

## Factsheet: Using Electrical Equipment in Wet Locations

Using electrical tools or equipment in wet areas can be a hazard. If your skin is dry, it has quite a lot of *resistance* (measured in *ohms* or  $\Omega$ ). However, if your skin is wet for any reason (rain, sweat, standing in a puddle of water), the skin's electrical resistance drops dramatically.

The amount of electrical **current**, in *amps*, that flows through your body **goes up when resistance in *ohms* goes down**.

**Amps = Volts/Ohms.**

The Current in **Amps** = Voltage in **Volts** divided by Resistance in **Ohms**.

***Higher voltage = more current***  
***(if resistance remains the same).***

***Lower resistance = more current***  
***(if voltage remains the same).***

### How much current does it take to kill me?

It doesn't take much, especially if it passes through your heart. Currents above about *75 milliamps (mA)* can cause a condition called *ventricular fibrillation*. (A milliamp is 1/1,000 of 1 amp.) If your heart goes into fibrillation, it beats very rapidly – but it doesn't pump any blood – because it's not beating in its normal rhythm.

If your blood can't carry oxygen to your brain, you'll experience brain death in 3 to 4 minutes. The way to get you back involves another electric shock, from a *defibrillator*.

If your skin is wet and you get your body across 120 volts of electricity, it's very likely that you'll have a current of 100 mA or more flowing through your heart.

***Currents above 10 mA*** can cause *muscle paralysis*. You may not be able to let go of energized tools or equipment. ***Shocks that are longer in duration are more severe.***

Electrical systems must be wired with either *fuses* or *circuit breakers*. These devices are known as *overcurrent protection* and they are rated in amps. Most common household circuits are wired for 15 amps or 20 amps.

**Overcurrent protection devices protect wiring and equipment from overheating and fires.** They may – or may not – protect you from electrical shock. If the current isn't high enough, the fuse won't blow or the circuit breaker won't trip. You could be shocked or killed without ever blowing a fuse or tripping a circuit breaker.