

# pH, (Acidic Water)

**USEPA Contaminant Classification:** Secondary, (non health-related)  
**EPA Maximum "Safe" Levels:** 6.50-8.50

**Source:** The text book definition of pH in an aqueous solution is the negative of the logarithm of the molar concentration of hydrogen ion. When referring to water, an acidic pH can cause plumbing damage. The pH scale goes from extremely acidic (1.0) to extremely basic (14.0), with a neutral pH being right in the middle at (7.0). Water with a pH at either end of the pH scale will be corrosive to your plumbing. The Water Quality Association (WQA) has set the following classification of water based on its pH:

<u>Water pH</u>	<u>WQA Classification</u>
> 8.6	Basic
7.0 to 8.5	Neutral
6.6 to 6.9	Slightly Acidic
6.0 to 6.5	Moderately Acidic
< 5.9	Extremely Acidic

Stream waters usually range from a pH of 6.5 to a pH of 8.5. Rain water is naturally acidic (~5.6), and in some areas may be even more acidic, (4.0-5.0) due to atmospheric pollutants. The more acidic the water, the greater its ability to dissolve and carry substances.

**Health Effects:** Since acidic water can dissolve most materials over time, any substance that the water comes in contact with may be dissolved and carried. This is especially important if the plumbing contains harmful materials such as Lead and Copper, (usually found in the joint solder or brass parts and fixtures). The more neutral the water, (pH 7.0) the less likely it is to dissolve and carry harmful metals in your water.

**Home Damage Effects:** Acidic water over time will damage and destroy your pipes, faucets, water tanks and heating element, (in your hot water heater) by corroding the metals over time. Acidic water is the major cause of plumbing leaks in older systems. Depending on pipe composition, acidic water may also cause staining to your plumbing fixtures. **Acidic water through Copper pipes causes blue-green staining.**

## How to Fix Contaminated Water:

**1. Regenerating/upflow neutralizers-** These units use an acid neutralizing mineral, (usually Calcium Carbonate) to dissolve in the acidic water raising the pH until the water cannot dissolve anymore. Since the media dissolves, it will have to be replaced as needed depending on raw water acidity and household water usage.

**2. Chemical feed systems-** These units must be used on extreme acid water conditions, (pH under 5.4) or if the TDS levels are above 500 ppm. Under these conditions, standard neutralizers cannot effectively bring the pH up to 7.0. These systems add caustic chemicals; (usually Sodium Hydroxide or Soda Ash) metered as the water is used to bring the pH up to neutral.