

## Thunderstorms

Indiana Department of Homeland Security

Interagency Press Release Bank



# Thunderstorms

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# Thunderstorms

## Thunderstorms

### Preparing for a Thunderstorm

Prevalent in Indiana during the summer months, thunderstorms may produce heavy rains, strong winds, hail, lightning and tornados. Even if they last only a few minutes, thunderstorms have the strength and power to cause a great amount of damage.

Some thunderstorms can be seen approaching, while others hit without warning. It is important to learn and be able to recognize danger signs, and to plan in advance what to do. Preparing before a thunderstorm occurs can mitigate the risk of injuries and property damage.

General information about thunderstorms:

- Warm, humid conditions are highly favorable for thunderstorm development.
- They typically produce heavy rain for a brief period, anywhere from 30 minutes to an hour.
- Thunderstorms may occur singly, in clusters or in lines. Some of the most severe occur when a single thunderstorm affects one location for an extended time.
- About 10% of thunderstorms are classified as severe—one that produces hail at least three-quarters of an inch in diameter, has winds of 58 miles per hour or higher or produces a tornado.

Know the difference between a WATCH and a WARNING:

- A severe thunderstorm WATCH means a severe thunderstorm is likely to develop.
- A severe thunderstorm WARNING means that a severe thunderstorm has been sighted or indicated by weather radar.

Prepare ahead of time:

- Keep trees trimmed to help them avoid falling onto your house, cars or other structures.
- Remove dead or rotting trees and branches that could fall and cause injury or damage.

If a thunderstorm is coming or likely to develop:

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- Keep your eye on the sky and listen to weather reports on the radio or television for the latest weather forecasts and postpone or cancel outdoor activities.
- Secure outdoor objects, such as lawn furniture, that could blow away, cause property damage or injury and take lightweight objects inside.
- Find shelter in a building or vehicle. Keep vehicle windows closed and avoid convertibles.
- If hail or strong winds are reported, park your vehicle under a shelter to avoid damage from hail and blowing debris.
- Shutter windows and secure outside doors. If shutters are not available, close window blinds, shades or curtains. If glass breaks due to objects blown by the wind, the shades will prevent glass from shattering into your home.
- Avoid showering or bathing. Plumbing and bathroom fixtures can conduct electricity.
- Turn off and unplug all electrical equipment, including computers, telephones and televisions.
- Turn off the air conditioner. Power surges from lightning can overload the compressor resulting in a costly repair job.

### What to Do During a Thunderstorm

Thunderstorms producing large hail, flash floods, heavy rains, lightning, strong winds and tornados are prevalent in Indiana. Remember that a severe thunderstorm WATCH means a severe thunderstorm (one that produces hail at least three-quarters of an inch in diameter, has winds of 58 miles per hour or higher or produces a tornado) is likely to develop. A severe thunderstorm WARNING means that a severe thunderstorm has been sighted or indicated by weather radar. Keep your eye on the sky and listen to NOAA Weather Radio, commercial radio or television for the latest weather forecasts.

If shelter is available:

- Take shelter in a building or vehicle.
- Shutter windows, close window blinds, shades or curtains and secure outside doors.
- Avoid showering or bathing, as plumbing and bathroom fixtures can conduct electricity.
- Use a corded telephone only for emergencies. Cordless and cell phones are safe to use.
- Unplug appliances and other electrical items such as computers and turn off air conditioners. Power surges from lightning can cause serious damage.

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- Keep abreast of the latest weather forecasts and prepare for possible tornadoes.
- For power outages and downed wires, call your local utility company. To have debris removed, call your city or county government.

If in a vehicle:

- Avoid seeking shelter in convertibles and keep car windows closed.
- Although you may be injured if lightning strikes your car, as long as you are not touching any metal, you are much safer inside a vehicle than outside.
- Pull safely onto the shoulder of the road away from any trees that could fall on the vehicle.
- Stay inside the car and turn on the emergency flashers until the heavy rains subside.
- Do not attempt to drive over a flooded road, you could be trapped or stranded. The depth of the water is not always obvious, or the road could be washed away. If you can't see it, you can't be sure it's there.

