**PROTOCOL FOR TAKING A WATER SAMPLE**

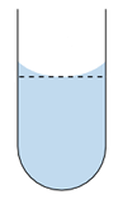
**To Measure Water Temperature & pH**

1. Rinse the bucket with sample water from the site. Be careful not to disturb the bottom.

1. Hold tightly onto the rope. Throw the bucket out to a well-mixed area (a riffle), a little distance from the shore.
2. If the bucket floats, jostle the rope until some water enters the bucket. You should always take a sample from the top surface water.
3. Be careful not to let the bucket sink to the bottom or stir up bottom sediment.
4. Allow the bucket to fill about 2/3 to 3/4 full and pull it back in with the rope.
5. Immediately begin testing procedures.

**PROTOCOL FOR MEASURING DISSOLVED OXYGEN  
Using a CHEM-ets® Visual Kit**

1. Put on gloves. Rinse out the water collection beaker with water from the stream.
2. Collect a water sample by completely submerging the beaker. Make sure as you bring it to the surface that there the beaker is completely full and has no air bubble at the top.



**Read Here**

1. Slowly pour off water back into the stream until the bottom part of the water in the beaker is resting   
   at 100 ml when you are looking at it at eye level. If you pour off too much, start again by submerging the beaker.
2. Get a vial from the kit. **CAUTION! Handle the vial carefully. It’s made of glass with a thin tip that is meant to be broken. It contains a chemical which needs to be kept out of the water and carefully disposed of in a waste container.**
3. Place the narrow tip of the vial with the indicator solution into the water. Holding the beaker firmly, put pressure on the vial against the side of the beaker until the tip breaks off. Let the vial fill with water from the sample, then turn it upside down so water can’t escape.
4. Mix the liquid in the vial by moving it back and forth. Start your stopwatch. Wait two minutes.
5. Compare the color in your vial with the scale of blue vials. Record the number of the vial that best matches your stream sample. Dispose of the vial with its contents and the tip of the vial in the waste container.

**Protocol for Measuring Water Temperature**

1. Put on the gloves and take a sample of the water column by lowering the bucket into the stream as deep as possible.

2. Put the thermometer in the water sample right away. Slip the rubber band around your wrist so that the thermometer is   
 not accidentally lost or dropped into the water.

3. Put the bulb end of the thermometer into the sample water to a depth of 4 inches.

4. Leave the thermometer in the water for three minutes.

5. Read the temperature in degrees Centigrade without removing the bulb of the thermometer from the water. Read it at   
 eye level.

6. Let the thermometer stay in the water sample for one more minute.

7. Read the temperature again. If the temperature has not changed, record it,

8. If the temperature has changed since the last reading, repeat Step 8 until the temperature stays the same.

9. Two other students repeat the measurement with two new water samples.

10. Calculate the average of the three measurements.

**PROTOCOL FOR MEASURING pH**

1. You will use the same water samples that will as the team measuring water temperature.
2. Put on latex gloves.
3. Rinse the beaker with sample water three times, dumping out the water outside the bucket.
4. Fill a 100 ml. beaker halfway with sample water.
5. Follow the instructions that come with your paper for testing the pH of the sample. The members of your team should reach consensus on the number to assign to the pH reading.
6. Record your first pH reading in your science notebook.
7. Repeat steps 4-6 using new water samples and new pieces of paper. Record your second and third reading in your science notebook.
8. Find the average of the three observations.
9. Discard used pH paper in a waste container. Rinse the beaker with distilled water.