



## Electrical risks in the workplace

Since electricity became an essential part of our daily life, we have started to perceive it as routine and often to give it for granted without reasonably considering its implications and the hazards electrical energy can cause, especially in the workplace.

Obsolete systems, inappropriate machinery and unsuitable behaviours which don't respect basic safety rules are among the primary causes of electricity-related accident and injuries at work.

**Electrocution** is probably the main reason grave injuries occur. This phenomenon is provoked by an electric shock, that is the passage of an electric charge through the body, generating an alteration in the vital organs and body functions, thus leading to serious illnesses or even to death.

The risks connected to electrocution depend on the type of electric current (direct current or alternating current), its intensity, the exposure time to the phenomenon and the victim's health and mental conditions. If we consider all these elements, the potential difference danger limit for the human body is conventionally set to 50 V.

When the potential difference limit is exceeded, the electric shock causes burns in the contact area and generates muscles **tetanzation**, that is painful strong contractions which don't allow the victim to separate him or herself from the area exposed to high voltage.

The most dangerous risk of electrocution is **ventricular fibrillation**, that happens when the heart muscle begins to contract in an irregular and chaotic way. Ventricular fibrillation is responsible of the highest number of deaths caused by electric shock.

Because of the gravity of all these risks, the presence of machinery and components working at high voltage must be indicated with specific signs.

Workers can protect themselves from machinery-related electrical hazards mainly through insulation and grounding.

**Insulation** consists of placing an element (an insulator) with a high resistivity to the flow of electricity between the machine and the worker.

**Grounding** consists of electrically linking with earth those metallic areas of machinery which could accidentally exceed the voltage limit.



### ACTIVITIES

- 1 Do you think there are further safety rules to follow to prevent electrical risks at work? Realize a poster showing your ideas.