How to use…

Pocket pH Meter

INSTRUCTION SHEET **For Waterproof Oakton pHTestr 1 Double Junction or EcoTestr pH2**

Testing Location - Field
This test, using the pH meter, should be performed in the field.

Materials
pHTestr 1 Double Junction (beige with yellow trim) or EcoTestr pH2 (green with gray trim)
Three or four 1.4 or 1.5 volt batteries (probably already in the meter)
Large-mouthed collection container
pH 7 calibration solution (yellow**)**

Testing Background
There are a variety of ways to test for pH: pH paper, meters, color comparator kits. *If properly taken care of*, the pH meters we have provided will give accurate numerical results in 0.1 increments. There are two models of pH meters being used by our schools; some are using the pH Testr1 from Oakton (beige in color with yellow trim), and others are using the EcoTestr pH2 (green with gray trim). Instructions for both types follow.

Calibration *Should be done before each use*

Oakton pHTestr 1 Double Junction
(beige w/ yellow trim)

1. To calibrate, find the pH 7 calibration solution (yellow liquid).
2. Remove the cap from the bottom of the meter. Immerse glass electrode 0.5 to 1 inch (not any deeper) in the pH 7 solution.
3. Press the ON button. Stir once and press the CAL button to enter Calibration (CA) mode. 'CA' flashes on the display. A pH value close to 7.0 will flash repeatedly. If the reading is not near 7.0, rinse the electrode and try again. If the reading is still not near 7.0, read the "trouble shooting" section.
4. After **30 seconds** press the HOLD/CON button to confirm calibration. The display will show 'CO' and then switch to the buffer value reading (7.0).
5. Turn the meter OFF and rinse the electrode with distilled water before proceeding with testing.

Oakton EcoTestr pH2 (green w/gray trim**)**

1. To calibrate, find the pH 7 calibration solution (yellow liquid).
2. Remove the cap from the bottom of the meter. Immerse the glass electrode 0.5 to 1 inch (not any deeper) in the pH 7 solution.
3. Press the ON button. Stir once and press the CAL button to enter calibration mode. A value will blink during this time. Stir gently and wait for the displayed value to stabilize on one reading. Hopefully this reading is near 7.0; aim for between 6.6 and 7.4. If the meter is not stabilizing near this value, rinse the glass electrode with distilled water and begin the calibration again. If the meter still does not stabilize, read the "trouble shooting" section.
4. When the reading has stabilized, press the HOLD/ENT button to confirm. Turn the meter OFF before removing it from the pH 7 solution. Rinse the glass electrode with distilled water.

Test Instructions for either meter:

1. Pour Sample water into small, wide mouth container that the meter can fit into. You only need 1 inch of sample water.
2. Remove the cap from the bottom of the meter. Dip the meter's electrode 0.5 to 1 inch in the sample water.
3. Turn the meter ON. Stir once and wait for the display reading to stabilize. The stabilized reading is the pH for the water sample. Record this value.
4. Turn the meter OFF and rinse the electrode. Repeat for Sample B.
5. When finished, make sure the meter is turned OFF. Rinse the glass electrode with distilled water and replace the cap. It is okay to have some moisture inside the cap when putting the meter away – this will actually prolong the life of the electrode.

Disposal and Clean Up

Calibration solution should be replaced after 4 sampling events/dates. Calibration solution can be flushed down the sink with plenty of water. Properly dispose of expired batteries; you can give them to Creek Connections.

Safety Precautions

Normal safety precautions should be taken when handling the water sample, buffer solution and the equipment to avoid breakage.

Trouble Shooting Tips

METER DOES NOT TURN ON

1. Check batteries. Make sure they are installed properly (see Changing Batteries instructions below).
2. If still not working, install new batteries (see Changing Batteries instructions below).
3. If the meter does not work after replacing batteries, recheck the direction of the batteries in the meter. Reversed batteries in meter will result in failure of the meter to work. If the new batteries are in the correct position, check to see if the red or black wires connecting to the battery compartment are broken. If they are broken, *you need to replace your meter*.
4. If the batteries are new and the meter is still not working, the battery contacts may be corroded or dirty. Check the metal contacts that the batteries fit between and look for rust or other oxidation. Clean them with isopropyl alcohol. You may need to carefully scrap away rust or dirt with a flathead screwdriver or pair of scissors. Replace batteries and try again.
5. If the meter still does not turn on, *you need to replace your meter*.

