Severe Weather Preparedness Week

MARCH 15 – 21, 2009

NATIONAL WEATHER SERVICE

*INDIANAPOLIS * NORTHERN INDIANA * CHICAGO *
*WILMINGTON * LOUISVILLE * PADUCAH *

2009 Awareness Weeks

- National Flood Safety Week—THIS WEEK!
- National Air Quality Week—April 28 - May 2
- Lightning Safety Week—June 21 - 27
- Winter Weather Preparedness Week—November 15 - 21

Governor Mitch Daniels *has proclaimed March 15 through 21, 2009 as Severe Weather Preparedness Week in Indiana. This week is also National Flood Safety Week.* The National Weather Service, in conjunction with the Indiana State Police, Department of Homeland Security, Department of Education, Broadcasters Association, the American Red Cross, and Amateur Radio Operators, will conduct **a statewide test of communication systems on Wednesday, March 18 between 10:00 A.M. and 10:30 A.M. and 7:00 P.M. and 7:30 P.M. EDT.**

The goal of Severe Weather Preparedness Week is to better educate people about the hazards of severe thunderstorms and tornadoes, and to help everyone be prepared when severe weather occurs.

This packet contains information about severe weather terms, safety rules, and some tornado events that affected Indiana. Daily statements will be issued on newswires and NOAA All Hazards Radio during the week. Your local National Weather Service office will be available throughout Preparedness Week for interviews or questions.

If weather postpones the tests, make-up drill day is Thursday March 19 at the same times listed above.

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This Week's Daily Focus

Sunday, March 15:	**Kick-off**; Discuss partners' (NWS, Media, Emergency Response Officials, Homeland Security, Red Cross, Public) roles in Severe Weather
Monday, March 16:	**Severe Weather Outlook**; partners' roles at the Outlook stage of an event
Tuesday, March 17:	**Watch**; partners' roles at the Watch stage
Wednesday, March 18:	**Warning**; everyone's role in Warnings; emphasize statewide tornado drill as time to practice plans.
Thursday, March 19:	**Response**; partners' roles in responding to disasters (real-time response)
Friday, March 20:	**Recovery**; partners' roles in the recovery process (days/weeks/months) after disaster
Saturday, March 21:	**Wrap-up**; importance of preparedness and action during threatening hazards.

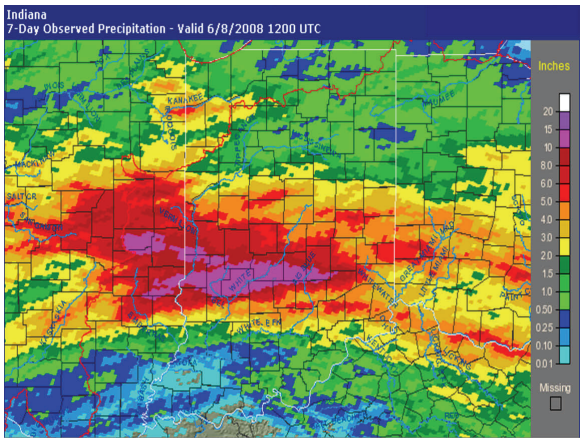
2008 in Review

2008 was a volatile weather year in Indiana. On January 7-8, 5 inches of rain melted snow on frozen ground to bring record flooding to the Tippecanoe River. January 29 brought a tornado and damaging winds to the west side of Indianapolis while 2 deaths occurred in Posey County from a tornado that same night. Major flooding returned to the Tippecanoe and Wabash Rivers a mere month later, in February. The period May 30-June 10 brought numerous tornadoes, severe thunderstorms, and heavy rain leading to record flooding of the White and East Fork White Rivers. One death resulted from an EF3 tornado which struck Rush County on June 3rd–one of 5 tornadoes to strike central Indiana that day. Heavy rain of up to 11 inches across south central Indiana led to incredible areal flooding in communities such as Columbus, Spencer, Seymour and others, and later, major to record flooding on area rivers. Indiana's weather remained relatively calm until September, when the remnants of Hurricane Ike plowed through the region, bringing wind gusts approaching 80 mph to parts of the state, and causing damage and widespread power outages, which lasted more than a week in some areas. A cold December, save for a sharp warmup near the end of the month, set the stage for multiple rounds of freezing rain and drizzle, with one event on December 23rd leading to enormous traffic headaches in many areas, as extremely cold ground temperatures led to rapid ice accumulations on roads.

