CO₂ sampling protocol for NCRMP field teams

Materials

- 1. Glass (borosilicate) CO_2 sampling bottles with glass stoppers. Note that the paper is there so that the stoppers do not stick. Please remove before obtaining a sample and discard.
- 2. Sample preservative (HgCl₂) and pipette
- 3. Apiezon grease
- 4. Stopper rubber band
- 5. Stopper clamp or cable tie
- 6. Datasheets in each crate
- 7. YSI salinity and temperature probe
- 8. Kimwipes
- 9. GPS

Filling directions

Rinse bottle two times with seawater by filling and discarding. On the third fill, take care to ensure that there are no air bubbles in the sample bottle. Pour out a small amount from the neck of the bottle so that a very small headspace is remaining in the bottle - just a few millimeters below the bottle neck. Squirt in 200 microliters of HgCl₂. The amount required is already set on the auto-pipette provided.

Make sure glass stopper is dry and spread a pea-sized amount of apiezon grease equally around the top 2/3 of stopper. There should be no bubbles in the grease. It is important that the inside of the bottle neck, where glass is ground, also be dry. Insert stopper fully and firmly, but don't push too hard or you could shatter the bottle. Turn slowly until it is finger tight. There should be a seal whereby there are no bubbles and stopper is firmly in.

Create a circle in cable tie or plastic stopper clamp about double the diameter of the bottle neck (Figure 1). Slide large rubber band over cable tie loop (should be locked). Pull rubber band over bottle neck by pulling down on side of cable ties within rubber band. Tighten cable tie around bottle neck so that stopper is held firmly in place (Figure 2). Turn bottle over a few times to mix. Return bottle to case. Note the date/time, and seawater temperature for the bottle filled in the datasheet provided.

Getting the amount of grease 'just right' and securing the rubber band will take a bit of



Figure 1. Preparing the rubber band and cable tie to secure bottle stopper.

practice. If you get water on the grease or see bubbles that don't disappear by slowly turning greased stopper less than half a turn, you'll probably have to remove it, wipe clean with a Kimwipe and start over.

Note: Care should be taken to minimize the time between sampling, poisoning, and sealing. If possible, these procedures should be performed back to back.



Sampling directions

Figure 2. Secure rubber bands on water samples.

Sample water approximately 20 cm underneath

the water surface. Measure temperature and salinity at the same depth with the provided YSI. Note the following information in the provided sampling spreadsheet:

- 1. Bottle number
- 2. Site name
- 3. GPS coordinates
- 4. Seawater temperature in Celsius
- 5. Salinity in practical salinity units (PSU)
- 6. Date
- 7. Time
- 8. Collector name and notes

Storage

Between sampling trips samples should be stored in their crate, indoors, and out of direct sunlight. Return for analysis soon after crate is full.

Warning

The $HgCl_2$ preservative is very toxic. Please exercise caution when using this by wearing the gloves provided. If you spill any on your skin, rinse with freshwater for a few minutes. Keep this substance stored within a plastic bag within the gray crate of CO_2 bottles.

If you have any questions or concerns, please do not hesitate to contact us via email at <u>Derek.Manzello@noaa.gov</u> or <u>Ian.Enochs@noaa.gov</u>

Bottle #	Site name	Latitude	Longitude	Seawater temperature (°C)	Salinity (PSU)	Date	Time (00:00 hrs)	Collector and notes