



Cape Cod Emergency Preparedness Handbook



A r e Y o u R e a d y ?

A Guide to Natural Disasters

Table of Contents

HURRICANES	1
PLANNING FOR PEOPLE WITH SPECIAL NEEDS	6
DISASTER SUPPLY KIT	8
FLOODS	10
NOR'EASTERS AND WINTER STORMS	12
TORNADOES	14
SHELTERS ON CAPE COD	
Map of shelter locations.....	16
What to Expect in a Storm Shelter.....	17
THUNDERSTORMS AND LIGHTNING	18
HEAT WAVES	19
WILDFIRES	20
PREPARING YOUR BOAT FOR A STORM	22
PROTECTING PETS IN THE EVENT OF A DISASTER	24
DRIVING IN A DISASTER	25
POWER OUTAGES	26
GENERATOR SAFETY	27
UNDERSTAND YOUR STORMWATER DRAINAGE SYSTEM	28
HOUSEHOLD HAZARDOUS PRODUCTS	29
HURRICANE TRACKING CHART	32
IMPORTANT CONTACTS	33

Sources of Information:

The information in this Handbook is a compilation of reference material from a variety of existing sources. It is modeled after the 2003 *All Hazards Guide* from Collier County, Florida. With permission much of the text herein is taken directly from that publication, though tailored to the risks and environment of Cape Cod, Massachusetts. Specific references to materials other than Collier County's Guide are provided throughout this Handbook.

A reader seeking additional information and the original sources are encouraged to contact the Cape Cod Chapter of the American Red Cross at (508) 775-1540, their local emergency manager, or their local police or fire department. For a listing of American Red Cross general disaster preparedness materials see:

www.redcross.org/pubs/dspubs/genprep.html; www.capecodredcross.org

We also encourage readers to visit the following web sites to search for additional information about risks and preparedness: www.fema.gov; www.noaa.gov

This Guide focuses on risk and preparation for natural disasters. We also take the opportunity to provide information on household hazardous products. In today's political climate, terrorism is certainly an issue on everyone's mind. If you seek information about preparedness in the face of a terrorist threat, please visit www.ready.gov.

Funding and Production:



CAPE COD COMMISSION

Cover Photos:

Front Cover, clockwise: S. Albers, Jim O'Connell, NOAA, NOAA.

Back Cover, clockwise: S. Teper, Jim O'Connell, Jim O'Connell, unknown.

See the back cover for a list of groups who collaborated to produce this handbook.

The Cape Cod Commission, a department of Barnstable County, funded and coordinated the production of this publication through its *Project Impact Cape Cod* program grant, a national program established by FEMA to empower communities to address disaster resistance and hazard mitigation at the regional and local levels. For more information visit www.capecodcommission.org/projectimpact or call the Commission at (508) 362-3828.

This 2007 updated edition was made possible by the generosity of Cape Cod Healthcare.

©2007 Cape Cod Commission. Third printing. Design/Production by Margo Tabb Graphic Design, Inc.

Hurricanes

Understanding Hurricanes

Of all the natural threats that might affect Cape Cod, hurricanes have the potential to cause the most property damage and loss of life if adequate planning and preparation is not undertaken.

The National Weather Service's National Hurricane Center/Tropical Prediction Center in Miami, Florida, has the responsibility of monitoring conditions in the tropical Atlantic, Caribbean Sea, Gulf of Mexico and the eastern Pacific for potential tropical storm development. The Center has many tools at their disposal including satellites, weather reconnaissance aircraft, radar and several computer models that help the forecasters to create forecasts covering several days. Although hurricanes can produce tremendous damage they can, unlike other threats, be tracked for several days before impacting a community – giving residents and visitors time to prepare and evacuate if necessary.

HURRICANE SEASON

The Atlantic Hurricane season runs from June 1st through November 30th. Based on the number and intensity of storms, mid-August through mid-October is defined as the peak months. During the months of June and July, hurricanes tend to form in the Caribbean and the Gulf of Mexico. By mid-August, as the waters of the tropical Atlantic warm, the focus turns to the Eastern Atlantic in the vicinity of the Cape Verde Islands off the African coast. The tropical waves intensify as they move westward, become tropical depressions, then tropical storms and finally hurricanes. Most of these storms turn northward around the peripheries of the semi-permanent Bermuda and Azores high-pressure areas, but can become exceptions to the rule and affect the Atlantic and Gulf Coast states. By early October, the waters over the Atlantic begin to cool and the focus for storm development shifts to the Caribbean and the Gulf of Mexico.



Photo above and in background courtesy of Jim O'Connell, ©2004

DECIPHERING THE FORECAST

Emergency managers, hurricane center forecasters, and TV meteorologists have created unique terminology for hurricanes and tropical storms. Below are a few definitions that may help you better understand storm information.

Tropical Depression: A closed circulation of low atmospheric pressure, originating over tropical waters, winds blow counter-clockwise around a center at speeds less than 39 mph.

Tropical Storm: A closed circulation of low atmospheric pressure, originating over tropical waters, winds blow counter-clockwise around a center at speeds ranging from 39 to 73 mph.

Hurricane: A violent storm over tropical waters with sustained winds of 74 mph or greater. The winds blow in a counter-clockwise direction around a storm center which may range from 100 miles to several hundreds miles in diameter. The most intense weather is usually found in the right-front quadrant of the storm.

Forecast Advisory: Advisory messages are issued by the National Hurricane Center for all tropical depressions, tropical storms and hurricanes at six-hour intervals. These advisories are increased to three-hour intervals when landfall is expected within 24 hours. An advisory gives details as to where the storm is located, its intensity, direction and speed of movement. Precautionary measures are given for ships and coastal residents near the storm center.

Tropical Storm Watch: An announcement made for specific coastal areas when tropical storm conditions may pose a threat within 36 hours.

Tropical Storm Warning: An announcement warning of tropical storm

conditions, including sustained winds of 39-73mph, that are expected in specific coastal areas within 24 hours.

Hurricane Watch: Indicates that a hurricane is near enough that everyone in the "watch" area should listen for advisories and be ready to take protective measures if a Hurricane Warning is issued.

Hurricane Warning: Issued when a hurricane is expected in a specified coastal area within 24 hours or less. When a Hurricane Warning is issued, all precautions should be taken immediately. If a hurricane's path is erratic, the warning may be issued only a few hours before the onset of hurricane conditions.

WHAT ARE THE REAL HAZARDS INVOLVED DURING A HURRICANE?

Some people can't visualize the total devastation that a hurricane can cause. Some of us have experienced or seen the massive damage from the Hurricane of 1938, but most of us have not.

Hurricane Bob, while destructive in its own right, was only a relatively weak Category 2 storm. It can, and sometimes it likely will, get much worse. Always prepare for the worst.

Wind: Strong surface winds of 74 to 200 mph can cause a barrage of flying debris. Hurricane force winds can sever power and communication lines. Winds in excess of even just 45 mph begin to cause damage to traffic signals and topple trees (also bringing down power lines).

Tornadoes: Tornadoes may form in the rain bands of a hurricane and cause significant damage. They are commonly found in the right front quadrant of an approaching storm. Although these tornadoes are not as intense as those that form in the Midwest tornado belt they can still inflict tremendous damage with little or no warning. There were four reports of tornadoes as Hurricane Bob came ashore.

Heavy Rain: Torrential rains are associated with slow moving or stationary tropical weather systems. In addition to flooding residences and businesses, heavy rain may overcome the Cape's storm drain systems and cause severe flooding or structural failure of roads or culverts.

Storm Surge: Rapidly rising storm surge is the hurricane's main threat to life. Storm surge is a dome of water that moves ashore to the right of the hurricane eyewall. It can be the primary risk to life if adequate evacuations are not done. In the case of Cape Cod Bay, storm surge will actually affect the shoreline, and particularly Wellfleet Harbor, shortly *after* the storm has passed. Residents and visitors should be aware to remain well above surge elevations until all threats have passed. Storm surge causes salt water flooding that can render evacuation routes impassible, cripple communications, cause sewers and storm water basins to back up, and contaminate drinking water supplies. Storm surge flooding can wash out roads and leave streets filled with sand and debris, rendering them impassible long after surge waters have receded.

The *Southeastern Massachusetts Hurricane Evacuation Study* was conducted in December 1994 by the U.S. Army Corps of Engineers, New England Division, in conjunction with the Federal Emergency Management Agency, for the Massachusetts Emergency Management Agency. This study produced two atlases that identify hurricane evacuation zones and SLOSH zones.

The SLOSH (Sea, Lake, and Overland Surges from Hurricanes) Model is a computer model that was designed by the National Weather Service to forecast surges that could occur from wind and pressure forces of hurricanes. The model is applied to the Cape to estimate potential flooding from hurricanes that may make landfall in New England. Surge limits shown on the community maps represent potential flooding that may occur from critical combinations of hurricane track direction, forward speed,

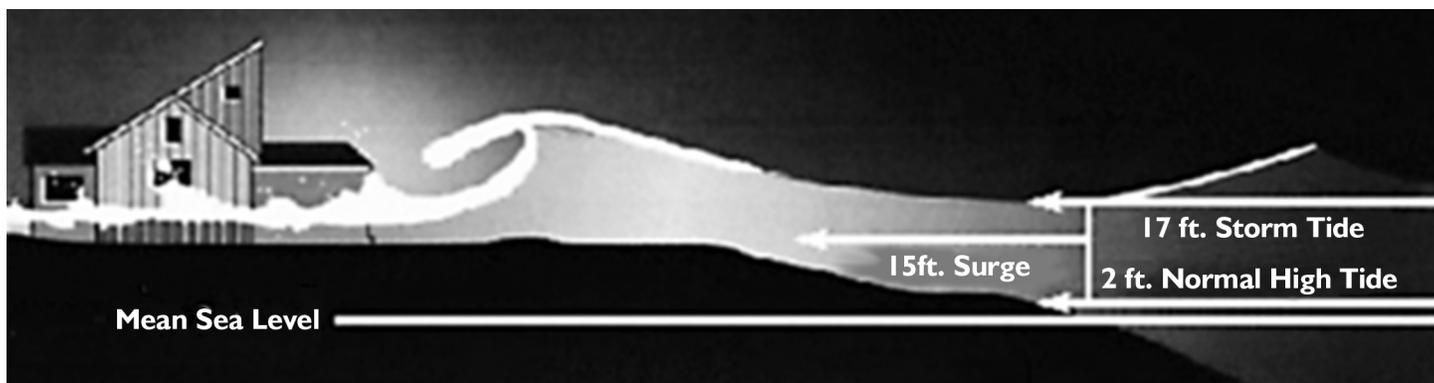
SAFFIR/SIMPSON SCALE

To make the predicted hazards of an approaching storm easier to understand, forecasters and engineers have created this *disaster potential scale*, which assigns hurricanes to five categories of hurricane intensity.