June 2008: Record Flooding

From the evening of June 6 to the morning of June 7, thunderstorms produced very heavy rain across portions of Central Indiana. Amounts of nearly 11 inches were recorded in some areas. This rain lead to record river flooding in some areas during the week afterward.

The storms were produced when strong winds above the ground interacted with an outflow boundary left over from the storms that produced severe weather earlier in the day of June 6. Rainfall amounts of 5 to 11 inches were common south of Interstate 70. Widespread flooding occurred due to the heavy rain. Eventually the water worked into area rivers, causing record floods in some areas. To the right is an image of the 7 day total rainfall ending 8:00 AM



Looking Back, Looking Forward

Tornadoes of 2008: By The Numbers

- Tornadoes: **30 (10 more than 30 year average)**
- Tornado Days: **11**
- Fatalities: **4**
- Injuries: **33**
- First: **Marion County, 1/29/08**
- Last: **Jasper County, 9/4/08**
- Worst Damage: **EF3 (Rush County 6/3/08)**
- Most Damage: **$29million (Marion Co. 4/30/08)**
- Longest: **27.15 mi, 40 min, (Greene/Lawrence Co 6/3/08)**

One Inch Hail Initiative Comes to Indiana

Based on feedback from media outlets, emergency officials, and the public, a change to the criteria for severe hail is coming to Indiana. Years of research and testing in the Central Plains have found that hail smaller than one inch in diameter causes little to no damage and poses little threat to life and property. Based on these findings, and the successful outcome of a 4 year demonstration period in Kansas, severe hail will now be defined as hail one inch or larger in diameter. This will allow NWS forecasters more time to focus on the most damaging severe storms, and create less work for spotters and emergency officials when storm danger is modest. The high wind criteria (50 knots) will remain unchanged. The NWS looks forward to continuing to serve you effectively in 2009 and beyond.

SEVERE WEATHER TERMS AND DEFINITIONS

Watch - A particular weather hazard is possible, or when conditions support its occurrence. A watch is a recommendation for **planning, preparation, and increased awareness** (i.e., to be alert for changing weather, listen for further information, and think about what to do if the danger materializes).

Warning - A particular hazard is either imminent or has been reported. A warning indicates the need to **take immediate action** to protect life and property. The type of hazard is reflected in the type of warning (e.g., tornado warning, blizzard warning).

Tornado - A violently rotating column of air in contact with the ground and extending from the base of a thunderstorm.

Severe Thunderstorm - A thunderstorm that produces tornadoes, hail **1 inch** or more in diameter, or winds of 50 knots (58 mph) or more.

Straight-line Winds - Generally, any wind that is not associated with rotation, used mainly to differentiate them from tornadic winds.

Flood - The condition that occurs when water overflows the natural or artificial confines of a stream or other body of water, or accumulates by drainage over low-lying areas.

Flash Flood - A flood that rises and falls quite rapidly, usually as the result of intense rainfall over a relatively small area. Usually it occurs within 6 hours of a rain event.

Slight Risk (of severe thunderstorms) - Severe thunderstorms are expected to affect between 2 and 5 percent of the area. A slight risk generally implies that severe weather events are expected to be isolated.

Moderate Risk (of severe thunderstorms) - Severe thunderstorms are expected to affect between 5 and 10 percent of the area. A moderate risk indicates the possibility of a significant severe weather episode.

High Risk (of severe thunderstorms) - Severe weather is expected to affect more than 10 percent of the area. A **high risk is rare**, and implies an unusually dangerous situation and usually the possibility of a major severe weather outbreak.

Supercell - A thunderstorm with a persistent rotating updraft. Supercells are rare, but are responsible for a remarkably high percentage of severe weather events - especially tornadoes, extremely large hail and damaging straight-line winds.

Squall Line - A solid or nearly solid line or band of active thunderstorms.

Downburst - A strong downdraft resulting in an outward burst of damaging winds on or near the ground. Downburst winds can produce damage similar to a weak tornado. Although usually associated with thunderstorms, downbursts can occur with showers too weak to produce thunder.

