A simple and portable seawater filtering device using pipette filler

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Filtration of seawater from the intertidal and coastal areas for separating chlorophyll pigments or particulate organic matter (POM) requires vacuum and for creating vacuum, a suction pump operated using AC/DC is essential. From the field or sea, large quantities of water samples have to be saved, brought to the laboratory and preserved by freezing until the filtration. Seawater filtration in remote areas with no power supply or portable suction pump is difficult but can be made possible by deploying a simple device involving filtering flask, a rubber hose and a safety pipette filler.

Requirements

1. Filtration funnels with magnetic base (300 ml, Gelman Sciences Inc)
2. Glass fibre filter paper (GF 52, Schleicher & Schuell)
3. Vacuum filtering flask with a glass hose connection- (1000 ml, Merck- 0101730)
4. Safety pipette filler (Cole - Parmer KH- 24805-10)
5. Rubber hose (10 mm dia., 25 cm long)

Procedure

Connect one end of rubber hose with the side arm of filtering flask and the other end with safety pipette filler by inserting the hose about 0.5 cm as shown in the Fig. 1. Place GF filter paper in between filter funnel and magnetic base and place it over the flask. Pour known quantity of seawater on the filtering funnel. To create vacuum for suction of seawater, press the filler bulb to expel the air and then squeeze the valve with the thumb and the index finger. Repeat this for 3-5 times until sufficient

Fig. 1. The arrangement of the filtration unit

vacuum is created inside the flask to get a steady flow of water from the funnel. Depending upon the organic load, it takes 5-7 minutes to filter 500 ml of seawater.