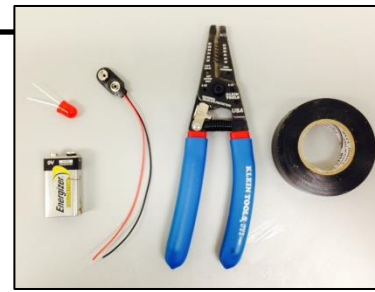


# Conductivity Meter

1. **Use** a battery, snap wires, and LED light (or buzzer).
2. **Connect** them to make an open circuit.
3. **Place** the exposed ends into saltwater. What happens to the light?
4. **Compare** conductivity by doing this with deionized (or distilled) water.
5. **Test** other items like tap water, juice, or rubbing alcohol.



## Take it with a grain of salt...

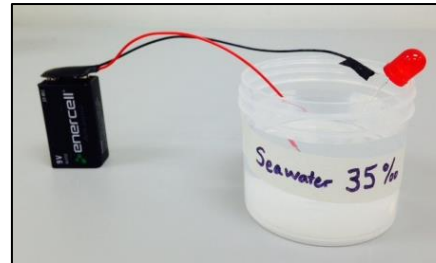
When salt is dissolved in water, it separates into charged particles called ions or electrolytes. As a result, saltwater conducts electricity better than freshwater. Therefore, conductivity meters are used to determine the amount of salt in the water.

**CAREFUL!** Do not connect the LED to the battery in a closed circuit. You will burn the bulb out!

## NAVY NOTES



Because salt water is a better conductor than freshwater, the rate of metal corrosion is much higher in seawater. Corrosion of metal due to a stray electric current in water is referred to as stray current corrosion. This type of corrosion is particularly destructive in ports where a stray current can induce corrosion on multiple vessels as electrons flow from the metal, through the water, and into the ground. Corrosion prevention and control (CPC) is a significant part of the Navy's budget (<http://www.navsea.navy.mil>).



Electrolysis occurs when a stray electric current (*our battery and wires*) finds a path between two metals in the presence of an electrolyte such as salt water. As a result, the electrolyte begins to breakdown. **Look closely at the wires in the water, one will have some bubbles!** This is a cathodic reaction that occurs when Hydrogen ions in the water gain electrons and turn into hydrogen gas.