Category	Wind Speed and Potential Effects	Storm Surge
1	Winds 74-95 mph: No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Some damage to poorly constructed signs. Also, some coastal road flooding and minor pier damage.	4 – 5 ft.
2	Winds 96- 110 mph: Some roofing material, door, and window damage to buildings. Considerable damage to shrubbery and trees with some trees blown down. Considerable damage to mobile homes, poorly constructed signs, and piers. Small craft in unprotected anchorages break moorings.	6 – 8 ft.
3	Winds 111-130 mph: Some structural damage to small residences and utility buildings with a minor amount of curtain wall (a nonbearing exterior wall) failures. Damage to shrubbery and trees with foliage blown off trees and large trees blown down. Mobile homes and poorly constructed signs are destroyed. Flooding near the coast destroys smaller structures with larger structures damaged by battering from floating debris.	9 – 12 ft.
4	Winds 131-155 mph: More extensive curtain wall (a nonbearing exterior wall) failures with some complete roof structure failures on small residences. Shrubs, trees, and all signs are blown down. Complete destruction of mobile homes. Extensive damage to doors and windows. Major damage to lower floors of structures near the shore.	13 – 18 ft.
5	Winds greater than 155 mph: Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. All shrubs, trees, and signs blown down. Complete destruction of mobile homes. Severe and extensive window and door damage. Massive evacuation of residential areas on low ground may be required.	18+ ft.

landfall location, and high astronomical tide. **Cape residents should review these SLOSH maps to understand the potential for storm surge in their area and the potential need for evacuation.**

Sources:
www.nesec.org;
www.erh.noaa.gov/box/HurricaneInfo.shtml;



Storm Surge Model, courtesy FEMA

Hurricane Preparations for Home and Family

BEFORE THE HURRICANE SEASON...

Securing and Retrofitting Your Home

The best time to plan for the protection of buildings is probably during the construction process. Through careful design of buildings, stresses can be reduced and damage minimized. Roof pitch, structural fasteners, window size and placement all can have a dramatic effect on the amount of damage done by a storm. You can also plan, and build in anchors for shutters or boards. They may be hidden in many ways, yet be easy to find and use when a storm threatens.

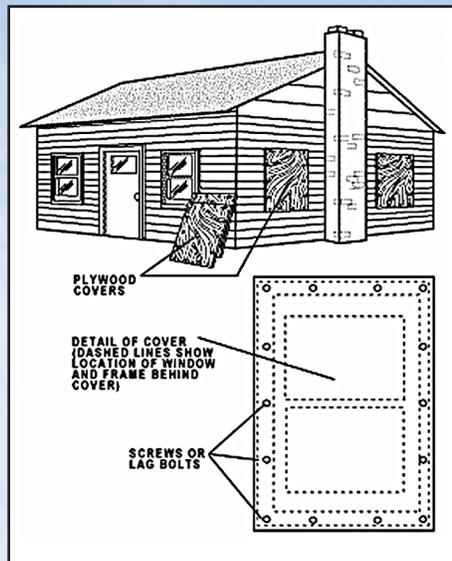
Most of us are not dealing with construction plans. **We are looking at protecting our existing homes and buildings from storm damage.** The most important precaution you can take to reduce damage to your home and property is to protect the areas where wind may enter. According to recent wind technology research, it's important to strengthen the exterior of your house so wind and debris do not tear large openings in it. You can do this by protecting and reinforcing in five critical areas: roofs, straps, shutters, doors, and garage doors.

Here are some actions you should take:

- Locate a safe place outdoors to store and anchor gas grills and propane or LP gas tanks. If damaged in a storm they can become a leaking, potential BOMB or flying missile.
- Keep outside areas free of loose objects. Any object outside should be considered a storm threat; either tie it down or find some other way to secure it.
- Make repairs to your home when necessary. Replace worn or rotted wood, seal cracks in concrete block, and otherwise block potential openings caused by wear.
- Keep your trees healthy. Make them more wind resistant by removing diseased and damaged limbs. Strategically remove branches so that wind can blow through.

- Strap and secure your oil tank to the wall or foundation. If your basement floods and the tank breaks free significant environmental contamination can result to complicate your clean-up.
- Elevate your utility box out of the basement or above flood elevation.
- Become familiar with removable equipment such as window air conditioners and roof turbines, so they may be removed quickly and the openings secured.
- **Window Protection.** Professionally installed, permanent impact-resistant shutters or laminated window systems (a plastic safety film mounted directly to your windows) are ideal for buildings in vulnerable areas. As an alternative to shutters and window film, properly attached, exterior grade plywood offers excellent storm protection. A minimum thickness of 5/8 inch is recommended.

Prepare the boards with reinforcement where necessary. If you install permanent anchors, prepare and mark each board for a specific location. Store boards in a cool, dry place, and have fasteners on hand. Pressure equalization holes in the center of the boards are essential! Masking or duct tape may control window shattering somewhat, but will not prevent breakage of glass, nor will tape



keep out wind and water damage once the glass has broken.

For details on how to implement these cost effective security/retrofit measures visit www.nhc.noaa.gov/HAW2/english/retrofit/secure_home_printer.shtml, or contact the Cape Cod Chapter of the American Red Cross at (508) 775-1540 for a copy of *Against the Wind: Protecting your Home from Hurricane Wind Damage*.

Advanced Preparation for You and Your Family

☐ Things you should know well in advance of a storm:

- Contact your local Emergency Manager (*see inside back cover for listings*) to learn:
 1. Where your emergency shelter is in case you must evacuate.
 2. Your safe evacuation route.
 3. The elevation of your property above mean sea level.
 4. If you are located in an evacuation zone or SLOSH zone.
- Know where utility lines enter your home so you can avoid the area after a storm.
- Know where the emergency shut-off is for electricity at the main panel, as well as for water, natural and bottled gas lines

☐ Compile your Disaster Survival Kit (*see pages 8 and 9*).

☐ Make a disaster plan for your pets. Pets are not allowed in Red Cross Storm Shelters (*see page 24*).

☐ Gather important documents (birth certificates, insurance policies, health records, mortgages, deeds, titles, financial documents) in one place, ready to take with you. Any documents you may need after a storm or flood should be gathered now and kept in a protected place. Check your insurance policy and understand for what hazards you are and are not covered.



Photo above courtesy of Jim O'Connell, ©2004

- ❑ **Make your own checklist** of things you'll want or need to do under a watch and a warning. If you are in a highly vulnerable flood zone, plan your evacuation route and a timetable. **Stay familiar with your plan!**
- ❑ **If you plan to evacuate the area,** plan to stay away up to 2-3 weeks. It could take that long or longer for public safety personnel to make the area safe for re-entry. If you have questions about your situation and your plan, ask now! Don't wait until the storm is nearly here, or it may be too late to get an answer.
- ❑ **Prepare your Family Disaster Plan.** Knowledge about hurricanes is not enough to protect you and your family. You must put this information to work. Review what you will need to do to prepare and protect yourself, your family and your property. The following options will help you make the correct choices:

Option A – Stay at home

If your home can withstand the anticipated winds, is away from the coast and on fairly high ground, and is not in a flood prone area then plan to stay at home.

Option B – Stay with a relative, friend, or hotel located outside the areas required to evacuate

If you expect to stay at someone else's home or a hotel, make advance arrangements. If staying at a friend or relative's home, be certain it is adequately prepared and is located in a safe area. Consider where you will go if the friend or relative is out of town.

Option C – Relocate off Cape

Your town's emergency management officials have developed a sheltering and evacuation policy for landfalling storms. If you are visiting the Cape, you may have to travel considerable distances on unfamiliar roads and should include a current road map as a part of your disaster supply kit. Know where you are going and plan, not only the best route, but alternate routes. Leave early to avoid heavy traffic, possible flooding and high winds. If you wait until the Hurricane Warning to leave, you may find heavy traffic congestion and possible closures at the Bourne and Sagamore bridges.

Option D – Public shelters

Local Officials will open public shelters in areas outside of the

evacuation area. A public shelter should be your last option and used only if you have no other safe place to go. Do not report to a shelter until it has been opened. Consult the map on page 16 for potential shelter sites. Be familiar with their locations and the most direct routes from your home to the shelters. Pets are not allowed in Red Cross shelters and alternative arrangements must be made for them. Do not wait until the last minute to activate your plan. If an evacuation order is given, move quickly but without panic.

BEFORE THE COMING STORM...

