Flash Flood Safety

A 5-Minute Safety Training

HS99-501E (05-21)

Flash floods are the number one weather-related killer in the United States.[1] Unfortunately, the geography and terrain in Texas are partly to blame. Named **"flash flood alley"** by the National Oceanic and Atmospheric Administration, Texas has reported over 500 flash flood events in the last 10 years.[2] Seven of those floods were declared federal disasters. While most of east Texas and the Gulf Coast region are subject to flooding, the Texas Hill Country in the center of the state is the most flash flood-prone area on the continent.[3]

The Cause

Two key factors – rainfall intensity and duration – contribute to flash flooding. **Intensity** is the rate of rainfall, and **duration** is how long the rain lasts. **Topography** (the natural and artificial features of an area), **soil conditions**, and **ground cover** also play important roles.

Timing

Flash floods occur within a few minutes or hours after excessive rainfall, a dam or levee failure, or a sudden release of water held by an ice jam. Most flash flooding is caused by a slow-moving thunderstorm, multiple thunderstorms repeatedly moving over the same area, or heavy rains from hurricanes and tropical storms.

Texas Flash Flooding

An estimated 20 million of Texas' 171 million acres are flood-prone – more than in any other state.[4] Texas' rocky, clay-rich soil, low coastal regions, and steep central terrain make the state vulnerable to flooding. The state's geographic location also makes it flood-prone because of the strong frontal air masses from the Great Plains and the intense storms from the Pacific Ocean and the Gulf of Mexico. When these weather conditions meet, rain may fall faster than the soil can absorb it. The surface runoff flows into the nearest stream or other natural or human-made channel. The result can turn a quiet streamside camp or a city street into a raging river in minutes.

The Impact

Flash floods can roll boulders, tear out trees, destroy buildings and bridges, and cut new channels in the Earth's surface. Rapidly rising water can reach heights of 30 feet or more during a flash flood. The rains that produce these flash floods can also trigger life-threatening and property-damaging mudslides.

In addition, floating debris can accumulate at a natural or human-made obstruction and restrict water flow. Water held back by a debris dam can cause flooding upstream and then flash flooding downstream if the obstruction suddenly releases.

Watches vs. Warnings

When a **flash flood watch** is issued, it means that current weather conditions are favorable for flooding. While a watch does not guarantee a flash flood, it is a good indicator that severe weather is coming. Those individuals in the specified area should remain alert and prepared for a flood emergency.

A **flash flood warning** means a flash flood is either imminent or occurring. In many instances, a flash flood occurs so quickly that there is no time to send out a flash flood warning alert. Individuals in the specified area should move to safe ground immediately.

Staying Safe

Rushing water has tremendous power. Since flash floods often happen with little warning, it is helpful to **prepare during dry times**. Create an emergency "go bag," develop an evacuation plan, and follow these safety tips to help save lives.

- **Monitor Local Weather Stations**
  Advanced warning is the key to saving lives. Listen to local media and keep a backup battery communication system, such as a weather alert radio, available to listen to storm advisories.
- **Follow Evacuation Orders**
  Know where all the evacuation routes are. If emergency managers say to evacuate, then do so!
- **Stay Away from Low-Lying Areas**
  Avoid creeks, trails, culverts, ponds, and other drainage infrastructure.
- **Move to Higher Ground**
  If water starts to rise, seek higher ground. This may mean getting on a roof. However, avoid seeking shelter in a closed attic or another area where people can get trapped by rising floodwater.

Staying Safe

- **Avoid Low-Water Crossings**
  Floodwater can wash out a bridge with little or no warning. If water is moving quickly under a bridge, turn around and find another route.
- **Avoid Driving through Floodwater**
  About 75% of flood-related deaths in Texas occur in vehicles.[5] It only takes 12 inches of water for a small sedan or SUV to float.[6] Check DriveTexas.org for known flooded roads.
- **Do Not Drive Around Barricades**
  Turn around and find an alternate route if a road is barricaded or if water is over the road. Keep in mind that the road may be heavily damaged underneath the floodwaters. Remember, "Turn Around Don't Drown."
- **Stay in the Vehicle if Surrounded by Fast-Moving Water**
  Unless water is rising inside the vehicle, do not exit the vehicle when surrounded by quickly moving floodwater. If water is rising inside the vehicle, get out and move to high ground.

References

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