

---

# Princeton University Lightning Safety Plan

---

## Introduction

Lightning is the second leading cause of direct weather deaths in the U.S., after floods, and results in more fatalities each year than tornadoes and hurricanes combined. Individuals who survive their initial contact with a lightning strike are often left with life-long severe injuries. Nearly 75% of lightning casualties (deaths + injuries) occur when the victims are in open areas, such as athletic fields, or under trees.

The purpose of this plan is to establish procedures and responsibilities for providing information about lightning safety guidelines to Princeton University faculty, students, staff, and visitors.

## Definitions

*Event Manager* – is the individual with responsibility for overall management of an event. The Event Manager, in cooperation with Public Safety and Environmental Health & Safety, develops severe weather plans that allow ample time to move attendees to a safe location in the event of severe weather. During intercollegiate sporting events, this individual will be designated by the Department of Athletics (typically certified athletic trainers, coaches, or Department of Athletics administrators).

*Flash-to-Bang Method* – is used to assess how far away lightning is striking by counting the number of seconds it takes to hear thunder after witnessing a flash of lightning. Generally, a 30 second or less flash-to-bang count means that the storm is within six miles of the event location, indicating the need to begin moving activities from outdoor locations into a safe shelter.

*Lightning-Safe Position* – is the best position to assume should you be unable to find a safe location during a thunderstorm. It involves crouching on the ground with your feet together with your weight on the balls of your feet, keeping your head lowered and covering your ears.

*Safe Location* – is a designated area likely to be safe during a thunderstorm. These locations are most often fully enclosed buildings, but may also include personal automobiles or buses.

*Unsafe Location* – is an area which provides little to no protection during a thunderstorm. These areas are usually outdoors and may include the highest point of an open field, on the open water, in an open vehicle (such as a golf cart or tractor), tents, under trees, or open areas under stadium seating.

*Severe Thunderstorm* – is a storm, as defined by the National Weather Service, with large hail (least  $\frac{3}{4}$  inch in diameter), high winds (58 miles per hour or greater), producing tornadoes, or any combination of the three.

*Severe Thunderstorm Watch* – is a statement issued by the National Weather Service that means conditions are favorable for the development of severe thunderstorms in and close to the watch area.

*Severe Thunderstorm Warning* – is a statement issued by the National Weather Service that means there is significant danger of severe thunderstorms for the warned area.

*Telvent DTN* – is a subscription weather service used by several university departments, including Public Safety, to monitor weather conditions.

## Responsibilities

Given the random nature of lightning strikes, absolute protection cannot be guaranteed to any individual or group. Individuals are ultimately responsible for their personal safety and should take appropriate action when threatened by lightning. Adults must take responsibility for the safety of children in their care during thunderstorm activities. However, awareness of certain lightning safety guidelines can greatly reduce the risk of injury or death.

---

# Princeton University Lightning Safety Plan

---

## Employees – Outdoor Workers

1. Identify in advance a safe location (e.g., building, bus, personal automobile). Locations that offer little or no protection from lightning include tents, under trees, golf carts, open shelters such as parking garages, or the open area under the stands at Princeton Stadium.
2. Public Safety will issue an “all call” radio announcement if a severe storm is expected and if workers need to seek shelter. However, when you first see lightning or hear thunder, go to the safe location immediately. Lightning often precedes rain; so don't wait for the rain to begin or for the “all call” message before suspending outdoor activities.
3. If you are caught outdoors, avoid the high ground, open spaces, and bodies of water. Avoid metal objects including electrical wires, fences, machinery, motors, and power tools. Avoid standing under tents; while they provide protection from the rain, they do not provide protection from lightning. If lightning is striking nearby when you are outside, you should:
  - a. Crouch down and put your feet together. Place your hands over your ears to minimize hearing damage from thunder.
  - b. If part of a group, spread out. You should avoid being in close proximity (minimum of 15 ft.) to other people.
4. Suspend outdoor activities until an “All Clear” radio message is issued by Public Safety. If you do not have a radio and no Public Safety officer is available, suspend outdoor activity for at least 30 minutes after the last observed lightning flash or thunder clap.
5. Persons injured by a lightning strike do not carry an electrical charge and can be handled safely. Apply First Aid procedures to a lightning victim if you are qualified to do so. Call Public Safety at 911 from any campus phone, 609-258-3333 from any cell phone, or send for help immediately.