When a WATCH is Issued

- Stay tuned to a NOAA weather radio, radio, or TV for official bulletins of the storm's progress
(see inside back cover for listings).
- Fill up the gas tanks in your cars and have extra cash on hand (for evacuation or use after the storm). Service stations and bank machines run on electricity and may be out of service for a while.
- Inspect and secure mobile home tie downs.
- Prepare to cover all windows and doors with shutters or plywood.
- Locate your family's Disaster Kit or **STOCK UP NOW** if not already prepared.
- Tie down or bring inside all outdoor loose objects that could blow away or become dangerous projectiles (grills, lawn furniture, garden tools, toys, etc.). **Make sure your neighbors are doing the same!**
- Boat owners – activate your storm plan now – haul it, move it to a safe harbor, check the mooring, or secure the lines (see page 22).
- Plan to leave if you live in a mobile home, live on the coastline, in a surge zone, or flood plain.
- Check your neighborhood for anyone who might need extra help. Be particularly aware of people living alone or who are in poor health and may be in serious difficulty if a power outage occurs.

DURING THE STORM...

When a WARNING is Issued – Act Promptly!

If you remain at home:

- Listen to the advice of local officials, and **evacuate if so advised**.
- Complete preparation activities.
- Stay indoors, away from windows.
- Bring your pets indoors. Secure them inside — they may become agitated and not act as you may expect.
- Turn your refrigerator to the maximum setting and don't open it unless necessary.
- Fill all airtight containers with drinking water. Fill up bathtubs or large containers for use in flushing toilets.
- Stay on the leeward or downwind side of your house. As wind direction changes, move to an “inside” room, and stay there.
- Be aware that the calm “eye” is deceptive; the storm is not over. Do NOT go outside. The worst part of the storm will happen once the eye passes over and the winds blow from the opposite direction. Trees, shrubs, buildings, and other objects damaged by the first winds can be broken or destroyed by the second winds.

- Be alert for tornadoes. Tornadoes can happen during a hurricane and after it passes over. Remain indoors, in the center of your home, in a closet or bathroom without windows.

If you must evacuate:

- Leave early for the shelter – in daylight if possible. Don't travel any farther than absolutely necessary.
- Lock all windows and doors at your property.
- Turn off water and electricity at main shut-off valves to your house.
- Take your family's Disaster Kit with you to the shelter. You cannot bring your pets and need to execute the plan you have made for them at this time.

AFTER THE STORM...

- Stay away from flood waters. If you come upon a flooded road, turn around and go another way. If you are caught on a flooded road and waters are rising rapidly around you, get out of the car and climb to higher ground.
- Do not touch or approach any loose or dangling wires. Report them to 9-1-1 immediately.
- Keep listening to your NOAA weather radio and local radio or TV stations for instructions (*see inside back cover for listings*).

- If you are evacuated, return home only when local officials tell you it is safe to do so.
- Inspect your home for damage.
- Use flashlights at all times; avoid using candles or other open flames.
- Use only the water that you've taken with you or stored before the storm or that has been declared safe by public health officials.
- Don't eat food that was opened or damaged in any way by the storm.
- Stay alert to announcements on where to apply for assistance if you suffered losses.
- Contact your insurance company to report property damage.

Sources:

www.ibhs.org; www.lope.state.la.us/factsheets/WindShutter&WindowCovers.htm; www.nhc.noaa.gov/HAW2/english/retrofit/secure_home_printer.shtml; American Red Cross publications #4454, 5023, 5030, 5040.



Photo above courtesy of Jim O'Connell, ©2004

Planning for People with Special Needs

Anyone who has a disability, or anyone who is involved in the care of a disabled person, should contact their local Emergency Medical Services provider (i.e., fire department and/or rescue squad) to advise them of the persons' location and potential needs during a weather related emergency.

The state's 9-1-1 emergency system enables people with special needs to register their disability into the system, therefore enabling emergency responders to better assist them when a 9-1-1 call comes in. Complete and submit the **Disability Indicator Form** located at www.state.ma.us/e911/info.htm.

PREPAREDNESS FOR PEOPLE WITH DISABILITIES

Anyone who has a disability, or anyone who is involved in the care of a disabled person, should obtain and use the following publication to develop a personal disaster plan NOW:

Disaster Preparedness for People with Disabilities by the American Red Cross, Disaster Services

This guide is designed to help people who have physical, visual, auditory, or cognitive disabilities to prepare for natural disasters and their consequences. **To obtain a copy of this publication, contact the American Red Cross, Cape Cod Chapter at (508) 775-1540.**

PREPAREDNESS FOR PEOPLE WITH BREATHING PROBLEMS

The American Lung Association urges everyone with a breathing problem to develop a personal hurricane plan NOW. Do not wait until the next storm event is predicted or upon us. Take the following information to your physician before finalizing your personal plan and always be guided by his or her advice.

In most cases, unless you live in a hurricane evacuation area, it is best for you to ensure that your home is protected and remain there with a friend or family member. If you cannot stay in your own home, stay with family or friends in a protected home. Shelters are crowded and uncomfortable and will not have air conditioning or other services if electrical power is interrupted and no generator is on site. Go to a shelter ONLY as a last resort. Remember that hospitals are reserved as the place to treat injuries and life threatening situations.

Before Hurricane Season

At your next physician appointment discuss hurricane preparedness and ask for specific recommendations. Ask the following questions:

- How often can I take a breathing treatment if I get short of breath?
- Should I keep a two-week supply of all medications on hand?
- If my condition changes, when should I go to a hospital?
- What procedure should I follow and what hospital should I go to?
- How should I get there?
- What about taking breathing treatments if the electricity fails? Possible options include:
 1. Substituting a metered-dose inhaler for treatment.
 2. Purchasing a portable battery operated nebulizer.
 3. Buying a DC inverter. (These inverters may be ordered from electronics stores. Before purchasing an inverter, check with your medical equipment vendor to assure compatibility of the inverter with your specific nebulizer and ask about the safety precautions.)

If you use oxygen at home

If you use oxygen, call your medical supply vendor now and ask for information on services they will provide in the event of a hurricane and/or power failure. Remember that oxygen should always be kept at least 10 feet from any open flame. **Some questions to ask the medical supply vendor include:**

- Will my full oxygen backup last at least 48 hours? If you do not have a backup cylinder, ask for one.
- Will you deliver additional oxygen cylinders in threatening weather?
- How should I store oxygen cylinders?
- What supplies will I need for cleaning respiratory equipment? Request a written procedure for cleaning the equipment.
- What is your plan to replenish my oxygen supply after the storm?

Ventilators

Patients using a ventilator should speak with their physician and medical supply vendor about obtaining a backup battery in case of a power failure during or following the storm.

THINGS TO CONSIDER WHEN DEVELOPING YOUR PERSONAL PLAN...

If dependent on oxygen therapy?

Contact your local Emergency Medical Services provider to give notice of your potential needs prior to an actual incident.

Should I stay home or go somewhere else?

- Inform local emergency officials, family members and close friends of your decision to relocate.
- Prepare contact information for emergency officials to assist them in the event they receive inquiries as to your well being.

- ❑ If relocation to a shelter is your only option you **MUST** plan to relocate **EARLY!** Contact your local Emergency Medical Services provider so they may prepare for your arrival, and assist in transportation if necessary.

PRACTICAL POINTS

It is most important that you **REMAIN CALM**. Emotional stress increases your heart rate, quickens breathing, makes breathing more difficult and demands more oxygen from the body.

1. Use only battery powered lights. Do not use candles or open flames for any reason around oxygen equipment.
2. Practice pursed-lip breathing, diaphragmatic breathing and conditioning exercises to help you breathe easier.
3. Assemble and check your survival kit. In addition to the items recommended for a **Disaster Kit on pages 8 and 9**, you should keep the following:
 - ❑ **14-day supply of medications**
 - ❑ **Small cooler with frozen gel packs**
 - ❑ **Supplies for cleaning respiratory equipment** including vinegar, water, liquid detergent, a dish pan and paper towels
 - ❑ **Backup oxygen cylinder**
 - ❑ Keep **important papers** such as your medical identification cards, physician's name and phone number, and other vital information in a handy place. Put important papers in waterproof containers.

Sources:

Harwich Fire Department;
www.lungusa.org;
www.stluciecountyhealth.com/emergency/breathing-probs.htm



Photo above courtesy of Gary Prahm, ©2004

Disaster Supply Kit

Prepare For AT LEAST 72 Hours

Although hurricanes are a major threat to our area, there are other events that may occur that may involve evacuation from your home. Brush fires, hazardous material spills, floods and tornadoes all have a potentially disruptive influence on our daily activities. To prepare for the unknown, each home should have a 72-Hour Disaster Survival Kit. You will need to pack some essential items to help you and your family to survive whether you stay at home or seek other shelter during a disaster. Ensure a minimum of three days (72 hours) supply for each person.

FOOD

Non-perishable packaged or canned foods (that require little or no preparation or cooking):

- Ready to eat canned meats, fruits and vegetables (include a manual can opener)
- Canned juices, milk, soup (if powdered, store extra water)
- Staples – sugar, salt, pepper
- High energy foods – peanut butter, jelly, crackers, granola bars, trail mix, dried fruits
- Vitamins
- Comfort/stress food – whatever that is for your family! Typically cookies or treats, instant coffee, tea bags

Special food for infants — baby food, cereals, breast milk, formula

Note: If power fails, pumped breast milk may not remain frozen or may be inaccessible. Nursing mothers should have a contingency plan for the feeding of their baby in case they are separated from their infant.

Special food for the elderly or people with allergies as required

Non-perishable pet food

Preparation and eating supplies:

- manual can-opener
- paper plates/plastic utensils (to avoid needing wash water), or mess kits
- cooking utensils
- sterno, camp stove, or a charcoal or gas grill for outside use only

WATER

1 gallon per person per day— 2 quarts for drinking/2 quarts for food prep and sanitation. Don't forget water for your pets!

