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Protection of human beings as per IEC Guide 62713

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SEFTIM

Introduction

- **Guide IEC 62713 has been published in April 2013**
- **It has been written by a group of international experts (AHG1) under the chairmanship of Professor Christian Bouquegneau (Belgium)**

Introduction

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Introduction

- **Groupe AHG1 has produced Guide IEC 62713:**
  - SAFETY PROCEDURES FOR REDUCTION OF RISK OUTSIDE A STRUCTURE
- **This group also produced an internal document on the use of Storm detectors into the Risk Analysis Method that will be introduced in IEC 62305-2 Ed.3**

Introduction

- **This AHG1 group has been transformed into 2 WG**
  - WG12 : for Lightning Location System (LLS)
  - WG13 : for Strom Detectors (TWS)

IEC 62713

- **SAFETY PROCEDURES FOR REDUCTION OF RISK OUTSIDE A STRUCTURE**

- **This guide is based on internationals contributions and in particular on APF publications**

IEC 62713

- **This report introduces lightning to the layman, noting the right action in the presence of thunderstorms, as well as protective measures against lightning. It also contributes to the prevention of lightning injuries and damages.**
- **Note, that so far there is no means to avoid lightning. Anyway, following some elementary rules, we can protect people, against its deleterious effects.**

IEC 62713

- **This Technical Report is informative, with the purpose of giving the lay person, i. e. a non-specialist in lightning protection and a non-medically trained person appropriate action to reduce risk from lightning to people outside fixed structures,**
- **i. e. in a variety of everyday outdoor activities, including immediate action to take in the event of a person being injured by lightning.**
- **Part of these precautions includes taking shelter in either a lightning protected structure (IEC 62305-3) or an unprotected structure.**

Generalities

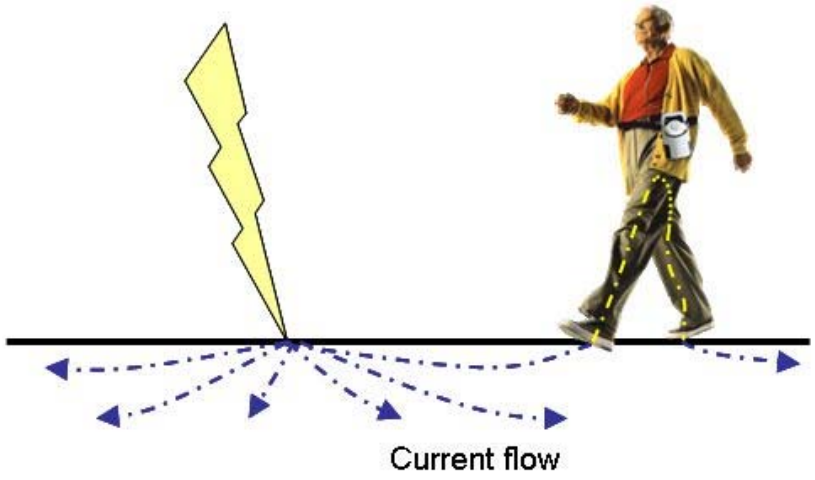
- **Direct lightning strikeCoup de foudre direct**
  - The direct lightning strike is the most dangerous of the lightning threats. The lightning current flows through a person and causes unconsciousness, inner or outer burning, apnoea, cardiac arrests or paralyses .

Generalities

- **Side flash**
  - It is dangerous to stay under an isolated tree (or by a mast) because if the human body is less than several metres from the trunk, it may experience a side flash at the head or shoulder level

Generalities

- **Touch or contact voltages**
  - To reduce the risk of electrical shock due to touch voltages it is advisable to stay away from potential lightning current conductors when storms are in the vicinity.
  - When lightning strikes the ground, the lightning current is spread out through the various layers of the soil. A high potential rise occurs at the point of strike. Step voltage can be experienced near this point



How to act in the presence of a thunderstorm

- **How to detect a lightning risk**
- **Where to find safe locations**
- **What to do outdoors**
- **Hazardous situation in a car**
- **What to do when camping**
- **Thunderstorms in mountainous regions**
- **What to do on water**
- **What to do at open air festivals**
- **What to do when playing outdoor sports**

How to detect a lightning risk

- **Advance information on the probability and corresponding approach of lightning is available from local weather forecasts?**
- **Lightning warning systems exist in some countries and provide, by internet or by other means (such as fax, phone, e-mail, dedicated communication lines), a warning of the occurrence of a lightning event.**
- **Local detectors also exist. Some sensors can be portable but are generally less reliable than others. Fixed sensors are efficient for golf courses and camping sites.**
- **You can evaluate the risk for your activity, by watching the approach of the thunderclouds with the accompanying far flashes and by listening to the thunder. The actual distance of a thunderstorm can be roughly estimated: the number of seconds between the flash and the thunder divided by 3 gives you the distance in kilometres.**

