pH Pen

The pH pen used by SCORE volunteers is a Checker® digital pH pen. This instrument is designed to measure the electrical activity associated with hydrogen ion concentration in a water sample. Since electrical activity is proportional to hydrogen ion concentration, the pH pen is able to convert its electrode (electrical conductor) signal into pH units on a scale of 0 to 14.

Before measuring the pH of a water sample, the pH pen must be calibrated for accuracy using buffer solutions (solutions that resist changes in pH when acids or bases are added) of known pH values. SCORE volunteers typically use a neutral buffer solution of pH 7 and an acidic buffer solution of pH 4, but sometimes substitute pH 4 with a basic buffer solution of pH 10.

Procedure

Calibration

1. Move the pH pen switch to the "on" position.
2. Remove the electrode's protective cap.
3. Immerse only the tip of the electrode in a sample of pH 7 buffer solution. Stir gently and allow the digital reading to stabilize.
4. Use a small screwdriver to adjust the pH 7 trimmer until the digital display reads **7.00**.
5. Rinse the electrode with distilled water.
6. Immerse only the tip of the electrode in a sample of pH 4 buffer solution. Stir gently and allow the digital reading to stabilize.
7. Use a small screwdriver to adjust the pH 4 trimmer until the digital display reads **4.00**.
8. Rinse the electrode with distilled water.

Sample Measurement

1. Collect a water sample by gently submerging a sampling beaker into the creek or river. Once it is full, remove the beaker and set it down.
2. Immerse only the tip of the electrode into your sample. Stir gently and allow the digital reading to stabilize.
3. Take reading while the electrode tip is in the sample. Record sample measurement.
4. Rinse the electrode with distilled water.
5. Move the pH pen switch to the "off" position.
6. Add a few drops of pH 7 buffer solution to the protective cap. Replace the cap and store the pen.

Field Notes

- Remove cap from pH pen before measuring.
- Do not be alarmed if white crystals appear around the cap. This is normal, and they dissolve when rinsed with water.
- If the electrode is dry, soak it in distilled water for a few minutes before use.
- Immerse only the tip of the electrode in water.
- Always keep the connector (part containing digital display, which "connects" to electrode probe) clean and dry.
- DO NOT use water for storage purposes. When finished, always add a few drops of pH 7 solution to the protective cap and replace cap.