Hot environments and intense activity can double the amount typically needed. Nursing mothers, children, and ill people will need more than 2 quarts per day.

- **Store water** in sterile, plastic containers, such as soft drink bottles.
- **Avoid storing in bottles** that will decompose or break such as milk cartons or glass bottles

FIRST AID KIT

Basic First Aid Manual

Epinephrine auto-injection device (This device should be obtained by anyone with a previous history of severe allergic reactions to bee stings, food, other environmental allergies, etc.. Even if this device is self-administered, contact 911 as early as possible to ensure positive patient outcome.)

Sterile adhesive bandages in assorted sizes

2 and 4 inch sterile gauze pads (4-6 each)

Hypoallergenic adhesive tape

Triangular bandages (3)

2 and 3-inch sterile roller bandages (3 rolls)

Scissors and tweezers

Needle

Moistened towelettes

Antiseptic

Thermometer

Tongue depressor (2)

Petroleum jelly or other lubricant

Safety pins (assorted sizes)

Cleansing agent/soap

Latex gloves (2 pair)

Medicine dropper

Sunscreen

Non-prescription drugs: aspirin, non-aspirin pain reliever, anti-diarrhea medication, antacid, laxative, activated charcoal and syrup of Ipecac (use only if so advised by the Poison Control Center)

TOOLS AND SUPPLIES

Battery operated radio and extra batteries

Flashlights and extra batteries

Road map for locating shelters and **compass**

Signal flare and whistle

Non-electric can opener

Utility knife

Fire extinguisher (small canister, ABC type)

Pliers

- Duct tape**
- Plastic sheeting**
- Matches in a waterproof container**
- Aluminum foil**
- Paper, pencil**
- Needles, thread**
- Shut-off wrench**, to turn off household gas and water
- Sanitation:** toilet paper, towelettes, and bucket with tight fitting lid
- Soap, liquid detergent**
- Plastic garbage bags with ties**
- Unscented, pure household chlorine bleach**

CLOTHING AND BEDDING

- Blankets, pillows, sleeping bags**
- Sturdy shoes or work boots**
- Wet and Cold weather clothing:** rain gear, hat and gloves, thermal underwear

Include **at least one complete change of clothing and footwear** per person

SPECIAL ITEMS

- Baby needs** — diapers, wipes, bottles, and medications, etc.
- Personal medications**
- Extra set of **eye glasses or contact lenses**
- Cash, change**
- Sanitary supplies**
- Personal hygiene items**
- Entertainment:** books, cards, small games

- Important Family Documents:** Keep these records in a waterproof, portable container: wills, insurance policies, deeds, stocks, bonds, passports, social security cards, immunization records, bank account numbers, credit card account numbers, inventory of valuable household goods, important telephone numbers, birth, marriage and death certificates, etc.

STORAGE OF EMERGENCY SUPPLIES

It is best to store your emergency supplies in one location. Be sure all family members know where the kit is located. Choose a place in your home that would be relatively safe in time of disaster (such as a closet or under a bed). The perishable supplies will remain stable longer if stored in a cool, dark location. If you are in an evacuation zone, be sure the container(s) you choose can fit in your car.

Consider a large, covered trash container or large plastic tub with a tight fitting lid — where items can be layered and kept together. A camping backpack or duffel

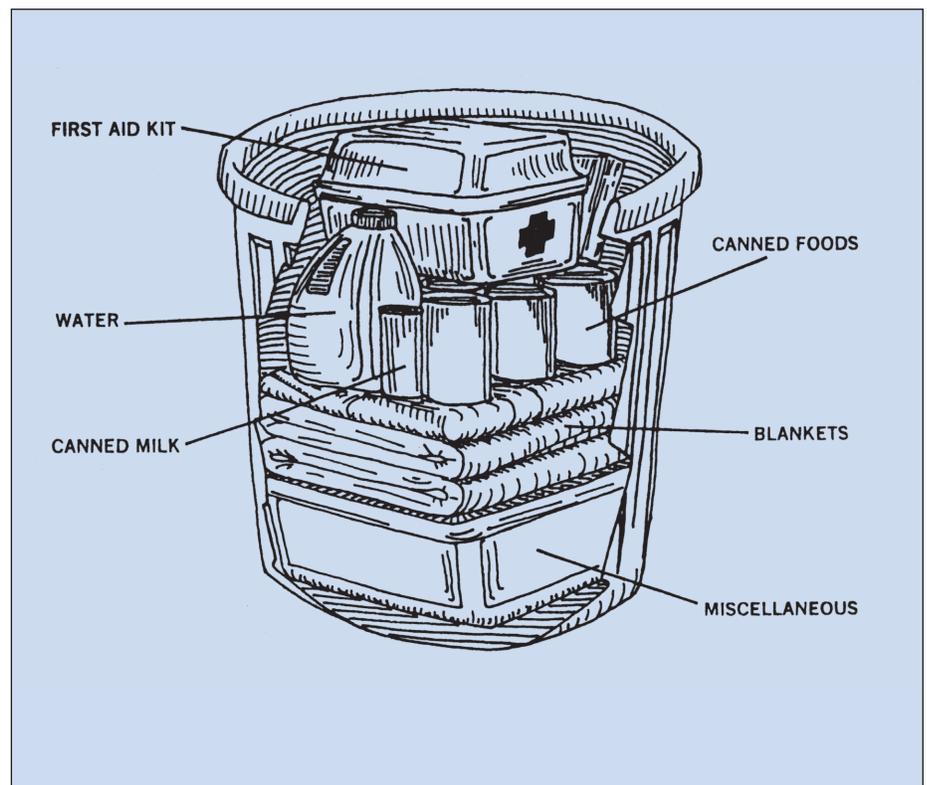
bag is also a convenient choice. It is best to store plastic water containers on top of the contents rather than on the bottom where they could possibly crack and leak from the weight of heavy objects placed on top of them.

MAINTAINING YOUR EMERGENCY KIT

- Every 6 months:** remember to change your stored water and rotate your stored food supply to ensure that they stay fresh.
- Once a year:** re-think your kit and family needs, replace batteries, update clothes, etc.
- Ask your physician or pharmacist** about storing prescription medications.

Sources:

For details on preparing your supplies and surviving during an event see the following Red Cross publications: Hurricane Preparedness: Before the Wind Blows; Your Family Disaster Supplies Kit; Food & Water in an Emergency; Your Family Disaster Plan; Emergency Preparedness Checklist; Disaster Preparedness for Seniors by Seniors.



Floods



Photo above and in background courtesy of Jim O'Connell, ©2004

Cape Cod is no stranger to flooding. While we are not subject to the intense inland riverine flooding that plagues many states, coastal flooding and storm surge inundation are our main concern. It doesn't take a major event for flooding to result in many areas — many of our storm drain systems are overcome during small rain events, which flood roadways and personal property.

There are many things you can do to protect your home and business from flooding. Actions you should take depend on the flood hazard in your area, the characteristics of your property, and the zoning and building codes in your community. Some methods are fairly simple and inexpensive while others may require a professional contractor.

Do you know your flood risk?

Call your local emergency manager or building department for information about flood risk in your area. Ask to see a flood map and SLOSH map of your town. There may be a projected flood elevation for your neighborhood. This information will help you determine how much water is likely to come in.

Do you have enough (any?) flood insurance?

Even if you have taken steps to protect your home from flooding, you still need flood insurance if you live in a floodplain. Know what your policy does and does not cover. Homeowners' policies do not cover flood damage, so you will probably need to purchase a separate policy under the National Flood Insurance Program (all 15 Cape towns are members of the NFIP). It takes 30 days for a flood policy to take effect, therefore purchasing one when a storm is predicted will do you no good — you must plan ahead.

ADVANCED ACTIONS YOU SHOULD TAKE...

- Relocate your main electric switchbox above potential floodwaters.**

- Relocate electric outlets and switches above potential floodwaters.**

Consider elevating all electric outlets, switches, light sockets, baseboard heaters and wiring at least one foot above projected flood elevation. You may also want to elevate the point at which electric service lines enter your home.

- Relocate your washer, dryer, furnace and water heater above potential floodwaters.**

For protection against shallow floodwaters, these major appliances and systems should be elevated to at least one foot above projected flood elevation. Other options are moving them to a higher floor, or building a floodwall around them.

- Securely anchor your fuel tank.**

A fuel tank can tip over or float in a flood, causing fuel to spill or catch fire. Cleaning up a house that has been inundated with floodwaters containing fuel oil can be extremely difficult,

dangerous, and costly. Fuel tanks should be securely anchored to the wall or foundation. Make sure the vents and fill line openings are above projected flood levels.

- Retrofit your floor drain with a float plug.**

Install a floating floor drain plug at the current drain location. If the floor drainpipe backs up, the float will rise and plug the drain.

- Retrofit your sewer or septic system with a backflow valve.**

If floodwaters enter the sewer system or overcome a septic system, sewage can back up and enter your home. To prevent this, have a licensed plumber install an interior and exterior backflow valve. Check with your building department for permit requirements.

WHEN FLOODING IS PREDICTED...

- Locate your family's Disaster Kit and stock it if incomplete.
- Keep your vehicle fueled.
- Tune to radio, TV, or NOAA Weather Radio for flood warning (see *inside back cover for listings*).

- Know your evacuation zone and route to a safe place.
- Shut off electricity and water at the main valves and lock your home prior to leaving.
- Move outdoor furniture inside and carry downstairs furniture to upper floors or higher locations. Move valuable objects to higher ground.
- Sandbags can help slow down floodwaters from reaching your possessions.
- Store drinking water in sterile, covered containers.
- Obey official warnings; evacuate when notice is issued.
- Be cautious and avoid flood prone areas when leaving.

