



# Lightning threat!

What can I do?



## **B**e aware of the threat of thunderstorms

- Follow weather forecasts to find out if thunderstorms can represent a risk for your activity
- Observe the current weather – haze, buildings, etc may hide development of a thundercloud. A mature thundercloud may become active above you surprisingly fast
- Have the emergency services telephone number available
- If a threat exists, minimize the risk by finding a safer place:
  - » Is an indoor shelter available?
  - » Is a car or other closed vehicle available?
  - » If outdoors, are you in a built-up area, forest/park, open field, sea? See safe locations below
- Actions to minimize thunderstorm risk are easy and inexpensive!
- Lightning is unpredictable! Do not just trust your good luck!

## **O**utdoor danger: 30-30 Rule

- If you count at most 30 seconds between flash and start of thunder, the thundercloud is within 10 km: **take measures!**
- The risk is probably over after 30 min from the last thunder/flash

## **S**afe locations

**Although there is no 100% safe location, the following recommendations minimize the lightning risks**

**Buildings are generally safe (inside), the larger the better!**

There are three kinds of threats to a building:

- 1) direct strikes to a chimney, TV mast, etc.,
  - 2) indirect strikes through a nearby tree
  - 3) overvoltages through electric power or telephone lines
- Avoid touching and standing near lamps and other electric appliances, outdoor telephones, heating systems, water systems (taps, shower), fireplaces
  - Shut all doors and windows
  - Avoid open spaces such as balconies

**Cars and other closed metallic vehicles are generally safe, but:**

- Large windows and other non-metallic surfaces diminish the safety
- Do not touch any metallic parts or radio while sitting in the car
- Tires have no protecting effect
- A lightning strike may damage car electronics or tires

**Small or open buildings and vehicles are dangerous:**

- Bikes and motorbikes
- Open boats
- Sailing boats if not properly protected
- Tents
- Picnic pavilions
- Trams
- Umbrellas

**The use of cellular telephones and other personal devices, as iPod and Walkman, does NOT increase the lightning risk. If needed, you can use your cellular telephone to call the emergency services**

## Open-air safety rules

If no building or vehicles are available when the lightning threat is obvious:

- Although lightning often strikes the tallest object, it may strike anywhere
- Keep away from any tall structures (masts, poles, towers) – a safe distance is about the same as the height of the structure
- Avoid the boundary between forest and an open area – go into the forest
- Do not go close to or under isolated or small groups of trees – a safe distance is similar to their height, or at least a few metres from the longest branches
- Avoid standing in the vicinity of buildings or cars where you cannot enter for shelter
- Avoid metallic fences and other structures
- Avoid ditches and other wet places
- Avoid open fields, hilltops and shores
- Do not wade or swim
- Do not hold metallic or other conducting objects in your hands (golf clubs, fibre fishing rods, etc.)

## Immediate risk

Consider the situation as very risky if a thundercloud is above you, nearby, or if you feel your hair stand up. Cracking sounds or discharges from high points also indicate imminent risk. In those cases, you must act immediately. If there is no shelter, follow these rules:

- Crouch down bringing your feet together as close as possible
- For a group, the distance between persons must be at least 5 m



## First Aid

If a person is struck by lightning, directly or indirectly, death can follow from cardiac arrest and/or stopped breathing. If the person is unconscious:

- Call emergency services if possible.
- Check the victim's breathing; the victim should lie on his or her back.
- Press the victim's forehead back with one hand, lift the jaw with two fingers of the other hand and check airway and if breathing is not normal or has stopped, start resuscitation (Figure A).
- Press the victim's breastbone with both hands with your arms stretched out, push 30 times in 20 seconds so that the breastbone is each time depressed 4-5 cm (Figure B).
- Check airway again, press victim's nostrils tight with two fingers, press your lips to the mouth and blow two times so that the breast rises (Figure C).
- Repeat the cycle 30 pushes - two blows until breathing is restored or other aid is available.



Figure A



Figure B



Figure C





Lightning images courtesy of Alex Herment, <http://alexherment.blogspot.com/> Oscar van der Velden (Lightning Research Group, Technical University of Catalonia), <http://www.lightninglab.com>  
Design by: Nava Shenman, The Open University of Israel

The lightning safety brochure is a result of COST activities of the Action P18  
The Physics of Lightning Flash and its Effects

<http://www.costp18-lightning.org/>

>75%

>50<75%

<50% correct



## WEATHER



Lightning may be present without rain  
(true)

Lightning only found beneath thundercloud  
(false)

There are no thunderstorms in winter  
(false)

## LOCATION, TREES

Lightning never strikes twice same place  
(false)

Lightning always hits the highest point  
(false)

More lightning hits on mountains (true)

Some trees hit by lightning more often  
(false)

## WATER

Slip on the water safe from lightning  
(true)

Bath/shower safe during a thunderstorm  
(false)

**AUSTRIAN SURVEY 2008 - Sample: 133  
adults**

>75%  
correct

>50<75%

<50%

 **MEDICAL**



Always instant death by lightning (false)

**Lightning victims electrically charged**

(false)

Cardiac massage can help victims (true)

 **PROTECTION**

In a group you are safe from lightning

(false)

Lightning-overvoltage may occur in grid

(true)

Unplug electric appliances in

thunderstorm (true)

**Crouched position more protected in open**

(true)\*

**Keep 3 m distance from tree in**

**thunderstorm (true)\***

\* controversial USA vs.

Europe

**OTHER**

All lightning flashes ignite a fire quickly

(false)

 **AVERAGE of 17 survival items AUSTRIA =  
60.3%**