Funnel Cloud - A condensation funnel extending from the base of a towering cumulus or cumulonimbus cloud, associated with a rotating column of air that is ***not*** in contact with the ground (and hence different from a tornado). A condensation funnel is a tornado, *not* a funnel cloud, if either a) it is in contact with the ground or b) a debris cloud or dust whirl is visible beneath it.

Cold-air Funnel - A funnel cloud that can develop from a small shower or thunderstorm when the air aloft is unusually cold (hence the name). On rare occasions, a small, relatively weak tornado can occur. These weak tornadoes last only a few minutes and are generally much less violent than other types of tornadoes.

TORNADOES

- **WHAT IS A TORNADO?**
  A tornado is violently rotating column of air extending from a thunderstorm to the ground.
- **WHAT TIME OF THE YEAR DO TORNADOES OCCUR?**
  Tornadoes can form any time of the year.
- **WHAT DIRECTION DOES A TORNADO MOVE?**
  Tornadoes can move in any direction. Most move from southwest to northeast, or west to east. Some tornadoes have changed direction amid path, or even backtracked. Forward speeds average 30 mph.
- **HOW LONG DOES A TORNADO LAST?**
  A tornado can last from several seconds up to more than an hour. Most tornadoes last less than 10 minutes.

Tornado Safety

IN HOMES OR SMALL BUILDINGS:

Go to the basement (if available) or to an interior room on the lowest floor, such as a closet or bathroom. Wrap yourself in overcoats or blankets to protect yourself from flying debris.

IN SCHOOLS, HOSPITALS, FACTORIES, OR SHOPPING CENTERS:

Go to interior rooms and halls on the lowest floor. Stay away from glass enclosed places or areas with wide-span roofs such as auditoriums and warehouses. Crouch down and cover your head.

IN HIGH-RISE BUILDINGS:

Go to interior small rooms or halls. Stay away from exterior walls or glassy areas.

IN CARS OR MOBILE HOMES:

ABANDON THEM IMMEDIATELY!! Most deaths occur in cars and mobile homes. If you are in either of those locations, leave them and go to a substantial structure or designated tornado shelter.

IF NO SUITABLE STRUCTURE IS NEARBY:

Lie flat in the nearest ditch or depression and use your hands to cover your head.

ENHANCED FUJITA SCALE RATINGS

RATING	3 SECOND WIND GUST (mph)
EF-0	65-85
EF-1	86-110
EF-2	111-135
EF-3	136-165
EF-4	166-200
EF-5	Greater than 200

Know the Signs of a Tornado

1. Strong, persistent rotation in the cloud base
2. Whirling dust or debris on the ground under the base of a cloud
3. Many tornadoes are wrapped in heavy precipitation and can't be seen. Watch for hail or heavy rain followed by either dead calm or an intense wind shift.
4. A loud, continuous rumble or roar which doesn't fade in a few seconds like thunder. "Ear popping" from substantial pressure drops from the tornado.
5. At night, persistent lowering from the cloud base illuminated by lightning.

LIGHTNING SAFETY

In the United States, there are an estimated 25 million lightning flashes each year. During the past 30 years, lightning killed an average of 62 people per year. This ties the average of 62 deaths per year caused by tornadoes. Yet because lightning usually claims only one or two victims at a time and does not cause mass destruction of property, it is underrated as a risk. While documented lightning injuries in the United States average about 300 per year, undocumented injuries are likely much higher.

When Thunder Roars, Go Indoors!

- Be the lowest point. Lightning hits the tallest object. Crouch down if you are in an exposed area.
- If you can't get to a shelter, stay away from trees. If there is no shelter, crouch in the open, keeping twice as far away from a tree as it is tall.
- Avoid leaning against vehicles. Get off bicycles and motorcycles. Avoid metal! Don't hold on to metal items such golf clubs, fishing rods, tennis rackets or tools.
- Get out of the water. It's a great conductor of electricity. Don't stand in puddles of water, even if wearing rubber boots.
- Move away from a group of people, staying several yards away from others. Don't share a bleacher bench or huddle in a group.