DURING AND AFTER THE FLOOD STAGE...

- Stay on higher ground.
- Do not drive on a flooded road.
- If your vehicle stalls, abandon it immediately and seek higher ground.
- Don't attempt to wade across a flowing stream that is above your knees.
- Don't allow children to play in standing water. It may be contaminated with chemicals or sewage.
- Do not eat food that has come into contact with floodwater.
- Drink only bottled or previously stored water. Listen

to news reports to learn whether the community water supply is safe to drink.

- Stay away from disaster areas. You may hamper rescue recovery operations.
- Do not handle live electrical equipment. Report downed power lines to the local law enforcement authorities immediately.



Photo above courtesy of Jim O'Connell, ©2004

Nor'easters and Winter Storms



KNOW YOUR STORM

What is a Winter Storm?

A winter storm can range from moderate snow to blizzard conditions. A severe winter storm deposits four or more inches of snow during a 12-hour period or six inches of snow during a 24-hour period. All winter storms make walking and driving extremely dangerous.

What is a Blizzard?

A Blizzard is a snowstorm with sustained winds of 40 miles per hour (mph) or more or gusts up to at least 50 mph with heavy falling or blowing snow, persisting for one hour or more, temperatures of ten degrees Fahrenheit or colder and potentially life-threatening traveling conditions.

What Is a Nor'easter?

A Nor'easter is a large weather system traveling from South to North, passing along, or near the seacoast. As the storm approaches New England, and its intensity becomes increasingly apparent, the resulting counterclockwise cyclonic winds impact the coast and inland areas from a north-easterly direction. The sustained winds may meet or exceed hurricane force. New England generally experiences at least one or two Nor'easters each year with varying degrees of severity. These storms have the potential to inflict more damage than many hurricanes because the high storm surge and high winds can last anywhere from 12 hours to 3 days, while the duration of hurricanes ranges generally from 6 to 12 hours.

THE RISK OF WINTER STORMS IN NEW ENGLAND

New England has a long history of severe winter storms, blizzards, and nor'easters. The most severe winter storm to ever hit New England was the Blizzard of 1888, which occurred March 11-14. Snow depths measured from 30 to 50 inches. Boston received a mix of snow and rain creating up to nine inches of slush. The Blizzard of 1978 dumped 24-38 inches of snow on New England, immobilizing the infrastructure and blocking major interstates. Thousands of motorists abandoned their cars on the highway.

Two weeks were required to remove the snow. More recent blizzards and snowstorms occurred in March of 1993, February of 1996 and March of 2001. These events killed scores of people, caused millions of dollars in damage, and left thousands of people without power for days.

Most winter storms bring the Cape both storm surge and high winds, making our coastline particularly vulnerable to damage. Because the coastline is highly developed, infrastructure is at significant risk of damage. If a storm should coincide with a high tide an additional layer of vulnerability and associated risk is added. Such storms are often associated with power outages and transportation disruptions (i.e., snow and/or debris-impacted roads, as well as hazards to navigation and aviation).

TERMS TO KNOW

Winter Weather Advisory: Winter weather conditions are expected to cause significant inconveniences and may be hazardous. If caution is exercised, these situations should not become life threatening. The greatest hazard is often to motorists.

Winter Storm Watch: severe winter weather conditions may affect your area. (Freezing rain, sleet, heavy snow may occur separately or in combination.) Prepare now!

Winter Storm Warning: severe winter weather conditions are imminent or occurring. Stay indoors!

Heavy Snow Warning: a snowfall of at least 4 inches in 12 hours or 6 inches in 24 hours is expected.

Blizzard Warning: considerable falling and/or blowing snow and winds of at least 35 miles per hour are expected for several hours. Seek refuge immediately!

Winter Storms are Deceptive Killers

WHY? Because most deaths are indirectly related to the storm

- People die in traffic accidents on icy roads.
- People die of heart attacks while shoveling snow.
- People die of hypothermia from prolonged exposure to cold.

BE PREPARED... BEFORE THE STORM STRIKES

At Home and at Work

Primary concerns are the potential loss of heat, power, telephone service and a shortage of supplies if storm conditions continue for several days.

Have available:

- Flashlight and extra batteries.**
- Battery-powered NOAA Weather Radio** to receive emergency information
- Extra food and water.** High-energy food, such as dried fruit or candy, and food requiring no cooking or refrigeration is best.
- Extra medicine and baby items**
- First aid supplies**
- Heating fuel.** Fuel carriers may not reach you for days after a severe winter storm.
- Emergency heat source** such as a fireplace, wood stove, or battery driven space heater. Be sure you have proper ventilation while using these heat sources!
- Fire extinguisher and smoke detector.** Test these units regularly to ensure they are working properly.

In Cars and Other Vehicles

Plan your travel and check the latest weather reports to avoid the storm! But, if you must go out take the following measures:

- Always carry a Winter Storm Survival Kit.
- Keep your gas tank near full to avoid ice in the tank and keep fuel lines from freezing.
- Try not to travel alone.
- Let someone know your destination, route, timetable, and primary and alternate routes.
- **Dress to fit the season.** Wear layers of loose fitting, lightweight, warm clothing. Trapped air insulates. Layers can be removed to avoid perspiration and subsequent chill. Outer garments should be tightly woven, water repellent, and hooded. Wear a hat! HALF of your body heat loss can be from the head. Cover your mouth to protect your lungs from extreme cold. Mittens, snug at the wrist, are better than gloves. Try to stay dry.

Winter Storm Car Survival Kit

- warm blankets/sleeping bags
- flashlight with extra batteries
- first aid kit
- knife
- high calorie, non-perishable food
- extra clothing to keep dry
- a large empty can and plastic cover with tissues and paper towels for sanitary purposes
- a smaller can and water-proof matches to melt snow for drinking water
- sack of sand (or cat litter)
- shovel
- windshield scraper and brush
- tool kit
- tow rope
- car battery jumper cables
- water container
- bright piece of cloth and a rod (if no antenna to tie to)
- compass and road maps if in unfamiliar territory



IF YOU ARE CAUGHT IN A WINTER STORM...

...Outside

- **Find shelter.** Try to stay dry and cover all exposed parts of the body. If you can't find shelter – make shelter: prepare a lean-to, windbreak, or snow cave for protection from the wind.
- **Build a fire** for heat and to attract attention. Place rocks around the fire to absorb and reflect heat.
- **Do not eat snow.** It will lower your body temperature. Melt it first.

...In a Car or other vehicle

- **Stay in your vehicle.** Disorientation occurs quickly in wind-driven snow and cold. Do not try to walk to safety.
- **Run the motor** about ten minutes each hour for heat. **Make sure the exhaust pipe is not blocked.**
- **Open one window (slightly)** away from the blowing wind to let in fresh air.
- **Make yourself visible to rescuers:**
 - turn on the dome light at night when running the engine
 - tie a colored cloth to your antenna or door
 - raise the hood indicating trouble after snow stops falling

- **Exercise** from time to time by vigorously moving arms, legs, fingers, and toes to keep blood circulating and to keep warm. Clap your hands, stamp your feet, swing your arms about.

...At home or in a building

- **Stay inside.** When using alternative heat from a fireplace, wood stove, space heater, etc. use fire safeguards and make sure you are properly ventilating
- **No heat.** Close off unneeded rooms. Stuff towels or rags in cracks under doors. Cover windows at night.
- **Eat and drink.** Food provides the body with energy for producing its own heat. Keep the body replenished with fluids to prevent dehydration.
- **Wear layers of loose fitting, lightweight warm clothing.** Remove layers to avoid overheating, perspiration, and subsequent chill.

Sources:

www.nesec.org;
www.crh.noaa.gov/lot/webpage/nwsredcross.html;
Winter Storms: A Guide to Survival, by the American Red Cross, NOAA, and FEMA, 1998.

Tornadoes



Photo above courtesy of NOAA.

A tornado is a violent windstorm characterized by a twisting, funnel shaped cloud with whirling winds of up to 300 miles per hour. They are spawned by thunderstorms and occasionally by hurricanes, and may occur singularly or in multiples. Tornadoes develop when cool air overrides a layer of warm air, causing the warm air to rise rapidly. Water-based tornadoes — called *waterspouts* — can and have formed over the water bodies surrounding the Cape.

Most vortices remain suspended in the atmosphere, but when they do touch down they become a destructive force — spinning like a top and sounding like a roaring train or airplane. Tornadoes move at an average speed of 30 mph and generally move from the southwest to northeast. Their direction of travel can be erratic and may change suddenly. These short-lived storms are the most violent of all atmospheric

phenomena and the most destructive over a small area.

TORNADOES IN NEW ENGLAND

On average the United States experiences 100,000 thunderstorms each year and approximately 1,000 tornadoes develop from these storms. Damage from tornadoes results from high wind velocity and wind blown debris. Over 80% of tornadoes strike between noon and midnight. New England “Tornado season” is marked from March through August, although tornadoes may occur at any time of the year. Normally, a tornado will stay on the ground for no more than 20 minutes. Injuries and deaths most often

occur when buildings collapse. The tornadoes experienced in recent history in New England have been generated by severe summer storms. Fortunately for us on Cape Cod, we are not susceptible to the major tornadoes of the Midwest and Great Plains states, but we are vulnerable and have experience deadly tornadoes.

The most devastating tornado ever to occur in New England was the Worcester Tornado of July 9, 1953. The tornado hit Worcester at 5:08 p.m. Within one minute more than 90 people were dead and over 1,300 injured. Damage estimates were placed in excess of \$52 million. Another damaging tornado occurred in Windsor Locks, Connecticut at about 3 p.m. on October 3, 1979. This twister lasted only about 45-60 seconds, but managed to kill 3 people, injure over 300, destroy 40 homes and cause \$300 million in property damage.