Where to find safe locations

- **The safest location to seek shelter is inside a building equipped with lightning protection systems.**
- **For homes without lightning protection it is advised to close doors and windows to repel air streams, to sit away from fireside or other chimneys and to avoid using water where the structure is equipped with metallic water pipes. Avoid open spaces such as balconies.**
- **Use mobile phones and cordless telephones. Don't call from a corded phone. Keep clear of electrical power lines, telecommunication lines, water or gas metallic pipes and metallic chimneys as well as household electrical equipment (e.g. extractor hoods, dishwashers, electric heaters). Don't take a shower or bath during a thunderstorm.**

Where to find safe locations

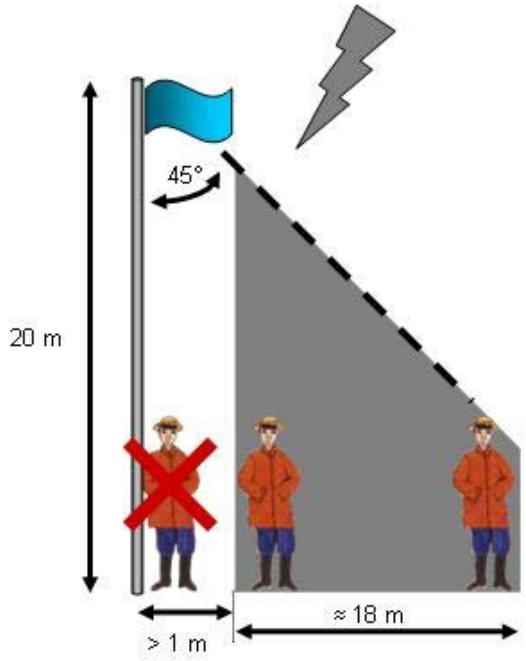
- **You should stay in the middle of the room or open-sided building with feet together and even in the squatting position inside small barns, wood or stone huts without lightning protection systems.**
- **The preferred option is to install surge protective devices (SPDs) in the incoming panelboard to protect the electrical devices, TV, antennas or telecommunication cables (even when these cables are underground). An SPD should be provided at the entry of each power and telecommunication line. When this is not provided you should unplug those devices.**

What to do outdoors

- **Avoid mountain climbing.**
- **Don’t walk close to rivers and, more importantly, don’t swim during a thunderstorm.**
- **Avoid horse riding, the use of a bicycle, motorcycle, convertible car or other open conveyance, a tractor or, harvester**
- **Don’t use sailing boats (unless properly protected against lightning), tents, open picnic pavilions, trams with open windows.**
- **In the countryside, move away quickly from high points, don’t stay in a group.**
- **In town, walk into a store or a public building where you are protected. Move away from street lights, towers and metallic fences as well as isolated trees.**

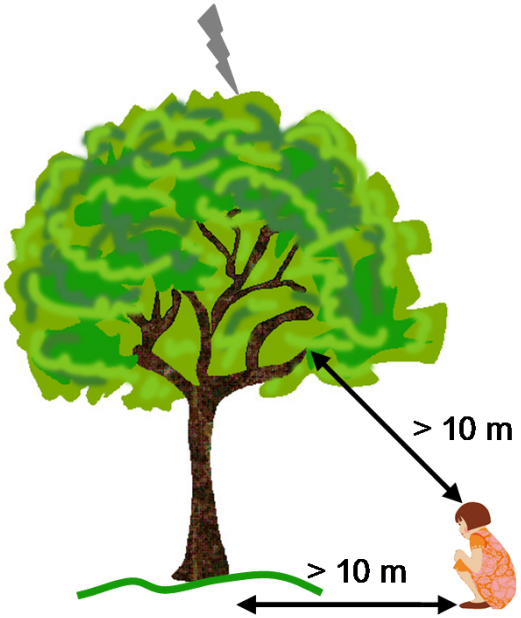
What to do outdoors

- **Metallic street lights and metallic towers provide a good protection against direct strikes, but may cause dangerous step voltages. Keep a distance of at least 1 m – better 3 m – from a metallic street light or tower.**
- **Don’t use umbrellas or golf clubs or hold long metallic or other conducting objects in your hands.**



What to do outdoors

- **Isolated trees are particularly hazardous. A safety distance of 10 m should be kept from the trunk and from the tree branches.**



- **The ideal position to be adopted in the open air is certainly not standing upright on the ground but ideally crouching down, with the head as close as possible to the ground and one's arms encircling one's legs. Human beings standing up, with feet together can be hit by a direct strike.**

What to do outdoors

- **It is also dangerous to stay at the edge of a forest; in this case, it is better to stay inside the woods in the middle of the trees.**
- **Keep away from fences and other metallic structures, ditches and other wet places, open fields, hilltops and shores. .**
- **If you are absolutely obliged to move in a thunderstorm, take short steps or run (in which case only one foot touches the ground), avoiding unfolding any protruding metallic object (umbrellas).**
- **You should stay at least one metre and preferably three metres from walls, supports, metal fences, particularly from parts of the lightning protection system.**
- **Place your feet together to avoid a possible surface voltage gradient. If several persons stand together, they should not touch one another but keep a distance of at least one metre and preferably three metres from each other.**

Association Protection Foudre

Thank you for your attention