"LIGHTNING CAN STRIKE AS FAR AS 10 MILES FROM THE AREA WHERE IT IS RAINING. THAT'S ABOUT THE DISTANCE YOU CAN HEAR THUNDER. IF YOU CAN HEAR THUNDER, YOU ARE WITHIN STRIKING DISTANCE. SEEK SAFE SHELTER IMMEDIATELY."

Lightning Myths

- **MYTH: Lightning Never Strikes The Same Place Twice**

  TRUTH: Lightning often strikes the same place repeatedly, especially if it's a tall pointy isolated object. Places prone to lightning are places to avoid when thunderstorms are nearby!
- **MYTH: Rubber Tires Protect You From Lightning In A Car By Insulating You From The Ground**

  TRUTH: Lightning laughs at two inches of rubber! Most cars are reasonably safe from lightning. But it's the metal roof and metal sides that protect you, not the rubber tires. Thus convertibles, motorcycles, bicycles, open shelled outdoor recreational vehicles, and cars with plastic or fiberglass shells offer no lightning protection.
- **MYTH: I'm In A House, I'm Safe From Lightning**

  TRUTH: While a house is a good place for lightning safety, just going inside isn't enough. You must avoid any conducting path leading outside, such as corded telephones, electrical appliances, wires, TV cables, plumbing, metal doors or window frames, etc. Don't stand near a window to watch the lightning. An inside room is generally best.

Flooding

This is also National Flood Safety Week!

CHECK OUT THE ADVANCED HYDROLOGIC PREDICTION SERVICE (AHPS)

AHPS is a great tool to check out the latest in river flood information. Information on flood stage, flood impacts and any current flood warnings or statements is available for each station on the map. If you live or work near a river or stream, this page will be of great help to you! **www.crh.noaa.gov/ahps**

Critical NWS Flood Products

Hydrologic Outlook: This product alerts the public when flood producing rainfall is expected in 36 to 72 hours. During the months of February and March, this product also contains information on the potential for flooding from the spring snow melt.

Flood Watch: A flood or flash flood watch is issued when conditions are favorable for flooding or flash flooding to develop.

Flash Flood Warning: A warning is issued when rapid flooding is imminent or occurring. Flash floods quickly develop within six hours of a heavy rainfall event.

Urban/Small Stream Flood Advisory (**issued as a Flood Statement**): These statements are issued when minor flooding problems are expected, mostly in flood prone urban areas or near small streams that may rise quickly out of their banks. Even minor flooding can cause huge problems if proper precautions are not taken.

Flood Warning: These warnings are issued for river floods. River flooding mostly occurs with longer periods of rain which result in slower rises in flood waters and a prolonged flood event.

Flood and Flash Flood Safety

- Monitor NOAA All Hazards Radio or your favorite news source for vital weather information.
- If flooding occurs, get to higher ground, away from areas subject to flooding.
- Avoid areas already flooded and do not attempt to cross flowing streams.
- Do not drive around barriers that warn you the road is flooded. **Some cities and counties will issue a fine to motorists who ignore barriers-not to mention the risk of death!**
- Never drive through flooded roadways as road beds may be washed out under flood waters.
- If your vehicle is suddenly caught in rising water, leave it immediately and seek higher ground.
- Do not camp or park your vehicle along streams and washes, if there is a threat of flooding. Be especially cautious at night when it is harder to recognize flood dangers.

FLASH FLOODING IS THE #1 CAUSE OF DEATH ASSOCIATED WITH THUNDERSTORMS ...MORE THAN 140 FATALITIES EACH YEAR.

Turn Around, Don't Drown!

Turn Around Don't Drown (TADD) is a NOAA National Weather Service campaign to warn people of the hazards of walking or driving a vehicle through flood waters.

Q: Why is Turn Around Don't Drown™ so important?

Each year, more deaths occur due to flooding than from any other severe weather related hazard. The main reason is people underestimate the force and power of water. More than half of all flood related deaths result from vehicles being swept downstream. Of these, many are preventable.

Weather Enthusiasts Wanted!

Volunteers are wanted to join the **CoCoRaHS** network in Indiana! Anyone can participate; old, young, and anywhere in between. The only requirement is a desire to learn more about how the weather impacts our daily lives.

