



# Facts About Lightning

## Safety Tips for the Mariner

Factsheet Vol. 1

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## MESMERIZING BUT DEADLY

*Lightning kills more people in the United States in a year than tornadoes. Mariners are particularly at risk. Marine vessels are often the tallest objects in a large open space. Seeking the tallest objects, lightning has blown out the bottom of boats and caused millions of dollars in damage to navigational equipment.*

## WHAT IS LIGHTNING?

Lightning is the result of the buildup and discharge of electrical energy. The air in a lightning strike is heated to 50,000 degrees Fahrenheit. It is this rapid heating of the air that produces the shock wave that results in thunder.

A cloud-to-ground lightning strike begins as an invisible channel of electrically-charged air moving from the cloud toward the ground. When one channel nears an object on the ground, a powerful surge of electricity from the ground moves upward to the clouds and produces the visible lightning strike.

The danger of lightning poses a major threat to mariners. A direct lightning hit can damage or destroy vessels, overload navigational and other electronic systems, and electrocute crew and passengers.



*Multiple cloud-to-ground lightning strikes during a nighttime thunderstorm*

## HOW DO YOU KNOW IF YOU ARE IN DANGER?

### Lightning is a threat whenever:

- You see lightning or hear thunder
- You hear loud static on your AM radio
- You hear buzzing sounds on radio antennas
- Mastheads begin to glow

### St. Elmo's Fire

The glow on a masthead produced by an extreme buildup of electrical charge is known as St. Elmo's Fire. Unprotected mariners should immediately move to shelter when this phenomena occurs. Lightning may strike the mast within five minutes after it begins to glow.

The principle lightning safety guide is the 30-30 rule. The first "30" represents 30 seconds. If the time between when you see the flash and hear the thunder is 30 seconds or less, the lightning is close enough to hit you. If you haven't already, seek shelter immediately.

The second "30" stands for 30 minutes. After the last flash of lightning, wait 30 minutes before leaving your shelter. More than one half of lightning deaths occur after a thunderstorm has passed.

## How Close Is The Lightning And Is It Coming My Way?

You can tell how close you are to a lightning strike by counting the seconds between seeing the flash and hearing the thunder. For every five seconds you count, the lightning is one mile away. If you see a flash and instantly hear the thunder, the lightning strike is very close. Take shelter immediately.

A hand bearing compass can be used to determine if you are in the path of a storm. By observing the storm's ground flashes and using a series of bearings, you can plot the approach of a thunderstorm. If the bearing of the flashes doesn't change, the average storm is heading toward you. It is time to alter your course.

## What To Do When Lightning Threatens?

### Before Setting Out on the Water

Before setting out to sea know what conditions to expect. Listen to a NOAA Weather Radio for weather information and plan your trip accordingly. If severe weather is approaching or forecast, the best bet is to stay ashore.

When thunderstorms threaten, mariners should stay away from the water, get to shore if already underway, get out of their vessels and seek shelter immediately inside a sturdy, closed building, vehicle or below decks.

Even when conditions look good, mariners should still leave a float plan with a marina or someone ashore and make sure they have an escape route planned in case a thunderstorm cuts off the original course back to land. Conditions can change from good to bad very quickly.

### Out on the Water

If a thunderstorm catches you while you are at sea, follow these safety guides:

- Keep away from metal objects not grounded to the vessel's protection system. Contact with them during a direct hit can cause electrocution.
- Stay out of the shower. The electrical charge often travels along and through plumbing.
- Wear a life jacket at all times. A victim struck by lightning can be rendered unconscious and fall overboard.
- Stay tuned to NOAA Weather Radio for the latest warnings, watches, advisories, and forecasts from the local National Weather Service office.

## Remember...

**Lighting occurs in all thunderstorms, preparedness can reduce the risk of lightning hazard.**

**For more striking facts about lightning check out the following Web site:**

**[lightningsafety.noaa.gov](http://lightningsafety.noaa.gov)**