The most recent killer tornado to strike New England occurred on May 29,

FUJITA DAMAGE SCALE (F-SCALE)

F-scale	Type of Tornado	Intensity	Estimated Wind Speeds	Description of Damage
F0	Gale Tornado	Weak	40-72 mph	Some damage to chimneys; breaks branches off trees; push over shallow-rooted trees; damage sign boards.
F1	Moderate Tornado	Weak	73-112 mph	The lower limit (73 mph) is beginning of hurricane wind speed; peels shingles off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads.
F2	Significant Tornado	Strong	113-157 mph	Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
F3	Severe Tornado	Strong	158-206 mph	Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
F4	Devastating Tornado	Violent	207-260 mph	Well-constructed houses leveled; structure with weak foundation blown off some distance; cars thrown and large missiles generated.
F5	Incredible Tornado	Violent	261-318 mph	Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobiles-sized missiles fly through the air in the excess of 100 m; trees debarked; incredible phenomena will occur.



Photo above courtesy of NOAA.

1995, in Great Barrington, Massachusetts. This tornado, with winds in excess of 200 mph, killed 3 people, injured 23 and caused an estimated \$25 million in damage.

THE FUJITA DAMAGE SCALE

Dr. Theodore Fujita, from the University of Chicago, devised a scale to classify the strength of a tornado. Since the F-Scale is based on tornado damage (primarily to buildings), there is some ambiguity in the scale. For example, a tornado that moves over open country will tend to receive a lower rating than a tornado that strikes a populated area. Since buildings have a wide variation in age, quality of design, and quality of building materials, more uncertainties are thrown into the mix. Tornadoes over open country will probably encounter varying type of vegetation, leading to uncertainties in these cases.

TERMS TO KNOW

Tornado Watch: Conditions are right for a tornado.

Tornado Warning: A tornado has been sighted or is visible on radar. A location of the sighting is normally given along with its projected movement.

TAKE PROTECTIVE MEASURES

For Tornado Watches

When conditions are right for a tornado, there are a few things you should do:

1. Stay tuned to a local weather station or listen to your NOAA Weather Radio.
2. Secure any loose objects outdoors, or move them inside.
3. Survey local structures for the most suitable shelter.
4. Keep watching the sky to the south and southwest. If you see any funnel shaped clouds, report them immediately to the nearest law-enforcement agency and take cover.

For Tornado Warnings

TAKE SHELTER IMMEDIATELY! Do not leave shelter, until you are sure no further danger exists. Remember that there is no guaranteed safe place during a tornado.

WHAT TO DO IF YOU ARE CAUGHT...

...In a motor vehicle

The least desirable place to be during a tornado is in a motor vehicle. Never try to outrun a tornado in your car. Stop your vehicle and get out. Seek shelter elsewhere. Do not get under or next to your vehicle. A ditch or ground depression will help, if a tornado shelter is not nearby.

...At school

Follow the school disaster plan. Stay away from auditoriums, gymnasiums, and other areas with wide, free-span roofs. Go into center hallways and stay away from windows.

...In open country

Move away from the tornado's projected path at right angles. Seek shelter in a ditch, ravine, or culvert. Even a low spot in the ground will give you some protection. Stay away from trees and remember to protect your head.

...In a home or condo

The best place to go is the innermost hallway on the lowest floor. An interior closet is relatively safe. An interior bathroom is even better. The walls are close together and the bathtub, sink, and toilet help support debris in case the house collapses. AVOID WINDOWS. Since flying debris does most of the killing, the worst kind of flying debris is broken glass. DO NOT open any windows when a tornado approaches to equalize pressure. If a tornado actually gets close enough for the pressure drop to be experienced the strong winds have probably already caused the most significant damage. Opening windows, in fact, may actually increase damage.

...In a mobile or manufactured home

One of the least desirable places to be during a tornado is in a mobile or manufactured home. If a tornado approaches, seek other shelter immediately. Go to a tornado shelter on foot, if possible. Do not drive your car. Do not get under your mobile home. If no other shelter is available, lie down in a ditch or a ground depression.

Sources:

www.nesec.org;

<http://hometown.aol.com/hurctrack/HurcTrack.index.html>



Photo above courtesy of MEMA.

American Red Cross Partner/Supported Shelters

Cape Cod, Martha's Vineyard, and Nantucket Island

Updated August 2010



- Emergency Shelters
- Red Cross Shelter
- Regional
- Community
- Pet Shelter *
- SLOSH Inundation Areas **
- Mass. Military Reservation
- Cape Cod Emergency Traffic Plan
- Major Roads
- Town Line

* All Barnstable County Regional Shelters are pet-friendly
 ** SLOSH Zone: Sea, Lake, and Overland Surges from Hurricanes) These are areas of inundation modeled to occur from wind and pressure forces of hurricanes. Inundation areas reflect "Worst Case" combinations of hurricane direction, forward speed, landfall point, and high astronomical tide. The SLOSH zones shown here have been obtained from the Army Corps of Engineers, 2002.

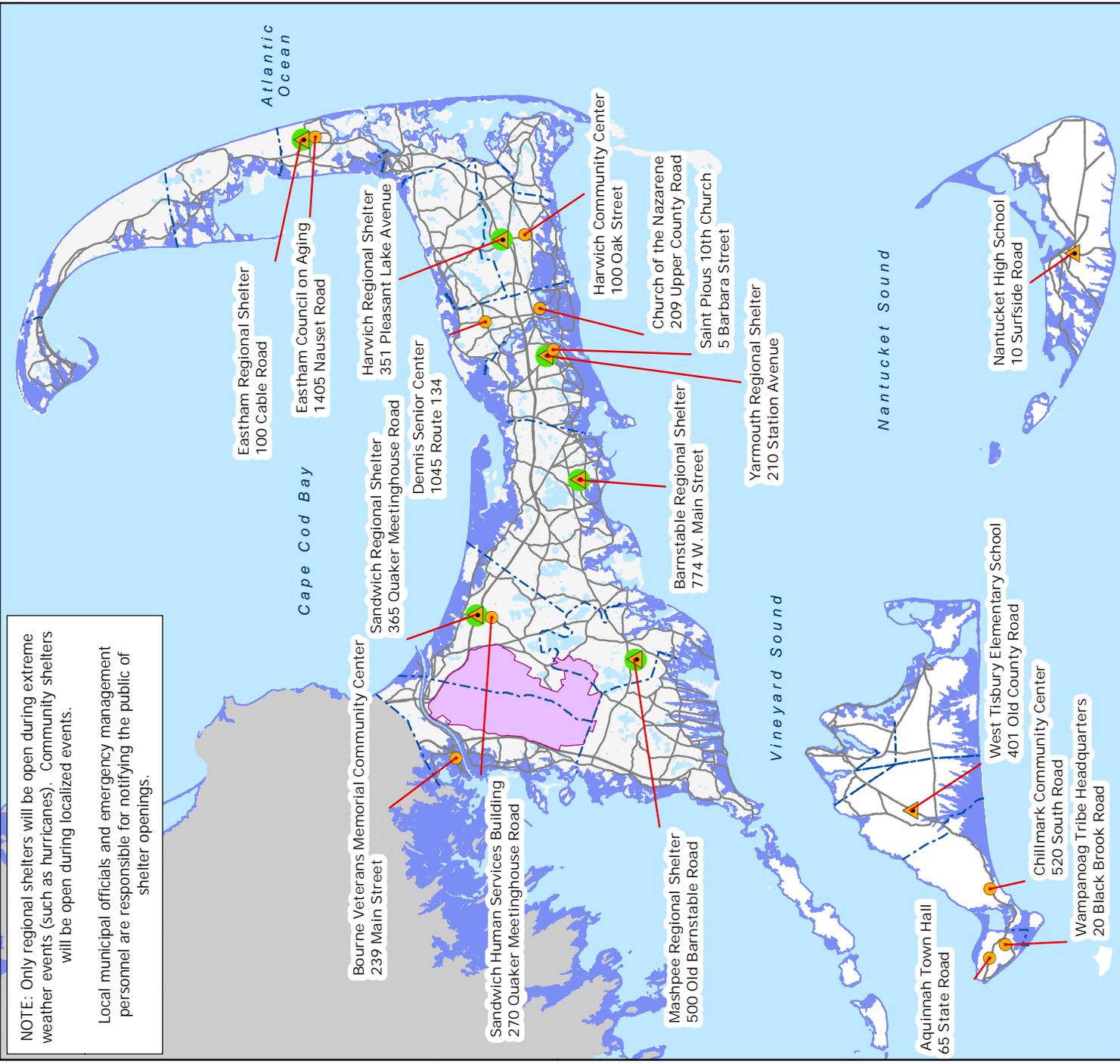
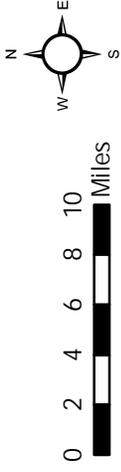
Data Sources:

Army Corps of Engineers, MassGIS Executive Office for Administration and Finance, the American Red Cross Cape Cod and Islands Chapter, and the Cape Cod Commission's Geographic Information System Department. All locations and designations of emergency shelters were provided by the American Red Cross - Cape and Islands chapter.

This map was produced by the Cape Cod Commission's Geographic Information System Department for "Project Impact Cape Cod" in 2003 and updated in July of 2010. Comments and corrections are welcome at the Cape Cod Commission office. This map is illustrative and all depicted boundaries are approximate.



Accepting a Special Place Special



NOTE: Only regional shelters will be open during extreme weather events (such as hurricanes). Community shelters will be open during localized events.
 Local municipal officials and emergency management personnel are responsible for notifying the public of shelter openings.

Storm Shelters on Cape Cod

The American Red Cross operates shelters for disaster victims. The shelters are established in pre-determined locations that have been selected on the basis of safety, emergency equipment (i.e., generators) and location.

The Red Cross DOES NOT make the decision to open a shelter. Shelters are opened by local municipal officials and then operated by the Red Cross and their shelter volunteers.

If you elect to go to a public shelter, here are some important things that you will need to remember:

1. Red Cross shelters are safe places for you and your family to stay in the time of a disaster. Basic needs will be provided but it is a good idea to assemble a disaster supply kit more specific to your family's needs (see Disaster Supply Kit on pages 8 and 9, or visit www.redcross.org).
2. If you cannot stay in your home please report to the nearest shelter with a few changes of clothing, bedding, essential medications and toiletries. Contact your family members to let them know where you are and that you are safe.
3. The first seventy-two hours of a disaster operation is led by the local Red Cross chapter. It is possible that during that time supplies could be scarce. It is important that you include meals containing non-perishable goods in your family's disaster kit.
4. For the safety of all shelter occupants no guns, firearms, weapons, illegal substances, or alcohol will be allowed on the premises.
5. As has been the case in past events on Cape Cod, shelters are not likely to be opened in every town. Some towns traditionally share shelters (e.g. Harwich and Brewster usually share the Cape Cod Regional Technical School). The nearest shelter may be some distance away so plan accordingly.
6. Red Cross shelters and services are volunteer led. In the time of disaster volunteers are greatly needed. If you are able to help out, please offer your services and expertise to a Red Cross team member.
7. Health and safety regulations preclude Red Cross shelters from accepting pets. Service animals that assist people with disabilities are the only exception. It may be difficult, if not impossible, to find shelter for your animals in the midst of a disaster so plan ahead -- do not wait until disaster strikes to do your research (see *Protecting Your Pets* on page 24).
8. It is important to listen to official information regarding the disaster. In high stress situations people may make assumptions and could mislead others about important details. Only repeat factual information that was obtained from a credited source to help keep rumors from circulating in the shelter.
9. When you arrive at the shelter please be patient and fill out all needed information on the registration forms. It is important that all occupants are accounted for and their needs are being met. Be sure to follow shelter procedures when leaving and returning to the shelter.
10. Red Cross shelters will be staffed with CPR/First Aid certified volunteers that will be able to assist on a basic level. If for any reason you need medical attention please call 911, or have someone call for you.

Sources:

American Red Cross, Cape Cod Chapter

Thunderstorms and Lightning



Photo above courtesy of S. Albers.

ARE THUNDERSTORMS DANGEROUS? ABSOLUTELY!

Although hurricanes and tornadoes receive most of the recognition, lightning occurs most often in the United States. Over 40 million lightning strikes occur every year, which result in nearly 100 deaths.

Lightning bolts can strike trees, power lines, buildings, people, and any electrically conductive elevated object. Lightning can cause fire or severe burns to anything that it contacts. Persons struck by lightning receive a severe electrical shock and may be burned. They do not retain an electric charge, so they can be handled safely. A person struck by lightning can often be revived by prompt cardio pulmonary resuscitation (CPR).

WHAT IS LIGHTNING?

The action of rising and descending air within a thunderstorm separates positive and negative charges. Lightning results from the buildup and discharge of electrical energy between positively and negatively charged areas.

An average flash could illuminate a 100-watt light bulb for more than three months.

The air near a lightning strike is heated to 50,000°F, which is hotter than the surface of the sun. The rapid heating and cooling of the air near the lightning channel causes a shock wave that results in thunder.

LIGHTNING SAFETY RULES

Thunderstorms are very unpredictable and can pop up at anytime. Remember that tornadoes can occur in areas of severe thunderstorm development. There are a few common sense measures you can take that can help you survive some of the hazards associated with thunderstorms:

- Watch for environmental clues, such as increasing wind, flashes of lightning, sounds of thunder, darkening skies, and AM radio static.

- Avoid being the tallest object.
- Do not stand under or near an isolated tree or small group of trees.
- Get inside a sturdy structure before the storm approaches.
- Unplug all unnecessary appliances BEFORE the storm approaches.
- DO NOT use the telephone during the storm, unless it's an emergency!
- Don't stand by open windows, doors, or patios during a thunderstorm.
- Get out of boats, away from water, and off the beaches.
- If lightning is occurring and a sturdy shelter is not available, get inside a hard-topped automobile and keep the windows up. The rubber tires DO NOT protect you — it's the roof.
- Do not take a bath or shower during a storm. Water and copper tubing are excellent conductors of electricity.
- Golfers should immediately leave the golf course and seek shelter, but never under trees.
- Hail can occur. If you don't have a garage for your vehicle, thick blankets tied down to the hood, roof, and trunk will offer some protection.
- Lightning can travel sideways for up to 10 miles. If you hear thunder, take cover. Be cautious even when the sky looks blue and clear. Many deaths from lightning occur ahead of the storm because people wait to the last minute before seeking shelter.

REMEMBER: If you can hear thunder, you are close enough to the storm to be struck by lightning!!!

- If you feel your skin tingle or your hair stands on end, squat low to the ground on the balls of your feet. Place your hands on your knees with your head between them. Make

yourself the smallest target possible, and be sure to minimize your contact with the ground!

NEVER touch downed power lines – always consider them energized and dangerous. Stay safe – keep yourself and others away. Call 9-1-1 immediately.

ON THE WATER OR IN A BOAT DURING A THUNDERSTORM?

Thunderstorms over coastal waters are generally unpredictable. Even with the best weather reports, boaters can still be caught in open waters. Either with or without a lightning protection system, it is critical to take these precautions to protect yourself:

1. Stay in the center of the cabin. If no cabin, stay low in the boat. Don't be a stand-up lightning rod!
2. Keep arms and legs IN the boat.
3. Discontinue fishing, water skiing, scuba diving, swimming or other water activities at the first sign of threatening conditions.
4. Disconnect and do not use or touch major electronic equipment, including the radio, for the duration of the storm.
5. Lower, remove, or tie down the radio antenna and other protruding devices if they are not a part of the lightning protection system.
6. To the degree possible, avoid making contact with two components connected to the system at the same time. For example, the gear levers and the spotlight may both be connected to the system. If you have a hand on both when lightning strikes, the path of the electric current could be directly through you.
7. If a boat has been or is suspected of having been struck by lightning, check out the electrical system and compasses to ensure that no damage has occurred.

Sources:
www.cdc.gov/nasd/menu/topic/lightning.html;
www.noaa.gov/lightning.html
Photo (top) by Steve Albers,
www.windows.ucar.edu/tour/.

TERMS TO KNOW

Heat Wave: Prolonged period of excessive heat and humidity. The National Weather Service steps up its procedures to alert the public during these periods of excessive heat and humidity.

Heat Index: A number in degrees Fahrenheit (F) that tells how hot it really feels when relative humidity is added to the actual air temperature. Exposure to full sunshine can increase the heat index by 15° F.

Heat Cramps: Muscular pains and spasms due to heavy exertion. Although heat cramps are the least severe, they are an early signal that the body is having trouble with the heat.

Heat Exhaustion: Typically occurs when people exercise heavily or work in a hot, humid place where body fluids are lost through heavy sweating. Blood flow to the skin increases, causing blood flow to decrease to the vital organs. This results in a form of mild shock. If not treated, the victim may suffer heat stroke.

Heat Stroke (a.k.a. Sun stroke): This is life threatening. The victim's temperature control system, which produces sweating to cool the body, stops working. The body temperature can rise so high that brain damage and death may result if the body is not cooled quickly.

PREPARE YOURSELF AND YOUR FAMILY

If a heat wave is predicted or happening

- **Slow Down.** Avoid strenuous activity. If you must do strenuous activity, do it during the coolest part of the day, which is usually in the morning between 4:00 am and 7:00 am.
- Stay indoors as much as possible. If air conditioning is not available, stay on the lowest floor, out of the sunshine. Try to go to a public building with air conditioning each day for several hours. Remember, electric fans do not cool the air, but they do help sweat evaporate, which cools your body.
- Wear lightweight, light-colored clothing. Light colors will reflect away some of the sun's energy.
- Drink plenty of water regularly and often. Your body needs water to keep cool.

Heat Waves



Photo above courtesy of Margo Tabb Summerfield, ©2004.

- Drink plenty of fluids even if you do not feel thirsty.
- Water is the safest liquid to drink during heat emergencies. Avoid drinks with alcohol or caffeine in them. They can make you feel good briefly, but make the heat's effects on your body worse. This is especially true about beer, which dehydrates the body.
- Eat small meals and eat more often. Avoid foods that are high in protein, which increases metabolic heat.
- Avoid using salt tablets unless directed to do so by a physician.

SIGNALS OF HEAT EMERGENCIES

Heat exhaustion: Cool, moist, pale, or flushed skin; heavy sweating; headache; nausea or vomiting; dizziness; and exhaustion. Body temperature will be near normal.

Heat/Sun stroke: Hot, red skin; changes in consciousness; rapid, weak pulse; and rapid, shallow breathing. Body temperature can be very high – as high as 105°F. If the person was sweating from heavy work or exercise, skin may be wet; otherwise, it will feel dry.

TREATMENT OF HEAT EMERGENCIES

Heat cramps: Get the person to a cooler place and have him/her rest in a comfortable position. Lightly stretch the affected muscle and replenish fluids.

Give a half glass of cool water every 15 minutes. Do not give liquids with alcohol or caffeine in them, as they can make conditions worse.

Heat exhaustion: Get the person out of the heat and into a cooler place. Remove or loosen tight clothing and apply cool, wet clothes, such as towels or sheets. If the person is conscious, give cool water to drink. Make sure the person drinks slowly. Give a half glass of cool water every 15 minutes. Do not give liquids that contain alcohol or caffeine. Let the victim rest in a comfortable position, and watch carefully for changes his/her condition. Consider the need for further medical attention.

