

# Lightning Safety in Sport – Best Practice in the US

Katie Walsh Flanagan, EdD, LAT, ATC

Director of Sports Medicine

East Carolina University, NC USA

**Caribbean Meteorological Organization**

# Lightning Safety Recommendations Overview

1. Establish a Lightning-specific EAP
2. Identifications of Safe Locations from Lightning
3. Identification of Unsafe Locations from Lightning
6. Criteria for Postponement and Resumption of Activities
7. Large Venue Planning
8. Personal Safety and Obligation to Warn

# Establish a Lightning-Specific Emergency Action Plan (EAP)

- ❁ Create, distribute and implement a comprehensive proactive EAP specific to lightning safety. The plan should have specific components

# Promote Lightning Safety Slogans

- ❁ Promote the Lightning Safety Slogans supported by the National Weather Service:
  - ◆ “NO place Outside Is Safe When Thunderstorms Are In The Area!”
  - ◆ “When Thunder Roars, Go Indoors!”
  - ◆ “Half An Hour Since Thunder Roars, Now It’s Safe To Go Outdoors!”

# Chain of Command

- ❁ Establish a chain of command that identifies a specific person/role who is to make the decision to remove individuals from the field or activity due to the threat of Lightning
  - ❁ Administrator?
  - ❁ Usually NOT coach or referee
- ❁ This person must have recognized and unchallengeable authority to suspend activity.

# Monitor the Weather

- ❁ Use of a reliable means of monitoring the local weather, and prior to the event identify a specific person (a weather -watcher) who is responsible for actively looking for threatening weather and is charged with notifying the chain of command.
- ❁ Day of event
- ❁ Before event
- ❁ During event







# Identify Safe Locations



# What are 'Safer' Locations?

## Identification of Safe Locations from Lightning

-  Identify substantial, fully-enclosed buildings that contain wiring and plumbing.
-  Identify these locations prior to the event and inform participants and spectators of the locations.
  -  Access to building/s during event
-  These buildings should be locations where people live or work and must be venue-specific.



# Safe Places from Lightning

Completely within  
buildings where people  
live or work, such as:



- ✿ School
- ✿ Fieldhouse
- ✿ Library
- ✿ Home
- ✿ Office Building

# Safe Places from Lightning

✿ Fully-enclosed metal vehicles (**buses**, cars, vans) are also safe locations for evacuation.



# Identify Unsafe Shelters



# Unsafe Areas from Lightning



Locations termed “Shelter” are rarely safe from lightning.

- ❁ Picnic shelter
- ❖ Park shelter
- ❖ Rain shelter
- ❖ Sun shelter
- ❖ Bus shelter
- ❖ Storage Sheds



# Unsafe Areas from Lightning

🌸 Locations with open areas are also unsafe from lightning.

- 🌸 Tents
- ❖ Dugouts
- ❖ Refreshment Stands
- ❖ Gazebos
- ❖ Press boxes
- ❖ Open garages



# Unsafe Areas from Lightning

- ❁ Tall objects (trees, towers, poles) and elevated areas are all potential lightning targets and should be avoided.
- ❁ Large bodies of water, including swimming pools are also unsafe areas from lightning.





# Criteria for Suspending Activity



- ✿ Specific criteria for suspending and resumption of activity must be identified in the plan.

# Criteria to Suspend Activity



- ❁ Postpone or suspend activities if a thunderstorm appears imminent before or during activity.
- ❁ Watch the skies for locally developing or approaching storms that have not yet produced lightning.

# Criteria to Suspend Activity

- ❁ All individuals must be **completely within** an identified safe location **before** the leading edge of the storm and the outdoor activity reaches 5 nautical miles (nmi, about 6 miles or **9.26 km**).



# Criteria to Suspend Activity

❁ The **Time** it takes to move individuals (spectators) from outdoor activities and be completely within the designated safe location(s) must be included with the safety plan to evacuate the premises.





