Procedural Tips on How To Make Better pH Measurements

Hot Training Tips PASEC

1. **DO NOT USE OAKTON OR HACH pH DIRECTLY IN THE STREAM.** Neither the Oakton meter (tan tubular device) nor the Hach pH meter (pencil shaped device in a rectangular black box) are to be used directly in the stream. The main reason this procedure must be carefully enforced is that both meters are relatively small and can easily slip out of hand and fall in the water. This can be the death of the meter. Additionally, since the level of water changes with each moment, there is a constant risk that the sensors on both devices will be influenced by bubbles in the water resulting in inaccurate readings. The best procedure for both meters is to use them on solid ground with samples taken from containers of stream water. **This is a big deal and must become integrated into our monthly practice.**

2. **TECHNIQUES HAVE BEEN DEVELOPED THAT EASE USE OF HACK pH.** At the calibration event, small dark brown bottles were put into each kit. These bottles will likely be ignored unless it becomes a topic of conversation/training during your next stream visit. We have all probably had some difficulty with both calibration and use of this meter. I have personally had this difficulty. The reason we had this problem relates to the sensitivity of the device to any variability in the surrounding light since that directly affects the meter. The brown bottles solve this difficulty. To calibrate the meter place a drop or two of the calibration liquid on the tip of the meter. Place the brown bottle on its side and insert the meter inside the bottle and use your hands to block any light from entering the bottle top. Follow the directions on which buttons to use. Calibration done this way will take only a few seconds. Once calibration has been complete, clean the tip of the meter with distilled water and then wipe it dry. You might want to power it off and then power it on to prepare for sample measurement. Next, get about half the brown bottle filled with stream water. Place the meter in the bottle so that the sensor tip is completely under the water surface in the bottle. Cover the top of the bottle with your hands to block light. The meter reading will appear in seconds. Team 5 used both the Oakton and the Hach pH meters to validate this procedure. The readings at both sites were within .1 units. However the Hach pH meter took less than thirty seconds to get its reading including calibration whereas the Oakton meter took close to 10 minutes to settle on its reading. The calibration for the Oakton pH readings is very time consuming and confusing. I have not mastered this process even after study and several tries. The Oakton meter should continue to be used to measure the conductivity of the stream water. The time it takes to get a reading can be reduced by doing the calibration of the meter and then soaking a ball of cotton with the calibration liquid and placing it in the cap of the meter. This helps in getting the meter to settle quickly on a value of conductivity when it is used within a few days after its calibration.