

CCPaSEC volunteer Training pH and Conductivity REVIEW[©]

"I hear and I forget. I see and I remember. I do and I understand." - Confucius



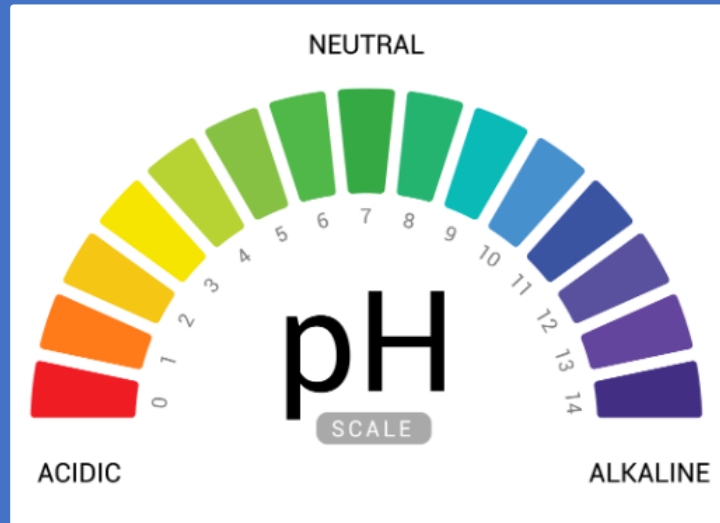
Ralph Locklin
Training Resource
Advisor

THANK YOU FOR TRYING OUR REVIEW

Many of us think that simply watching volunteers perform their activity during a stream visit is an adequate way to introduce new members to our activities.

Observation is useful in learning how we do our measurements, but it may omit learning why we do them, how to care the instrument or about how works.

WHAT IS PH



pH was defined as the negative log of the hydrogen ion. ($pH = -\log [H^+]$) concentration. The range of pH extends from zero to 14.

A pH value of 7 is neutral, because pure water has a pH value of 7. Values lower than 7 are acidic; values greater than 7 are basic or alkaline.

WHY WE MEASURE PH

Even small changes in pH can shift the composition in streams.

pH affects most chemical and biological processes in water. It is one of the most important environmental factors limiting species distributions in aquatic habitats. Different species flourish within different ranges of pH, with the optima for most aquatic organisms falling between pH 6.5-8.

**By the way, What do you call an acid
with an attitude?**

WHY WE MEASURE CONDUCTIVITY

A sudden increase or decrease in conductivity in a body of water can indicate pollution. Agricultural runoff or a sewage leak will increase conductivity due to the additional chloride, phosphate and nitrate ions.

Conductivity in streams and rivers is affected primarily by the geology of the area through which the water flows. Streams that run through

Wait for meter reading stabilized

Wait until a reading has remained unchanged on the screen for 30 seconds, we consider that stabilized before hitting enter and going on to the next standard value.

Then when actually taking a stream sample reading, wait for it to stabilize, document the value that has remained unchanged for 30 seconds.

It may take more than 3 minutes for these stabilizations to occur, depending on the age of the probe tip.

Problem reporting

We are concerned if the measured conductivity much than higher than 500 micro-siemens per centimeter ($\mu\text{S}/\text{cm}$).

An Unusuall sudden increase or decrease in pH from the normal range observed at your location may indicate a pollution even.

We recommend that it be reported to the CCPaSEC leadership.

Our website has a Problem Report form your can use.

Things to remember

- Inspect the glass bulb and the two electrode before you calibrate the meter.
- Wait until a reading has remained unchanged on the screen for 30 seconds.
- Calibrate before each use.
- Store the probe in tap water, not distilled or deionized water.
- Report conductivity if it is much greater than $500 \mu\text{S}/\text{cm}$.

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Frequently Asked Questions about pH and conductivity

Click on it for the answer

[What Is pH?](#)

[Why we should report a conductivity much over 500 \$\mu\text{S}/\text{cm}\$, or an unusual change of pH?](#)

[What is the best way for me to clean the pH meter?](#)

[What is the best way for me to store the pH meter?](#)

[How does the meter measure pH and conductivity?](#)

Generally pH is a measure of hydrogen ions.

pH is the negative logarithm of the effective hydrogen-ion concentration or hydrogen-ion activity in gram equivalents per liter of the solution. $pH = -\log [H^+]$

However, you may be told that because of uncertainty about the physical significance of the hydrogen ion concentration, the definition of the pH is now an operational one; i.e., it is based on a method of measurement.

[Click here to return to the FAQ's](#)

Problem reporting

Conductivity in excess 500 micro-siemens per centimeter ($\mu\text{S}/\text{cm}$). or An Unusuall sudden increase or decrease in pH from the normal range observed at your location may indicate a pollution even.

Our protocol recommends that you repeat the calibration and your measurements to confirm the result

We recommend that it be reported to the CCPaSEC leadership to determine what action is needed.

Our website has a Problem Report form your can use.

[Click here to return to the FAQ's](#)

You could do a quick rinse with distilled water but please, Only If you quickly rinse the porous glass bulb for a short time.

It's recommended we only use tap water. We shouldn't try to brush it or use distilled or deionized water will shorten the life time of the meter probe.

Please contact our supplies advisor if your are having a problem. He can clean the probe with a special cleaning HACH solution or replace the probe as needed.

[Click here to return to the FAQ's](#)

Store the probe in regular tap water when not in use.

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How does the meter work?

The U.S. National Institute of Standards and Technology has defined pH values in terms of the electromotive force existing between certain standard electrodes in specified solutions.

The meter measures the electrical potential (volts) between the expendable solution in a porous glass electrode and a wire electrode.

Conductivity is measured micro-siemens per centimeter mS/cm as electrical current (amperage) between two electrodes. Total dissolved solids and salinity are actually calculations made from the conductivity result.

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Ans:

“A-mean-o Acid”



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