# ELECTRICITY

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**Non-Viscous Fluid Flow**

The flow of a fluid is said to be steady or laminar if each particle of the fluid follows a smooth path, and the paths of each particle do not cross each other. Above a certain critical speed, the fluid flow becomes irregular and turbulent.

# WHAT KILLS?
# VOLTAGE OR CURRENT???

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Voltages over 600 volts can rupture human skin, greatly reducing the resistance of the human body, allowing more current to flow and causing greater damage to internal organs. The most common high voltages are

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| Estimated Effects of 60 Hz AC Currents | |
|---|---|
| 1 mA | Barely perceptible |
| 16 mA | Maximum current an average man can grasp and "let go" |
| 20 mA | Paralysis of respiratory muscles |
| 100 mA | Ventricular fibrillation threshold |
| 2 Amps | Cardiac standstill and internal organ damage |

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When current greater than the 16 mA "let go current" passes through the forearm, it stimulates involuntary contraction of both flexor and extensor muscles. When the stronger flexors dominate, victims may be unable to release the energized object they have grasped as long as the current flows. If current exceeding 20 mA continues to pass through the chest for an extended time, death could occur from respiratory paralysis. Currents of 100 mA or more, up to 2 Amps, may cause ventricular fibrillation, probably the most common cause of death from electric shock. Ventricular fibrillation is

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# Why is short circuit dangerous?

It is an accidental low-resistance connection between two nodes of an electrical circuit that are meant to be at different voltages.

This results in an excessive electric current and potentially causes circuit damage, overheating, fire or explosion.

The electrical opposite of a ***short circuit*** is an ***open circuit***, which is infinite resistance between two nodes. It is common to misuse "short circuit" to describe any electrical malfunction, regardless of the actual problem.