U.S. Department of Commerce
National Weather Service
Quad Cities, Iowa/Illinois

INFORMATION SHEET

FLOODS: AMONG THE GREATEST NATURAL DISASTERS

Floods are one of the greatest natural disasters known to mankind. Over the past 50 years, flooding caused an average of almost $4 billion in damages and took more than 100 lives per year in the United States – more than any weather-related event. Three fourths of all presidential disaster declarations are associated with flooding.

Flooding occurs whenever water due to rain or snow melt accumulates faster than soils can absorb it or rivers can carry it away.

Flood Types

The variety of floods is as diverse as the nation's natural resources ranging from localized flash flood covering several city blocks to massive flooding encompassing up to a quarter of the area of the lower 48 states. Flooding can happen in the summer due to torrential rains often associated with severe thunderstorms and tornadoes, in the fall as a result of hurricanes, in winter due to ice jams, and in the spring as a result of melting snows.

Flash floods: Flash floods are typically caused by short, intense rainfall events over areas as small as a city to larger than a state. Water pools in low spots such as underpasses and basements because rain falls faster than the ground can absorb it. Widespread flash flood events are characterized by pockets of heavy rain with larger areas of lighter rain, making forecasting of exactly where the worst flooding will occur difficult. Year in and year out, flash floods take more lives than any other type of flooding. The cumulative effect of widespread, prolonged flash flooding can lead to flooding of major river systems.

Hurricanes: Hurricanes consistently capture the attention of the nation because of their destructive power. While the effects of extreme winds and massive coastal storm surges are widely recognized, the potential for severe flooding is not always appreciated. Warm, moist tropical air that serves to drive the winds in a hurricane can also lead to widespread hazardous flooding. Rainfall is sometimes measured in feet as opposed to inches. This deluge typically falls over the period of a day or two, overwhelming the ability of streams and rivers to carry it off, and resulting in extreme flooding.

Ice jam floods: When rivers clogged with ice rise rapidly due to rainfall and/or snowmelt, the ice breaks up into chunks, some larger than an automobile. These chunks of ice move downstream and can jam at constrictions in rivers such as bends, bridge abutments or shallow areas. The

effect is much like a traffic jam that occurs if travel lanes are closed due to an accident. The ice jam can act as a dam, causing water to back up behind it. River levels behind the ice jam can rise rapidly. On occasion, the ice jam can release quickly, sending huge chunks of ice downstream in the torrent, destroying everything in its wake.

Riverine flooding: Widespread excessive rain events produce flooding along waterways throughout the United States. River flooding can range from minor overbank events to massive, widespread inundation such as occurred along the Missouri and Mississippi Rivers in the summer of 1993. Such flooding may be caused by excessive rainfall alone, or a combination of heavy rainfall and snowmelt.

Snowmelt floods: Snow melts slowly enough that, by itself, it seldom causes flooding in many parts of the country. However, warm, moist conditions and heavy rain can combine with snow melt to cause dramatic winter and spring flooding. In relatively flat areas in the Midwest, river beds drop very slowly along the length of the river. As a result, the water in the river glides slowly downstream. In such areas, accumulation of melt water from over extensive snow-covered areas can cause significant flooding. This situation is often compounded by the effects of ice jams.

Flooding is sometimes also caused by dam breaks or levee failures.

NWS Monitoring

The National Weather Service monitors conditions that lead to flooding 24 hours a day, 7 days a week, and issues forecasts, watches and warnings, because flooding can occur any place and at any time. In the case of flash flooding, rapid dissemination of these forecasts, watches and warnings is especially critical.

NOAA Weather Radio provides up to the minute flood warnings. Receivers can be set to provide audible alarm even when they are turned off. This technology is critical to saving lives, particularly during nighttime disasters.

In addition, NWS works closely with national, state and local emergency managers to disseminate forecasts and warnings as well as to support their flood response activities.

Through the constant infusion of technology, the National Weather Service continues to improve flood forecasts with the goal of saving lives and reducing damage. For example, Doppler radar provides a powerful tool to provide pin-point warning information, particularly in the case of flash floods. By making forecasts more accurate and providing more lead time, public response to warnings appears to have improved, resulting in savings of lives.

As the millennium begins, the National Weather Service is implementing Advanced Hydrologic Prediction Service (AHPS) which leverages new technology and advances in hydrologic science to provide increasingly more accurate forecasts. Not only will AHPS allow better forecasting and response to flooding, but the will also transform water management activities, leading to improved reservoir management and provide information on how long drought conditions will affect river levels.

Citizen Safety

Unfortunately, most flood fatalities are not due to limitations in the forecast system. All too often, people in vehicles literally drive into harms way. As little as two feet of water can float an average car. Currently popular sports utility vehicles (SUVs) require only slightly more water to be swept away. While it may appear that water is not deep enough to cause problems, there is almost no way of knowing if the roadbed itself has been eroded or undermined. AVOID WATER, no matter how benign it may look. Don't gamble with your life.

FOR MORE INFORMATION

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You can also listen to **NOAA WEATHER RADIO** for more information.