The project website is located at http://www.cocorahs.org

The **CoCoRaHS** network is a unique, non-profit community based network of volunteer observers who measure and record daily amounts of precipitation (rain, hail, and snow). The high quality data collected by our volunteers will help weather forecasters and resource managers better understand the highly variable patterns that make up Indiana's weather. Qualified observers will be eligible to receive a free rain gauge for use in the project.

CoCoRaHS in Indiana is a collaborative effort between the National Weather Service and the Indiana State Climate Office at Purdue University.

Heat Waves

Relative Humidity (%)

°F	40	45	50	55	60	65	70	75	80	85	90	95	100
110	136												
108	130	137											
106	124	130	137										
104	119	124	131	137									
102	114	119	124	130	137								
100	109	114	118	124	129	136							
98	105	109	113	117	123	126	134						
96	101	104	108	112	116	121	126	132					
94	97	100	103	106	110	114	119	124	129	135			
92	94	96	99	101	105	108	112	116	121	126	131		
90	91	93	95	97	100	103	106	109	113	117	122	127	132
88	88	89	91	93	95	98	100	103	106	110	113	117	121
86	85	87	88	89	91	93	95	97	100	102	105	108	112
84	83	84	85	86	88	89	90	92	94	96	98	100	103
82	81	82	83	84	84	85	86	88	89	90	91	93	95
80	80	80	81	81	82	82	83	84	84	85	86	86	87

Heat Index (Apparent Temperature)

With Prolonged Exposure and/or Physical Activity	
Extreme Danger	Heat stroke or sun stroke highly likely
Danger	Sunstroke, muscle cramps and/or heat exhaustion likely
Extreme Caution	Sunstroke, muscle cramps and/or heat exhaustion likely
Caution	Fatigue possible

Heat kills by taxing the human body beyond its abilities. In a normal year, about 175 Americans succumb to the demands of summer heat. North American summers are hot; most summers see heat waves in one section or another of the United States. East of the Rockies, they tend to combine both temperatures and high humidity although some of the worst have been catastrophically dry.

Considering this tragic death toll, the NWS has stepped up its efforts to alert more effectively the general public and appropriate authorities to the hazards of heat waves-those prolonged excessive heat/humidity episodes.

Based on the latest research findings, the NWS has devised the Heat Index (HI), (sometimes referred to as the "apparent temperature"). The HI, given in degrees F, is an accurate measure of how hot it really feels when relative humidity (RH) is added to actual air temperature. To find the HI, look at the Heat Index Chart. As an example, if the air temperature is 95°F (found on the left side of the table) and the RH is 55% (found at the top of the table), the HI (or how hot it really feels) is 110°F. This is at the intersection of the 95° row and the 55% column.

Heat Wave Safety Tips

Slow Down. Strenuous activities should be reduced, eliminated, or rescheduled to the coolest available place, not necessarily indoors.

Dress for summer. Lightweight light-colored clothing reflects heat and sunlight, and helps your body maintain normal temperatures.

Drink plenty of water or other non-alcohol fluids. Your body needs water to keep cool. Drink plenty of fluids even if you don't feel thirsty. Persons who (1) have epilepsy or heart, kidney, or liver disease, (2) are on fluid restrictive diets or (3) have a problem with fluid retention should consult a physician before increasing their consumption.

Do not drink alcoholic beverages.

Don't get too much sun. Sunburn makes the job of heat dissipation that much more difficult.

Severe Weather Preparedness Week

National Weather Service
6900 West Hanna Avenue
Indianapolis, IN 46241-9526

http://www.weather.gov/safety.php *http://www.stormready.noaa.gov*

National Weather Service Contacts

INDIANAPOLIS, IN—David Tucek, david.tucek@noaa.gov, 317-856-0360 x726

NORTHERN INDIANA—Michael Lewis, michael.lewis@noaa.gov, 574-834-1104 x726

CHICAGO, IL—Jim Allsopp, jim.allsopp@noaa.gov, 815-834-0600 x726

LOUISVILLE, KY—Joe Sullivan, joe.sullivan@noaa.gov, 502-969-8842

PADUCAH, KY—Ricky Shanklin, ricky.shanklin@noaa.gov, 270-744-6440 x726

WILMINGTON, OH—Mary Jo Parker, mary.parker@noaa.gov, 937-383-0428

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE