

Oakton, Colorimeter and Flow Meter Tips

Hot Training Tips PASEC

1. **Maintenance of the Oakton meter.** Between stream visits there are a small number of maintenance tasks that must be completed.

a. The first of these tasks is to keep the meter immersed in a saline solution for all the days the kit is not in use. The saline solution is available from Dan DeLotto and it has a specific concentration so do not try to create your own solution. One of the reasons to do this is to minimize the oxidation of the sensors on the meter. Exposure to air will result in some oxidation with the result of a downturn in the accuracy of the readings. A final step in this process is putting a small amount of the saline solution in the cotton ball in the cap of the meter. This step should be taken within a short time before a stream visit.

b. The meter should be calibrated for pH within a small number of days before the next stream visit. Directions for completing the calibration are available on the CCPASEC web site. The calibration should be carried out for pH readings at 4.01, 7.00 and 10.01. When you start the calibration against the 4.01 solution, the meter will take some time getting to a value that is close to 4.01 but not necessarily exactly on that value. When the reading has stabilized on a single value, press the Mode/Ent button. This will set the calibration for that value. Repeat for the other two values. When complete with the calibration do a non-calibration reading of the three buffer solutions. For example make sure the meter is set for pH then immerse it in each of the three standard buffer solutions rinsing the tip in water and drying it in between solutions. The reading you get should be very close to the buffer solution value.

c. Calibration of the meter for conductivity is a much simpler process, but to even begin this procedure you must have a bottle of the appropriate calibration liquid. To do this, you put the meter in conductivity mode and then press the "Cal" key to begin the calibration. When the displayed values stabilize, press the "Ent" key to set the calibration. If you cannot find a conductivity calibration solution in your kit, contact Dan DeLotto to get a bottle.

d. When using the Oakton meter in a stream visit, but sure to get a sizable stream sample in a beaker and then read the pH and Conductivity on the shore. Do not use the meter directly in the stream. With a stream sample in a beaker you set the meter for the appropriate task and insert it into the beaker, **stirring frequently** to get the most accurate reading.

2. **Important colorimeter procedure for the best accuracy of readings.** Accuracy is an important goal to strive for in all of our measurements. Recent experiments with the colorimeter bottles found that the orientation of the bottle when it is being read may give slightly different readings. To minimize this effect, take special care to use the same bottle for the same test week to week. In order to implement this, make certain that each bottle is labeled for the specific test it will be used for and preserve this condition by writing on it with a water proof pen the name of the test. The second procedure that must be used is to always place the bottle in the colorimeter with the geometric figure on the bottle facing the keyboard of the meter. Wiping the outside of

the bottle before each reading should not be forgotten. This step ensures that little of the light of the colorimeter will be blocked from the sample.

3. Flow meter care. Recently the spinning wheel of a flow meter was broken most likely not during normal use. It is important to realize that the sensor with a propeller in a blue tube is part of the meter that is fitted on the end of the rod. It is not glued on but it is a tight fit. If you want to remove the sensor from the end of the rod, make certain that you do not pull on the blue cylinder because it breaks relatively easily. Rather use the black tube above the sensor to gradually move that part of the device off the end of the rod. When storing the whole assembly in its case, be very careful to make certain that the blue tube part of the device is in a secure place and connected to a completely compressed rod. The rod must be at minimum size to fit well in the case.

4. Flow meter use precaution. *Under no circumstances should the flow meter be used as a means to stabilize the user in the stream.* The probe is just not strong enough to do this. To avoid problems, ensure that two people always use the flow meter. One person would hold the meter and the other would handle the probe. When done this way each member can carry and use a rod to stabilize themselves in the stream and the flow meter will have a longer life.