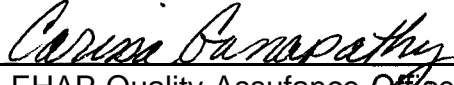
KEYWORDS-

Acidification, calibration, preservation, pH

APPROVALS

APPROVED BY:  DATE: 10/13/98
Management

APPROVED BY:  DATE: 10/5/98
EHAP Senior Scientist

APPROVED BY:  DATE: 10/1/98
EHAP Quality Assurance Officer

PREPARED BY: Adrian Bradley / Carissa Ganapathy DATE: 10/1/98

Environmental Hazards Assessment Program (EHAP) 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 .O INTRODUCTION

1 .I Purpose

The stability of pesticides in water varies greatly. Preserving water samples may slow the degradation of some pesticides. The decision to preserve a sample and the preservation method should be chosen based on a storage stability study (SOP QAQCOOI) and in consultation with the chemists, project leader and lab liaison. One routinely used procedure is to add 3 N hydrochloric acid (HCL).

1.2 Scope

This document will provide specific instructions for preserving water samples by acidification with HCL.

2.0 MATERIALS

- 2.1 Portable pH meter (accurate to a least 0.1)
- 2.2 pH equipment listed in SOP EQWA002
- 2.3 Clean 1,000 ml beaker
- 2.4 Deionized (DI) water in a squirt bottle
- 2.5 3 N HCL in dropper bottle
- 2.6 Disposable gloves
- 2.7 Water Quality Sheet and Chain of Custody (COC)

3.0 PROCEDURES

3.1 Sample Preservation

Refer to the study protocol to determine the method of preservation as well as the replicates needing acidification. Below is a list of analytes and screens commonly sampled by this branch that may require acidification and a list of chemicals that should not be acidified. Remember this is a general guide, and when they differ, the study protocol should be followed.

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Screen or Analyte	Acidification
<u>Organophosphate (OP) screen:</u> Chlorpyrifos, azinphos-methyl, DDVP, ethoprop, phosalone, thimet, dimethoate, fonofos, malathion, methidathion, methyl parathion and Phosmet	Yes
<u>Diazinon (DI)</u> <i>note</i> this OP breaks down rapidly when acidified	No
<u>Carbamate (CB) screen:</u> carbaryl, carbofuran, aldicarb, methiocarb, methomyl, and oxamyl.	Yes
<u>Phenoxy (PH) screen:</u> 2,4,-D, MCPA, and Triclopyr	No
<u>Glyphosate (GL)</u>	No
<u>Triazine (TR) screen:</u> Atrazine, bromacil, diuron, Cyanazine, hexazinone, metribuzin, prometon, prometryn and simazine. Sometimes norflurazon and some breakdown products included.	No
<u>Molinate (ME)</u>	No
<u>Thiobencarb (TB)</u>	No
<u>Endosulfan isomer and breakdown product</u>	No

Sometimes the following are requested: (see protocol)

(BA) Back-up Acidified sample (back-up for acidified samples)	Yes
(BU) Back-up Unacidified sample (back-up for samples not acidified)	No

3.2 pH Determination and acidification

3.2.1 pH determination for preservation should be performed using sample water and the same volume of water contained in the sample bottles. For instance, for a 1-Liter Amber bottle, **fill a 1,000 ml beaker to the 1,000 ml level with the sample water. For ground water sampling, fill a beaker with water while the pump is operating.**

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3.2.2 Determine pH of the sample water in the beaker by following SOP EQWA002.

3.2.3 Using a dropper, slowly add 3 N HCl to the water while gently stirring with a clean glass rod or the pH meter probe. For pH meters without an attached probe (one-unit) do not wet the pH meter above the immersion line (indentation on plastic) as this will wet the electronic portion of the meter which could affect the accuracy of the instrument. Add drops until the pH reaches between 3.0 to 3.5.

3.2.4 The final pH and number of HCl drops used should be recorded on the water quality sheet and on the COC matching each sample bottle that needs to be acidified.

3.2.5 Add the determined number of drops to the samples requiring acid preservation. Be careful not to over fill the bottle because the acid may pour off the side and the sample may not be properly preserved.

3.2.6 Cap all bottles and cool to 4°C using wet ice, blue ice or place in a refrigerator.