

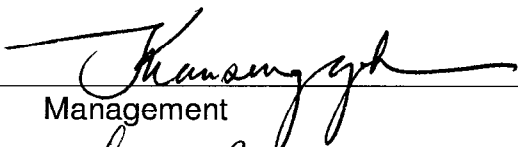
STANDARD OPERATING PROCEDURE

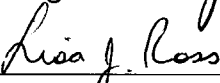
**Thorough Cleaning of the Geotech® Dekaport Splitter and Splitting Equipment**

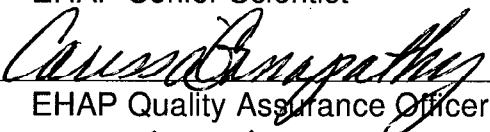
**KEY WORDS**


Splitter

**APPROVALS**

APPROVED BY:  DATE: 6/22/98  
Management

APPROVED BY:  DATE: 6/1/98  
EHAP Senior Scientist

APPROVED BY:  DATE: 5/28/98  
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PREPARED BY:  DATE: 5/28/98

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.

## STANDARD OPERATING PROCEDURE

### **Thorough Cleaning of the Geotech® Dekaport Splitter and Splitting Equipment**

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## 1.0 INTRODUCTION

### 1.1 Purpose:

This SOP discusses the procedure for thoroughly cleaning the Geotech Dekaport® Splitter. When splitting water samples containing large particulate matter (straw, aquatic vegetation, sand etc.), sometimes the particulates get trapped inside the splitter. This can lead to cross contamination and make the splitter operate unevenly due to blocked ports. It is important to do this more intensive cleaning at least monthly even if samples are fairly clear, to ensure no particles are trapped inside and that no algae is growing. In addition, this procedure should be followed at the beginning of a study to ensure that the splitter is clean.

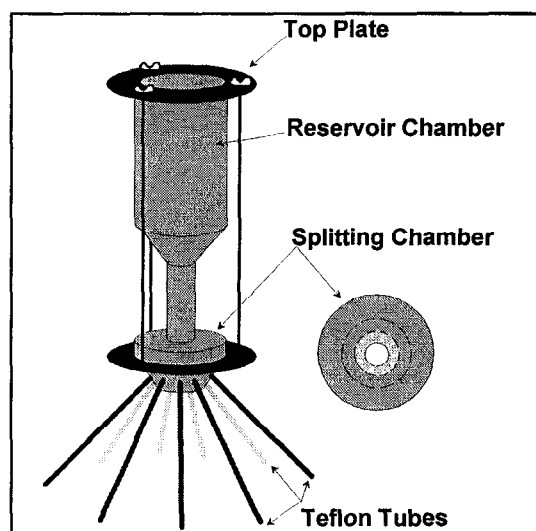
## 2.0 MATERIALS

- 2.1 Non-phosphate detergent (e.g. Liquinox)
- 2.2 Small bottle brush (very soft)
- 2.3 Methanol (500ml)
- 2.4 Deionized water (5 gallons)
- 2.5 10 clean 1-L Amber bottles
- 2.6 Flat nosed pliers with duct-taped ends
- 2.7 Latex disposable gloves
- 2.8 Foam ended computer keyboard cleaners
- 2.9 Level
- 2.10 Methanol waste bottle
- 2.11 Tap water

## 3.0 Procedures

### 3.1 Disassembly

**3.1.1** When disassembling the dekaport splitter care should be taken to select a tool that will not scratch, dent, de-thread or mangle the Teflon® nuts. Flat nose pliers with some duct tape wrapped around the ends works well. Also remember how each part fits together to make reassembly easier. First, undo all the nuts from the splitting chamber where the ten Teflon® tubes are attached. Then loosen the compression fittings by partially unscrewing the nut assemblies and pulling out the Teflon® tubes from each nut assembly. Next remove the wing nuts at the top of the splitter so that the top plate can be removed. All the other parts are stacked. Separate them.



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#### **3.2 Cleaning**

**3.2.1** Once the splitter is completely disassembled, put on latex gloves then wash the parts thoroughly with a solution of non-phosphate soap with a soft bottle brush. The splitter is constructed of very soft Teflon®. Be careful not to scratch the surfaces with the brush. The splitting chamber which actually divides the water is the most delicate. Do not shove the brush through the holes for it may bend the thin walls that divide the sample water. Remove particles by gently scrubbing using a keyboard cleaner and then washing them out with tap water. To clean the Teflon® tubes, place them in a clean plastic bag, pour the soap solution into the bag, then shake. Another option would be to purchase new Teflon® tubes.

**3.2.2** Rinse all the parts with tap water.

**3.2.3** Rinse the parts with methanol. (This should only be done when the splitter is fully disassembled, because methanol trapped in the splitter could harm organisms in the biotoxicity testing). Used methanol should be poured into a labeled waste container and stored in the flammable chemicals cabinet to await proper disposal.

**3.2.4** Thoroughly rinse the parts individually with deionized water to ensure that there is no residual methanol and allow the parts to dry.

#### **3.3 Reassembly**

**3.3.1** To reassemble the splitter, restack the parts according to the diagram in this SOP. Replace the top plate and screw on the wing nuts. Make sure the stacked parts are straight between the two plates. Then screw in the nut assemblies into the splitting chamber section until they are fairly tight, shove the Teflon® tubes in as far as they will go into the nuts and again tighten the compression fittings finger tight.

#### **3.4 Testing for even flow and as a final rinse**

**3.4.1** After the splitter is reassembled, place the splitter on the splitter stand. Make sure it is on level ground and that the splitter is level by using a level. Place one clean 1-L amber bottle under each of the ten spouts. Ten clean bottles can be stored for testing purposes in a clearly marked box, so that new bottles are

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not wasted each time this procedure is followed. Check to see if these bottles are available in the surface water storage cabinet. Pour about 6 to 7 L of deionized water through the splitter. While pouring, make sure the top cylinder reservoir is full to maintain head pressure. Sufficient head pressure is necessary for even flow.

**3.4.2** Next weigh each bottle or a graduated cylinder to measure water height to determine how even the flow is. Normally there will be some error in a properly working splitter. However, the maximum suggested difference from the mean should be about 10 to 12%. Sometimes one spout may flow much slower than the others. This should be investigated by loosening the nut assembly and removing the Teflon® tube. Look through the hole in the splitting chamber to see if the chamber's Teflon® dividers are bent toward the hole enough to retard flow. Try using a clean instrument such as the blunt end of a glass stirring rod to straighten the divider. Reassemble and test again.

**3.4.3** Remove and discard the amber bottles, then clean the outside of the splitter spouts by pouring deionized water over them.

**3.4.4** Cover the splitter with a plastic bag for storage. Store the splitter in its protective box for transport or for long term storage.