

# Lightning Safety Plan – SCCA

31 March 2009

NOTE: This information is provided for event Safety Stewards. Given the technical nature of some parts, it is not recommended this be posted. It is background information based on current science in lightning research.

## Policy –

SCCA RallyCross events will take all steps necessary to mitigate the risk and avoid endangering competitors, workers and spectators from cloud-to-ground lightning.

## Procedure –

There is a one-page summary that should be posted at all RallyCross events during the lightning season (varies across the country). The best procedure is to provide officials of the event (mainly, but not limited to, the Safety Steward) with sufficient background knowledge of lightning to make informed decisions. The person making the decision to halt/restart competition is likely not trained meteorologists. This procedure has been developed with those considerations and relies on observable phenomena.

**This procedure DOES NOT include risks from other types of severe weather that may accompany thunderstorms.**

It is necessary that all individuals participating in the decision process appreciate the potential hazard that lightning discharges pose. An understanding of the underlying physics is not necessary.

The procedure to follow will be the following:

1. Develop an emergency action plan specific to the activity (this document) and consisting of:
  - a. a defined chain of command that identifies who is to make the decision;
    - i. This decision authority is **final**.
  - b. a designated weather watcher who looks for the signs of severe weather and a lightning threat;
  - c. a method of monitoring local weather forecasts (hazardous weather outlook) and warnings;
  - d. a list of specific locations that are probably safe from the lightning threat;
  - e. a set of specific criteria that will determine suspension and resumption of activities on the course (30-30 rule); and
  - f. use of recommended lightning safety procedures.

Here is additional information on specific items of the procedure above:

1. RallyCross events are often held in remote locations. These can be far from any metro area, and farther from any source of reliable weather information. If cell phone access is available, an internet connection to any one of several sources of online data may be possible. Sites such as <http://www.rap.ucar.edu/weather> or

<http://hprcc.unl.edu/nevit> provide radar and satellite imagery though interpretation is problematic without proper training. The latter site provides forecast information. Use of your local National Weather Service website (<http://www.nws.noaa.gov> will provide a list) will provide a listing of current warnings, but you must be online nearly all the time to see them. The Weather Channel has begun a new service that will send watches/warnings to your cell phone. SCCA does not recommend any particular vendor, so event personnel are free to make their own choice.

Use of a NOAA Weather Radio (also called NOAA All Hazards Radio) is the **best way** to keep informed while on the site. It provides the most up-to-date warning information. Many handheld scanners and amateur radio units can receive these stations.

Unfortunately, the NWS does not issue lightning alerts. Lightning is present with every thunderstorm by definition. Thunderstorms are a common occurrence in many areas and while they may produce lots of lightning, a warning may never be issued. There are specific criteria for issuing a warning and lightning is NOT one of those criteria.

2. The chain of command specifies who makes the decision to suspend competition and directs the people involved in the event to a safe location. The person (one person, NOT a committee) is recognized to have the authority to halt competition for weather-related safety reasons at any time. **THIS IS NOT A DEBATABLE DECISION.**

Since there is a Safety Steward present at every SCCA-sanctioned event, it could be this person, but more likely his/her designee. While not all events will have this risk, all events should have a person designated to do this by the Safety Steward.

3. The person designated as the decision-maker in item 1 should not be the person watching the weather. Not all events will hold competition in an environment that poses a risk on any given day. However, given the capricious nature of storms, no area has zero risk during the competition season (even Alaska!). The Safety Steward will make the decision who will be assigned to this task. Someone must be assigned. It can be the Safety Steward, the decision maker, or someone else depending on the daily forecast risk for thunderstorms in the area. Common sense must prevail.
4. Safe locations on or nearby the course need to be identified prior to the start of competition. A sturdy building is usually the best. If this is not available, have everyone get into their cars (no convertibles), roll up the windows and not touch any metal in side the car until the lightning threat has ended.