THE NUMBERS ARE FAINT OR DISAPPEAR or there is an ER1 (bAt) Message

1. If the meter is IN a solution, and the readout numbers are faint or disappear while meter is on or there is an ER1 (bAt) Message that is displayed, then the batteries need to be replaced (see Changing Batteries Instructions below).

METER WILL NOT CALIBRATE or there is an ER2 Message

1. Did you take the cap off the meter?
2. Do you have fresh calibration solution?
3. Are you following the directions for calibration correctly? Use the Creek Connections handbook instructions.
4. If the digital reading does not stabilize when calibrating… rinse the glass electrode with distilled water before calibrating. Make sure the meter is in <u>new</u> pH 7 calibration solution (this should be replaced after a 3 or 4 creek trips). For both meters, make sure the meter is actually IN the calibration solution when turning the meter on to calibrate; numbers will go crazy if the meter is on while in the air and not in a solution. Before removing from any solution or sample, turn the meter off.
5. An ER2 Error Message means that the wrong buffer has been used or the buffer is bad. Replace the buffer. This error message could also mean the electrode is failing and needs to be replaced.
6. Are you calibrating to the correct number? The meter will not necessarily blink and stabilize on 7.0 perfectly. The closer to 7.0 the better, but 6.6 - 7.4 is acceptable, just as long as when the "Hold/Con(Ent)" button is pushed, the meter reads 7.0.
7. After addressing these, if the reading still does not stabilize at all, the batteries may need to be replaced (see Changing Batteries Instructions below).

NUMBERS ON METER WILL NOT STABILIZE IN A <u>SAMPLE</u> or there is an ER2 (ERR) Message

1. Did you take the cap off the meter?
2. Do you have fresh calibration solution?
3. Just wait. It takes some time for the meter to stabilize. After a few minutes, if the readout number does not stabilize (it is "jumping around" still), turn off the meter, remove from the sample, and then rinse the meter's glass electrode thoroughly with distilled water and try again.
4. If readout still does not stabilize, the batteries may need to be replaced (see Battery Changing Instructions below).
5. If the batteries are new, installed correctly, the contacts and wiring are in good condition, and the readout still does not stabilize, then the glass electrode may need cleaned more thoroughly. You should soak the glass electrode periodically in tap water for 1-2 hours. This will help remove any buildup on the electrode. Do this then try your sample again later. A consistent ER2 (ERR) error message could mean the electrode is failing and needs to be replaced.

METER STILL NOT WORKING

If you have done all of the above and the meter is still malfunctioning, contact Creek Connections for a replacement meter.

CHANGING BATTERIES

1. For the pHTestr 1 Double Junction (yellow trim), unscrew the battery compartment on the top of the meter. It is held on tightly by a waterproof o-ring and will unscrew with some difficulty. For the EcoTestr pH2, lift up front battery cover and hold in position before lifting two sides of the pocket clip. Remove old batteries (give them to your teacher for proper disposal).
2. Replace the batteries with new ones noting polarity (+ and -) inside the meter and on the batteries. The red wire is the positive (+) side; black wire, negative (-). Make sure the small black cloth or white plastic strip wraps along the bottom of the batteries before inserting them. It is a tug strip to help pop out the batteries. Make sure the tug strip is not placed in between batteries or covers up the metal contacts.
3. When replacing the cap on the pHTestr 1 Double Junction (yellow trim), make sure the seal with the o-ring is waterproof by snugly tightening the cap. Do not over-tighten!

What batteries to use: They are hearing aid batteries often found in pharmacies. Shop for 1.5 or 1.4 volt Eveready EP675E or EP675HP, Duracell DA675, or most any other 1.5 or 1.4 volt brand with the number 675 in its name.

LONG TERM CARE TIPS

1. Make sure the meter is turned off after each use. For both meters, DO NOT have meter turned on unless it is in a solution, having it on when the electrodes are in the air is not good.
2. Use distilled or tap water (not de-ionized water) to rinse the electrode and never store the meter with de-ionized water on the electrode. It is okay to store the meters with some water moisture in the electrode cap. You can even wet a paper towel or small sponge piece and insert it in the cap. This will actually prolong the life of the electrode.
3. To improve meter performance and accuracy, periodically soak the glass electrode in tap water.
4. Do not expose battery compartment to excess moisture. Store in a dry place. Do not drop meter in the creek or leave out in rain.
5. Students should not touch the meter's glass electrode.

This test sheet was adapted from the instructions for the Oakton pHTestr1DoubleJunction and the EcoTestr pH2 and from Creek Connections staff observation.