# General Weather Awareness



# Criteria to Suspend Activity



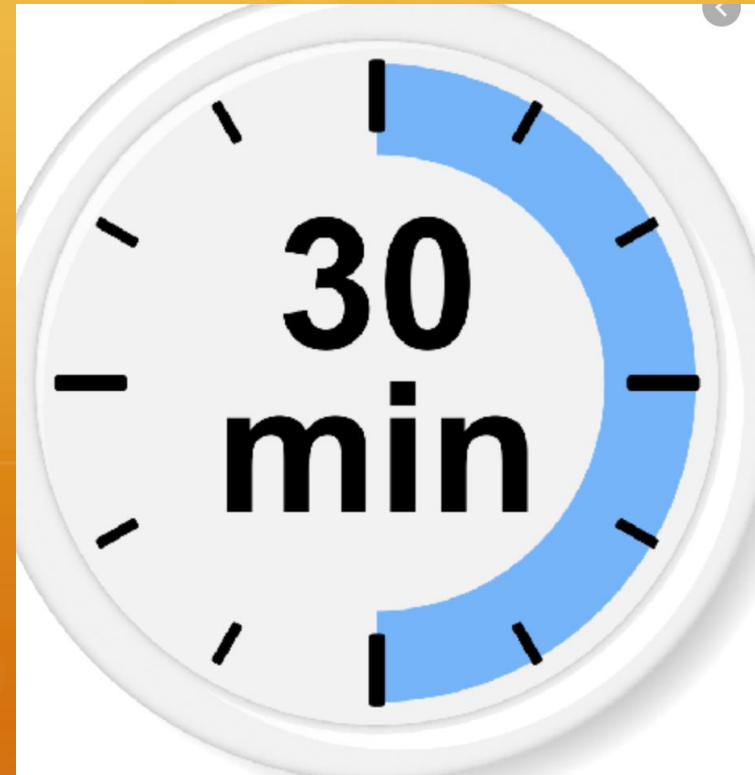
- ✿ Postpone or suspend activities if a thunderstorm appears imminent before or during activity. Watch the skies for locally developing or approaching storms that have not yet produced lightning.



# Criteria to Resume Activity

❁ Activities should not be resumed until 30 minutes after the **last strike of lightning is seen** (or at least 5 nmi away) or **last sound of thunder is heard**.

❁ This 30-minute clock re-starts for each lightning flash that is seen or thunder that is heard.



# Large Venue Planning



# Large Venue Planning

## ❁ Large Venue Planning

- ❁ A lightning-specific plan for large-scale events should be established that included components of the EAP for lightning. The plan should address:
  - ❁ Use of a reliable weather monitoring system that has been independently verified to perform accurately, reliably and consistently to determine if to cancel or postpone activity prior to the event

# Large Event Recommendations

- ❁ Means to prevent spectators from entering an outdoor venue when the event has been suspended due to lightning.
- ❁ Assure that spectators will be directed to the nearest safe location.
- ❁ Identification of enough close-proximity buildings and/or vacant fully enclosed vehicles to hold all individuals affected by the lightning hazard; to include participants and spectators.



# Large Event Recommendations



- ⚙️ Decisions to suspend activity should include consideration for the time it takes to safely move all individuals so they are wholly within a safe substantial building or location before the lightning danger is imminent.

# Large Event Recommendations

- ✿ Means to ensure a safe, orderly evacuation from the event, including:
  - ✿ Announcements
  - ✿ Signage
  - ✿ Safety Information in programs/brochures
  - ✿ Assistance from ushers
  - ✿ Entrances that can also serve as exits



# Personal Safety



# Personal Safety

## ❁ Personal Safety & Obligation to Warn

- ❁ If thunder can be heard, lightning is close enough to be a hazard, and people should go to a safe location.
- ❁ In the event of impending thunderstorms, those in control of outdoor events should fulfill the obligation to warn participants and guests of lightning danger.

# Personal Safety

- ❁ All individuals have the right to vacate an outdoor site or unsafe area without fear of repercussion or penalty, in order to seek a lightning-safe location if they feel in danger from impending lightning activity.

# SUMMARY

- ❁ Establish and implement a lightning-safety EAP before the season starts that includes:
  - ❁ established and recognized chain of command to suspend events and/or evacuate the facility
  - ❁ Use the National Weather Service Lightning Safety Slogans
  - ❁ A reliable means of monitoring the weather, including a specific weather watcher
  - ❁ A list of previously identified venue-specific safe structures from the threat of lightning
  - ❁ Criteria for suspension of activity, evacuation of facility and issuing the all-clear signals

# Lightning Resources

❁ National Oceanic and Atmospheric Admin

❁ [www.noaa.gov](http://www.noaa.gov)

❁ National Weather Service

❁ [www.nws.noaa.gov](http://www.nws.noaa.gov)

❁ Lightning Safety

❁ [www.lightningsafety.noaa.gov](http://www.lightningsafety.noaa.gov)



# Questions?





# References

- ❁ Walsh, K., et al., *National Athletic Trainers' Association Position Statement: Lightning Safety for Athletics and Recreation*. *Journal of Athletic Training*, 2013. 48(2): p. 258-270.
- ❁ National Federation of of State High School Associations – Guidelines on....Lightning Disturbances 2021 of State High School Associations  
<https://www.nfhs.org/media/4295169/guidelines-on-handling-practices-and-contests-during-lightning-or-thunder-disturbances-final-2-14-21.pdf>
- ❁ National Weather Service, *Lightning Fact Page*. 2021 Available from:  
[http://www.crb.noaa.gov/pub/lt/crb\\_ltg\\_facts.php](http://www.crb.noaa.gov/pub/lt/crb_ltg_facts.php).

# References

- ❁ NOAA. *Lightning Safety: Large Venues.*  
Lightning Safety 2011 Available from:  
[http://www.weather.gov/os/lightning/more.](http://www.weather.gov/os/lightning/more.htm)  
[htm.](http://www.weather.gov/os/lightning/more.htm)