



**Structure, Tower &
Antenna Council**
Conseil des structures,
pylônes et antennes

STAC Talks: Lightning Policy

(Discussion Notes)



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The Structure, Tower and Antenna Council (STAC) helps ensure communications antennas in Canada continue to be constructed with the highest regard to worker safety.

STAC is a non-profit Council of the Canadian Wireless Telecommunications Association, representing and providing a collaborative forum for Canadian wireless communications carriers, tower owners/operators, tower and rooftop equipment engineering service suppliers, and wireless communication facilities construction and maintenance contractors.

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STAC Talks: Lightning Policy

Question: What are some elements that should be considered when developing a policy for working on sites under the threat of lightning? Are there any best practices STAC can recommend?

Contributors:

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Note: Following this request, STAC's Workplace Health & Safety Committee will work to develop a draft policy on this topic in the months ahead. For more information or to get involved, please contact Nicholas Kyonka, STAC Program Manager, at nkyonka@stacouncil.ca

Responses:

Gord Lyman:

If weather conditions create a hazardous situation in the opinion of the Supervisor, the Supervisor has the authority and responsibility to suspend work.

Whenever an electrical storm can be seen, heard, or is known to be in the vicinity, all work aloft and on the ground must be suspended immediately until the storm clears.

Employees will move away from a tower or pole until the storm clears.

Doug Westacott:

Local weather forecasts should be checked prior to commencing tower activities by any/all means available, including local weather reports on a commercial radio stations, internet lookup or monitor Environment Canada VHF radio channels. This activity also covers any other potentially hazardous weather conditions including high winds, fog, blizzards etc. Knowing what may be forthcoming is half the battle, so to speak.

Secondly, have the crew "keep a weather eye". The riggers on the tower are normally the first people on site to detect lightning or any other condition.

Lastly, if lightning is observed, riggers on the tower must descend quickly *but safety*. Additionally, ground personnel must be instructed to assemble in a safe area. It is unwise to be sitting on a winch with the winch line running up the tower. Lightning is unpredictable: it can follow a metallic winch line cable from the tower to the winch even though the experts will content the tower is grounded at the base. Technically electricity will follow the path of least resistance to ground with current division at junctions based on Norton's theorem's.

Jennifer Grant:

Our guys currently use the Environment Canada Lightning Map to see if lightning is in the area, plus visuals from atop the tower/rooftop. From our standpoint, it is difficult to have a hard-and-fast rule because lightning and storms can vary greatly, but typically we try to use 50-km as a general rule for packing up and moving to safety.



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The other method that some of our guys use is to program into their handheld radios the Environment Canada "Weather Radio" VHF frequencies. The radio silently listens for a weather alert tone on the "B" channel and if detected automatically opens this channel and broadcasts the audio to the crew. These alerts include Lightning/thunderstorms, high winds, hail, snowstorm/blizzard conditions etc...

Additional Information

The U.S. [National Lightning Safety Institute](#) (NLSI) provides the following information about components that should be included in any lightning action plan:

Management, event coordinators, organizations, and groups should designate a responsible, person(s) to monitor the weather to initiate the evacuation process when appropriate. Monitoring should begin days and even hours ahead of an event.

A protocol needs to be in place to notify all persons at risk from the lightning threat. Depending on the number of individuals involved, a team of people may be needed to coordinate the evacuation plan. The Action Plan must be periodically reviewed by all personnel and drills conducted.

Consider placing lightning safety tips and/or the action plan in game programs, flyers, score cards, etc., and placing lightning safety placards around the area. Lightning warning signs are effective means of communicating the lightning threat to the general public and raise awareness.

The [NLSI](#) also provides the following information about Lightning Safety for Outdoor Workers:

Education and preparation are essential to achieving lightning safety. Remember this simple lightning safety message and teach it to others: "If you can see it (Lightning), flee it; If you can hear it (Thunder), clear it."

The NLSI Lightning Safety Plan includes the following information for everyone's protection:

1. When loud Thunder is heard the danger from Lightning is very near to you. Lightning's high temperature explodes the surrounding air. This always creates Thunder. BANG! BOOM ! CRACK ! (We hear Thunder).
2. Immediately tell others it is dangerous and all people should go to safe locations.
3. SAFE locations are:
 - a. Fully enclosed metal vehicles with all windows and doors closed.
 - b. Large permanent buildings.
4. NO PLACE OUTSIDE IS SAFE. AVOID being near any metal objects including fences, machinery and electrical equipment. AVOID solitary trees. AVOID water. AVOID open fields. AVOID small rain/sun shelters and gazebos. AVOID using the telephone or touching appliances. (Portable radios and cell phones are safe to use.) *Editor's note: All personnel should move to a safe distance from towers and/or guy wires.*
5. When is it safe to go back outside? We suggest waiting a minimum of 20 minutes from the last observed Lightning or Thunder before resuming outdoor activities.
6. People who have been struck by lightning do not carry an electrical charge and are safe to handle. Apply CRP immediately if you are qualified to do so. Get emergency help promptly.

Lightning and Thunder Flash – Bang Rule

The “40 – 30” Concept - Use the “40 – 30” concept to determine if there is a Hazard of Lightning in your vicinity.

40 SECONDS

Count the seconds between seeing the lightning and hearing the thunder. If this time is 40 seconds or less, the lightning is close enough to be a hazard. *Seek shelter immediately.*

30 MINUTES

After seeing the last lightning flash or hearing loud thunder, wait 30 minutes before leaving your shelter

NOTE

More than ½ of lightning deaths occur after the thunderstorm has passed. Lightning is the first thunderstorm hazard to arrive and the last to leave the area.

Tonnerre et éclairs

Règle Foudre – Coup de tonnerre

Le concept “40 – 30” – Utilisez-le pour déterminer s’il existe un risque que la foudre tombe à proximité de vous.

40 SECONDES

Compter les secondes entre le moment où vous voyez un éclair et celui où vous entendez le tonnerre. Si l’intervalle est de 40 secondes ou moins, la foudre est assez proche pour être un danger. *Cherchez un refuge immédiatement.*

30 MINUTES

Attendez 30 minutes après avoir vu le dernier éclair ou entendu un coup de tonnerre avant de quitter votre refuge.

NOTE

Plus de la moitié des décès causés par la foudre arrivent une fois l’orage passé. La foudre est le premier danger d’un orage à gagner une zone et le dernier à la quitter.