Defining unsafe locations is as important as defining safe ones. No person should be standing on the course, in the pit, paddock or spectator area during a thunderstorm. It may be best to avoid the pit area altogether if fuel is present in containers. Since lightning is static electricity (i.e., a spark), the risk of vapors igniting is definitely NOT zero. Use common sense here.

5. The 30-30 rule is best to use for determining the suspension and resumption of competition, and this is what is stated in the public policy. We acknowledge the course conditions may change radically after a thunderstorm passes. Each event will have to determine how to handle this change so subsequent competition runs are fair for all competitors. It is not the purpose of this document to define how to handle it.
  - a. The 30-30 rule is simple. It is not arbitrary, but based on scientific observations and principles related to lightning activity in and around thunderstorms.
    - i. Count the number of seconds between the observation of a lightning flash and hearing the thunder. If this is less than 30, the lightning is within 6 miles of the competition site. The lightning safety plan should be activated.
    - ii. After the lightning threat has passed, wait 30 minutes after the last observation of lightning within 6 miles (30-seconds) of the competition site. This may seem like a long time, but based on the speed of the storm and the distance it travels in 30 minutes, it is the bare minimum for safety reasons. Lightning has been observed to travel 10 miles outside the core of the storm and seemingly strike ‘from the blue’.
6. Basic lightning safety strategies consist of:
  - a. Postponing/canceling outdoor events
  - b. Avoiding the highest point in the area
  - c. Avoiding being the tallest object in the area.
  - d. Do not take shelter under trees or light poles.
  - e. Do not stand out on the course during a thunderstorm
  - f. If caught outside, do not lie flat on the ground, but crouch on your toes with your feet together, head lowered and ears covered with your hands. Yes, it’s awkward, but better uncomfortable than dead.
  - g. Observe basic first-aid procedures if lightning does strike:
    - i. Observe the scene briefly...dashing out to help the injured may result in additional injuries.
    - ii. Call 911 or whatever emergency number is in the event safety plan
    - iii. Move the victims to a safer area if required.
    - iv. Treat the ‘dead’ first...victims may appear dead, but can often be revived with CPR (only trained persons should perform CPR).
    - v. Evaluate and treat for additional injuries (breathing difficulties, shock, fractures, burns, etc.). This is not an all-inclusive list.

Implementation of any lightning safety plan is the responsibility of the Safety steward. Development of that plan is the responsibility of the event chairman and the Safety Steward (at a minimum). Common sense should prevail. Some areas of the country have better visibility than others (Colorado, for example). Lightning may be visible at distances of 40 miles or more and not pose a threat initially. There are documented cases and photos of lightning discharges striking ground some 10+ miles from a parent cloud. This is call the ‘Bolt from the Blue’ for good reason...usually there is a blue sky above where lightning hit the ground!

The 30-30 rule works in these situations as well as it does in urban areas with less visibility.  
**Keep in mind that there must be observed lightning for this rule to work.**

**If the first stroke of a storm strikes your area, the 30-30 rule will not work.**

In this situation, the weather observer must be aware of the signs of an impending thunderstorm (dark clouds, thunder with no visible lightning, high winds, etc.) (this list is not all-inclusive). There is often an indication of charge building up from someones hair standing up, feeling your skin tingle, hearing nearby crackling noises, or synthetic fabrics rising away from the wearer's body, just to mention a few. In these cases, implement the lightning safety plan IMMEDIATELY.

Some may mention that getting in a vehicle is safe because the rubber tires insulate the vehicle. The insulation portion is true, but consider that the lightning discharge just came many miles through the atmosphere. 6" of rubber is not a deterrent! It's the metal framework of the car that allows the lightning charge to flow across the skin of the vehicle to ground. Lightning rarely penetrates the vehicle interior, but it's still a good idea to not touch anything metal inside until the lightning threat has ended.

That's it. Overall, it's a simple plan (with a bunch of explanation). If you want additional information on lightning and lightning safety, please contact the Rally Department. They will put you in touch with the proper people to answer your questions.