If shelter is unavailable:

- If you are in a forest, seek shelter in a low area under a thick growth of small trees.
- If you are on open water or swimming, get to land and find shelter immediately.
- If you are walking with others in an open area, stay a minimum of 10 feet apart, keep low and walk quickly to find shelter.

If you are caught in an open area:

- Go to a low-lying, open place away from trees, poles or metal objects. Make sure the area you choose is not subject to flooding.
- Make yourself the smallest target possible. Squat low to the ground and place your hands on your knees with your head between them.
- Do NOT lie flat on the ground; this will make you a larger target.

Always avoid:

- Natural lightning rods such as a tall, isolated tree in an open area.

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- Hilltops, open fields or the beach.
- Isolated sheds or other small structures in open areas.
- Anything metal: tractors, farm equipment, motorcycles, golf carts, golf clubs, bicycles, etc.

## What to Know About Lightning

While your chances of being struck by lightning are estimated at only 1 in 600,000, you can reduce your risk even further by following appropriate safety precautions. Knowing what to do if you or someone else is injured by lightning will also increase your and your family's chances of surviving.

Every thunderstorm produces lightning. In the United States an average of 300 people are injured each year by lightning. Most lightning deaths and injuries occur when people are caught outdoors in the summer months during the afternoon and evening. Although most victims survive, people struck by lightning often report a variety of long-term, debilitating symptoms.

Things to keep in mind:

- Lightning is extremely unpredictable and CAN strike the same place more than once. This volatility increases the risk to individuals and property.
- Lightning often strikes just outside a band of heavy rain but may occur as far as 10 miles away from any rainfall.
- "Heat lightning" is actually lightning from a thunderstorm too far away for thunder to be heard. However, be aware that the storm may be moving in your direction.

Before lightning strikes:

- Keep an eye on the sky. Look for darkening skies, flashes of light or increased wind speeds.
- Listen for the sound of thunder. If you can hear thunder, you are close enough to the storm to be struck by lightning. Go to a safe shelter immediately.
- Listen to NOAA Weather Radio, commercial radio or television for the latest weather forecasts.

When seeking shelter remember:

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- Get inside a home, building or hard top automobile (not a convertible). Although you may be injured if lightning strikes your car, you are much safer inside a vehicle than outside.
- Rubber-soled shoes and rubber tires provide NO protection from lightning. However, the steel frame of a hard-topped vehicle provides increased protection if you are not touching metal.
- Avoid showering or bathing. Plumbing and bathroom fixtures can conduct electricity.
- Unplug appliances and other electrical items such as computers and telephones and turn off air conditioners. Power surges from lightning can cause serious damage (Leaving electric lights on, however, does not increase the chances of your home being struck by lightning.).

If you are caught outside:

- Go to a low-lying, open place away from trees, poles or metal objects. Make sure the place you pick is not subject to flooding.
- Squat low to the ground on the balls of your feet. Place your hands over your ears and your head between your knees. Make yourself the smallest target possible and minimize your contact to it. DO NOT lie flat on the ground—this will make you a larger target. Remember, if you feel your hair stand on end, that is an indicator that lightning is about to strike.

Stay away from:

- Natural lightning rods such as a tall, isolated tree in an open area.
- Hilltops, open fields, the beach or a boat on the water.
- Isolated sheds or other small structures in open areas.
- Anything metal—tractors, farm equipment, motorcycles, golf carts, golf clubs, bicycles, etc.

If someone is struck by lightning:

- Have someone dial 9-1-1 or your local Emergency Medical Services number immediately.
- People struck by lightning carry NO electrical charge and can be safely attended to immediately.
- The injured person has received an electrical shock and may be burned, both where they were struck and where the electricity left their body. Check for burns in both places. Being struck by lightning can also cause nervous system damage, broken bones and loss of hearing or eyesight.