## Outdoor Events, including Athletics Events

Outdoor events fall into two broad categories - those that would take less than 10 minutes to evacuate to a safe location and those that would take more than 10 minutes to evacuate to a safe location. The event organizer, through cooperation with Public Safety and Environmental Health and Safety, should develop weather-related planning that will allow ample time to safely move participants from the outdoor location to a safe shelter in the event of a thunderstorm.

Prior to the beginning of intercollegiate sporting events, the event manager, athletic trainers, coaches, and Public Safety must establish responsibilities for severe weather notifications. Typically, the athletic trainer is responsible for notification of coaches and on-field officials, while the Event Manager, with the cooperation of Public Safety, is responsible for notification of spectators and other attendees.

Weather-related planning should include the following:

1. The identification of locations that would be “safe” during a thunderstorm, such as buildings, buses, or personal automobiles. Locations that offer little or no protection from lightning include tents, under trees, golf carts, club cars, or open shelters at golf courses or athletic fields.
2. Determination of how weather will be monitored prior to and during times of outdoor activities. There are several methods available for monitoring weather, including:
  - a. Daily weather forecasts – Monitor local weather forecasts for several days leading up to the event to learn of predicted severe weather.
  - b. Severe weather announcements – Through cooperation with Public Safety, monitor Telvent DTN for National Weather Service (NWS) announcements and real-time lightning data.
  - c. Flash-to-bang method

---

## Princeton University Lightning Safety Plan

---

3. Designation of those individuals responsible for monitoring weather conditions and consulting with Public Safety on the need to make weather-based decisions.
4. Notifying event participants in advance of potentially severe weather conditions, evacuation plans, and the location of safe shelters. This may include the use of public address systems, loud speakers, or, in the case of small groups, simple verbal communication.
5. Notifying participants that the lightning threat has passed. To allow time for severe weather to move out of the area, organizers should wait for an “all clear” message from Public Safety. In the absence of a Public Safety officer, participants should wait at least 30 minutes after the last flash of lightning is witnessed or thunder is heard before resuming outside activities.
6. Persons injured by a lightning strike do not carry an electrical charge and can be handled safely. Apply First Aid procedures to a lightning victim if you are qualified to do so. Call Public Safety at 911 from any campus phone, 609-258-3333 from any cell phone, or send for help immediately.

### **DeNunzio and Dillon Pools**

Lightning can travel through many avenues such as electrical wires, pipes, groundwater, etc. and the possibility exists that lightning can put swimmers at risk, even if they are using an indoor pool. Therefore, the following procedures must be followed in the event of a thunderstorm.

1. At the first sign of an electrical storm (lightning can be seen or thunder heard), the lifeguard must immediately clear all patrons from the pool and the deck. Patrons do not need to leave the facility, but must be clear of the pool deck and move to another part of the building (bleachers, hallway, etc.)
2. The lifeguards are to remain in the bleacher area to ensure that patrons do not reenter the pool or the deck.
3. The lifeguards are to keep the pool closed until the storm passes (20 minutes after the last lightning is seen or thunder is heard).

Patrons or staff should not use showers or phones during an electrical storm.

### **Summer Sports Camps**

Coaches are responsible for weather-related planning and daily weather monitoring that will allow ample time to safely move summer camp participants from an outdoor location to a safe shelter in the event of a thunderstorm. Coaches or their designated representative should take the following actions:

1. Identify locations that would be “safe” during a thunderstorm, such as buildings or buses. Locations that offer little or no protection from lightning include tents, under trees, golf carts, club cars, or open shelters at golf courses or athletic fields.
2. Determine how weather will be monitored prior to and during times of outdoor activities. There are several methods available for monitoring weather, including:
  - a. Daily weather forecasts – Monitor local weather forecasts for several days leading up to the beginning of your camp to learn of predicted severe weather.
  - b. Severe weather announcements – Through cooperation with Conference and Event Services and Public Safety, monitor Telvent DTN for National Weather Service (NWS) announcements and real-time lightning data.
  - c. Flash-to-bang method
3. When you first see lightning or hear thunder, proceed immediately to the nearest building and account for all campers in your group. Lightning often precedes rain; do not wait for the rain to begin before suspending activities and seeking shelter. For all camps taking place at West Windsor Fields you should proceed to your busses for shelter.

## Princeton University Lightning Safety Plan

---

4. Notifying camp participants when the lightning threat has passed. Coaches should wait at least 30 minutes after the last flash of lightning is witnessed or thunder is heard before resuming outside activities.
5. Persons injured by a lightning strike do not carry an electrical charge and can be handled safely. Apply First Aid procedures to a lightning victim if you are qualified to do so. Call Public Safety at 911 from any campus phone, 609-258-3333 from any cell phone, or send for help immediately.