Advice for Newcomers
Electrical hazards
GeePs

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General informations about electricity

Electricity is a flow of electrons circulating in a conductive material thanks to a generator. It is characterized by:

- The voltage **V**

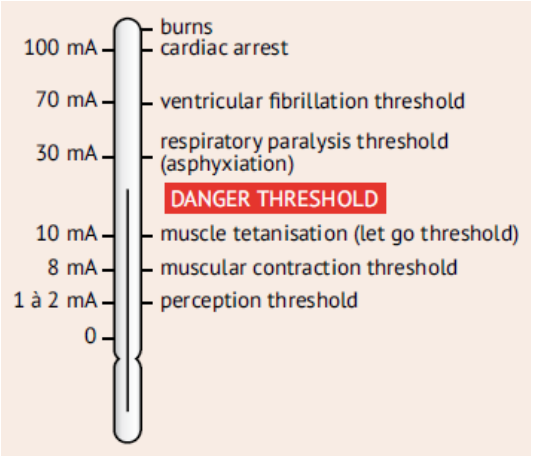
	Very Low Voltage	Low Voltage	High Voltage A	High Voltage B
Voltage Level	U<50	50<U<1000	1000<U<50 000	U>50 000

- The current **I**
- The resistance **R**
- Ohm's law: **U = R x I**

Electrical hazards : electric shock and electrocution

Accidental leakage of current through a person's body (electric shock). It depends of several things:

- The kind of current (DC or AC) and of its level → **current is killing**



- The resistivity of the body
- The path it takes through the body

Effect : muscular tetanisation (the victim can or cannot shout, it is reversible→**electrical shock**), ventricular fibrillation (heart tetany) →**electrocution**

Electrical hazards : electrical burns

Joule effect : heat produced by an electric current through the body

Electrical burns can come from electrical arcs, electrothermal burns, molten metal projection

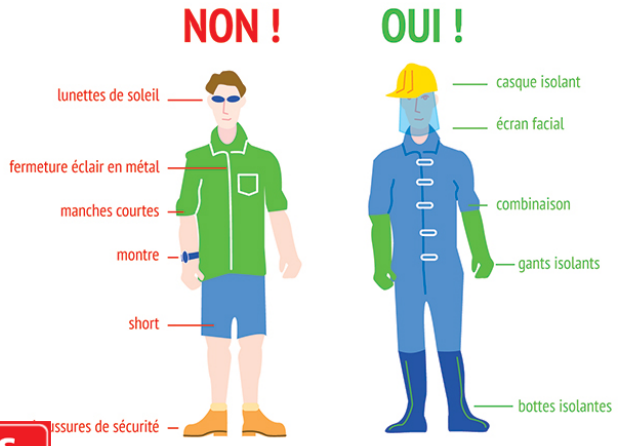
Electrical hazards : fire and electrical arc blast

- Short-circuits
- Overheating of cables
  - Overloaded electrical circuits
  - Loose or rusted connections
  - Electrical circuits that are not properly insulated

Preventive measures

How avoid accident?

- Collective Protective Equipement (CPE) : Insulation, Guarding, Grounding, Electrical protective devices (switch, circuit breaker, fuses, ground fault circuit interrupter)
- Personnal Protection Equipment (PPE) : insulating gloves, glasses, protective clothing untreated natural fiber, safety shoes



Rescue resources

- Emergency stop
- Main breaker
- Follow-up the emergency procedures
- ► First-aid

Good Practices

How avoid accident?

- Prevention/behavior
  - Electrical installations must be checked
  - Do not overload sockets with multiple devices
  - Before doing any work ensure that the electrical installation is switched off
  - Only use equipment that is in good condition
  - Electrical certification (see for training courses)
- Different classes of protection

Class 0	The use of this type of equipment is prohibited in the workplace.	
Class I	Protection is provided by the equipment earthing.	
Class II	Protection is provided by double insulation.	
Class III	Protection is provided by a safety extra-low voltage power supply.	

- Lower the voltage to a secure level