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- Give first aid. If breathing has stopped, begin rescue breathing. If the heart has stopped beating, a trained person should give CPR. If the person has a pulse and is breathing, look and care for other possible injuries.
- Stay with the victim until medical professionals arrive.

### Stormwater and Construction

Stormwater discharges are generated by runoff from land and impervious areas such as paved streets, parking lots and building rooftops during rainfall and snow events. Stormwater can impact active construction sites as well as post-construction land use and water quality. As stormwater flows over a construction site, sediment and other pollutants can be washed onto nearby properties and into surrounding bodies of water. Post-construction land use can also generate pollutants as stormwater runoff discharges off the property. Polluted stormwater runoff can then adversely affect the physical and biological integrity of Indiana's surface waters.

Responsibilities to remember:

- The Indiana Department of Environmental Management (IDEM) is responsible for protecting human health and the environment while providing for safe industrial, agriculture, commercial and governmental operations.
- General Permits must be obtained prior to all land disturbing activities of one acre or more. The General Permit requires the development and implementation of a Construction Plan/Stormwater Pollution Plan for each project.
- Project site owners are also required to file a Notice of Intent with IDEM.
- Citizens are also encouraged to contact IDEM's Office of Water Quality with any questions or concerns about stormwater runoff and its effects on water quality.

For more information about:

- Stormwater quality; visit IDEM's stormwater website at <http://www.in.gov/idem/4896.htm>.
- Relevant Indiana law, see <http://www.in.gov/idem/4902.htm>.

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## Stormwater and Manufacturing

When it rains or snows, the water that runs off city streets, parking lots, construction sites and other impervious surfaces can wash sediment, oil, grease, toxics, pathogens and other pollutants into nearby storm drains or ditches. Once this pollution has entered the sewer system, it is usually discharged untreated into local streams and waterways creating stormwater runoff pollution. New regulations, known as Stormwater Phase II, have now been established in Indiana to reduce the impacts of stormwater from construction, industrial, municipal, governmental and intuitional sources.

Regulation:

- IDEM regulates this industrial stormwater discharge as part of the National Pollutant Discharge Elimination System (NPDES) Permitting Program.
- Under Phase I, requirements applied to specific categorical industrial facilities which had a point source discharge of stormwater exposed to industrial activity from their facility.
- Phase II: The rule was expanded to allow conditional “no exposure certification” exclusions to any designated industry. This exclusion provides both an incentive for facilities to protect their operations from stormwater exposure and water quality benefit for the state by reducing polluted runoff.
- If it is determined that industrial stormwater discharges are mixing with other waste streams, then the facility does not qualify for a general stormwater permit and must apply for an individual storm permit with more specific guidelines for protecting water quality.

Responsibilities to remember:

- IDEM is responsible for protecting human health and the environment while providing for safe industrial, agriculture, commercial and governmental operations vital to a prosperous economy.
- Citizens are also encouraged to contact IDEM’s Office of Water Quality with any questions or concerns about stormwater runoff and its effects on water quality.

For more information about:

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- Stormwater and Phase II regulations visit IDEM's stormwater website at <http://www.in.gov/idem/4896.htm>.
- Relevant Indiana laws see <http://www.in.gov/idem/4901.htm>.

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## Tornadoes

### Preparing for a Tornado

Tornado terms:

- A tornado WATCH means conditions are favorable for the production of tornadoes. You should remain alert for approaching storms. Watch the sky and stay tuned to NOAA Weather Radio, commercial radio, or television for updated information.
- A tornado WARNING means a tornado has been sighted or indicated by weather radar. You must take shelter immediately.
- Tornado predictability: Severe weather occurs in Indiana most often from April to July, and tornadoes are most likely to occur between 3 and 9 p.m., but either can occur at any time of the day or year.
- Tornadoes may strike quickly, with little or no warning. Occasionally, tornadoes develop so rapidly that little, if any, advance warning is possible.
- Before a tornado hits, the wind may die down and the air may become very still. Tornadoes generally occur near the trailing edge of a thunderstorm. It is not uncommon to see clear, sunlit skies behind a tornado.

Tornado visibility:

- Some tornadoes are clearly visible, while rain or nearby low-hanging clouds obscure others.
- Tornadoes may appear nearly transparent until dust and debris are picked up or a cloud forms in the funnel.
- A cloud of debris can mark the location of a tornado even if a funnel is not visible.
- A tornado appears as a rotating, funnel-shaped cloud that extends from a thunderstorm to the ground. Its whirling winds can reach 300 miles per hour.

Tornado trajectory:

- The average tornado moves southwest to northeast, but tornadoes have been known to move in all directions.

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- The average speed of a tornado is 30 MPH, but may vary from stationary to 70 MPH.
- Damage paths can be in excess of one mile wide and 50 miles long.

## What to Do During a Tornado

If a tornado WATCH is issued:

- Listen to NOAA Weather Radio, commercial radio, or television newscasts for weather updates.
- Look for approaching storms and the following danger signs:
  - Dark, often greenish sky
  - Large hail
  - Large, dark, low-lying or funnel-shaped cloud extending from the sky. Pay particular attention if the cloud appears to be rotating.
  - Loud roar, similar to a freight train
- If you see approaching storms or any of the danger signs, be prepared to take shelter immediately.
- If a tornado WARNING is issued, you must seek shelter immediately. You may have only a few minutes or seconds before it reaches you.

If you are in a structure (e.g. residence, small building, school, nursing home, hospital, factory, shopping center or high-rise building):

- Go to a pre-designated shelter area such as a safe room, basement or storm cellar.
- Pick a place where family members can gather together and keep this place uncluttered.
- If an underground shelter is not available, go into an interior room or hallway on the lowest floor, putting as many walls as possible between you and the outside.
- If you are in a high-rise you may not have time to get to the building's lowest floor. Pick a hallway in the center of the building.
- Stay in the center of the room, away from corners because they collect debris.
- Stay away from exterior walls, windows and doors.
- Get under a piece of sturdy furniture such as a workbench, heavy table or desk and hold onto it.

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- Use blankets, pillows or your arms to protect your head and neck.
- Do NOT open windows.

If you are in a vehicle, trailer or mobile home:

- GET OUT immediately. Even if tied down, mobile homes offer little or no protection from tornadoes.
- Go to the lowest floor of a sturdy building or a storm shelter nearby.
- NEVER try to out drive a tornado in a vehicle. Tornadoes can change direction quickly and can lift up a car or truck and toss it through the air.
- Even if there is no time to get indoors, GET OUT of the vehicle or mobile home.

If you are outside with no shelter:

- Lie flat in a nearby ditch or depression (beware of the potential for flooding) or crouch near a strong building.
- Cover your head with your hands.
- Do NOT get under an overpass or bridge. Wind speeds actually increase under them and can suck you out. You are safer in a low, flat location.
- Beware of flying debris which is the cause of most fatalities and injuries.

### What to Do After a Tornado

After the tornado passes:

- Stay out of damaged buildings.
- Help injured or trapped people if you can do so without endangering yourself.
- Check on others who may require special assistance, such as the elderly, children and people with disabilities.
- Inspect your home for damage.
- Do not use candles for emergency lightning or heating.
- Watch out for fallen power lines.

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- For power outages and downed wires, call your local utility company. To have debris removed, call your city or county government.
- Local authorities may not immediately be able to provide information on what is happening and what you should do. However, you should listen to NOAA Weather Radio, watch TV, listen to the radio or check the Internet often for official news and instructions as they become available.