Heat/Sun stroke: This is a life threatening situation. Help is needed fast. Call 911. Move the person to a cooler place. Quickly cool the body. Immerse victim in a cool bath, or wrap wet sheets around the body and fan it. Watch for signals of breathing problems. Keep the person lying down and continue to cool the body any way you can. If the victim refuses water or is vomiting or there are changes in the level of consciousness, do not give anything to eat or drink.

(This material was reprinted directly from American Red Cross Publication #5032, Heat Wave)



Wildfires

Fire circa 1920s. (Photo courtesy of COMM Fire Department.)

IS CAPE COD AT RISK FOR WILDFIRE?

The Cape is no stranger to wildfires. In the past many wildfires have begun and spread quickly throughout large tracks of pitch pine forest and large salt marsh areas in which *phragmites* is prolific. *Phragmites* is an invasive plant that has taken over many of the Cape's salt marshes. Even the salt hay itself would be quick to burn and is considered susceptible to wildfire.

Cape residents and visitors are certainly fortunate to have these natural resources and must simply take extra precautions and be diligent to prevent fires from starting in or threatening these areas. Wildfires can be started in these areas naturally, such as from a lightning strike, but more often they are started as a result of human carelessness or intervention.

RAGING WILDFIRES - COULD THEY HAPPEN HERE?

The answer is yes and no. Western forests differ from most eastern forests because they contain mostly evergreen

trees that have a lot of resin in their needles. This resin burns readily, creating an explosive flame that rages up the crown, where it jumps easily from tree to tree. Because of the Cape's extensive pitch pine, we are vulnerable to these types of burns, particularly when the Cape faces drought conditions.

Western and eastern forests differ in one more important respect - precipitation. Many western forests are extremely dry. Because of the dry climate, the West is also plagued by "dry lightning" - electrical storms without rain that often spark fires. While the Cape does not tend to have huge, rampant fires like the West, there have been serious wildfires here in the past and there likely will be again.

WHEN ARE WILDFIRES MOST LIKELY ON CAPE COD?

Wildfire season usually begins in March in coastal and southern New England, gradually extending to central, western and northern areas. The wildfire season usually ends in late November. The majority of wildfires usually occur in April and May, when home owners are cleaning up from the winter months, and when the majority of vegetation is void of any appreciable moisture making

them highly flammable. Once "green-up" takes place in late May to early June, the fire danger usually is reduced somewhat.

BE PREPARED!

- Have an evacuation plan.
- Make sure everyone in your family knows the plan.
- Have all your evacuation needs (papers, medications, Family Disaster Kit, etc.) together.
- As with any disaster, don't forget to plan in advance for your pets.

WHEN WILDFIRE THREATENS

Evacuate immediately if requested!
Follow all directions given by emergency personnel.

If time allows:

1. Close all windows and doors.
2. Close heavy drapes, blinds or hurricane shutters.
3. Remove lightweight curtains.
4. Move flammable furniture away from windows and glass doors.
5. Back the car into the garage.
6. Disconnect the automatic garage door opener.
7. Turn off fuel supplies at the connection.
8. Connect a garden hose with a nozzle to an outside tap.

Sources:

www.nesec.org;
Cape Cod Brush Breakers Pictorial History
www.capecodfd.com/PAGES%20Special/Breakers00.htm;
www.fs.fed.us/na/durham.



In the spring of 1964 a huge brush fire raged in the area of Boardly Road and Hog Pond Road, in South Sandwich, MA.

(Photo by Gordon Caldwell, Cape Cod Times, courtesy of COMM Fire Department.)

KEETCH-BYRAM (SOIL MOISTURE) DROUGHT INDEX (KBDI)

The KBDI is a mathematical system for relating current and recent weather conditions to potential or expected fire behavior. This system is based primarily on recent rainfall patterns. The result of this system is a drought index number ranging from 0-800 that accurately describes the amount of moisture that is missing; 0 = no moisture deficiency and 800 = maximum drought possible.



A view from Onset of the great 1907 forest fire in the Bourne-Sandwich area.

(Photo courtesy of COMM Fire Department.)

Drought Index/Fire Danger Expected Conditions

0-200/Low

Soil and fuel moisture is high. Most fuels will not readily ignite or burn. However, with sufficient sunlight and wind, cured grasses and some light surface fuels will burn in spots and patches.

200-400/Moderate

Fires more readily burn and will carry across an area with no "gaps". Heavier fuels will still not readily ignite and burn. Also, expect

smoldering and the resulting smoke to carry into and possibly through the night.

400-600/High

Fire intensity begins to significantly increase. Fires will readily burn in all directions exposing mineral soils in some locations. Larger fuels may burn or smolder for several days creating possible smoke and control problems.

600-800/Extreme

Surface litter and most of the organic layer is consumed. Stumps

will burn to the end of roots underground. Spotting from snags is a major problem if close to line. Expect dead limbs on trees to ignite from sparks. Expect extreme intensity on all fires, which makes control efforts difficult. With winds above 10 miles per hour, spotting is the rule. Expect increased need for resources for fire suppression. Direct initial attack is almost impossible. Only rapid response time to wildfire with complete mop up and patrol will prevent a major fire situation from developing.



In 1965 a huge forest fire, which started on the MMR/Otis, jumped Route 6 and burned down into Sandwich's center.

(Photo courtesy of COMM Fire Department.)

Preparing Your Boat for a Storm

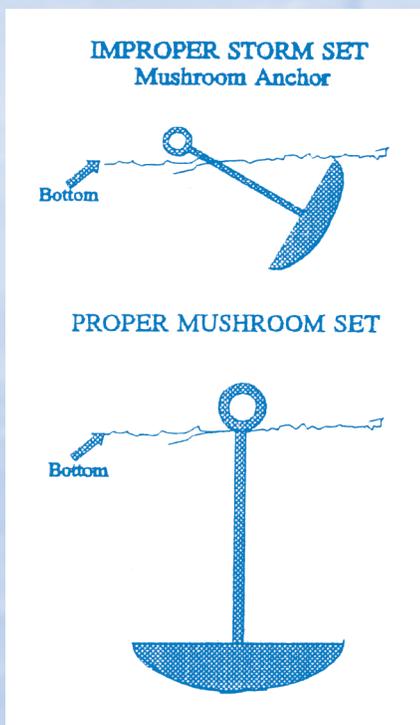


If your boat is moored, docked, or stored in a recreational

harbor, the threat of hurricanes is a very real concern. Even the least severe Category 1 hurricane can have devastating effects in today's crowded harbors. These high-density areas can be disasters waiting to happen because of the close proximity of vessels to one another, faulty mooring maintenance, and a general lack of hurricane preparedness.

Although the harbor manager or harbor master will try to ensure that boats in their harbor are safe, the ultimate responsibility falls upon the boat owner. In order to protect personal property and the vessels around them, owners must:

- Know their boat and their own skills
- Know the surrounding area and potential weather threats
- **Have a Hurricane/Storm Plan**



Creating a plan and being ready for a hurricane starts well in advance of the boating season. When boat owners prepare their vessel for the boating season, they should also prepare a hurricane plan. Prior to the hurricane season, decisions should be made as to where the safest place for the vessel would be, the adequacy of the present mooring or dock, and what type of equipment is necessary to have on board. Each boat owner needs a plan unique to the type of boat, local boating environment, the severe weather conditions likely to occur, and the characteristics of safe havens available.

ADVANCED AWARENESS

1. Prior to the hurricane season, develop a detailed plan of action to secure your vessel in the marina. If permitted, remove your boat from the threatened area, or take your boat to a previously identified hurricane refuge. Specifically, identify and assemble needed equipment and supplies. Keep them together. Before hurricane season, practice your plan to ensure that it works.
2. Know the preparation status of all neighboring boats and hurricane plan of your boatyard or marina. **This has to be a group effort.**
3. Arrange for a friend to carry out your plans if you are out of town during hurricane season.
4. Check your lease or storage rental agreement with the marina or storage area. Know your responsibilities and liabilities as well as those of the marina.
5. Consolidate all records, including insurance policies, a recent photo of your vessel, boat registration, equipment inventory, lease

agreement with the marina or storage area, and telephone numbers of appropriate

authorities (i.e., harbor master, Coast Guard, insurance agent, National Weather Service, etc.) and keep them in your possession.

6. Before a hurricane threatens, analyze how you will remove valuable equipment from the boat and how long it will take, so you will have an accurate estimate of the time and work involved. When a hurricane is approaching, and after you have made anchoring or mooring provisions, remove all moveable equipment such as canvas, sails, dinghies, radios, cushions, biminis and roller furling sails. Lash down everything you cannot remove such as tillers, wheels, booms, etc. Make sure the electrical system is cut off unless you plan to leave the boat in the water, and remove the battery to eliminate the risk of fire or other damage.

SAFEGUARDING RECREATIONAL BOATS

Option 1: Get out of the water

If the vessel is small and trailers easily, it should be taken out of the water and moved to higher ground. This is the safest means of protecting a vessel. Being out of the water does not automatically mean that your boat is safe. It is only protected from the storm surge and wave action – rain and wind must still be considered.

Option 2: Stay in the water

Staying in the water assumes that the vessel will either: (1) stay on the mooring or dock; (2) go to a hurricane hole to anchor; or (3) head out to sea. Hurricane conditions at sea are extremely violent. Going offshore should not be considered as a viable option for most recreational boaters.

WHAT YOU SHOULD DO...

...IF you can trailer your boat:

- Determine the requirement to load and haul your boat to a safer area. Be sure your tow vehicle is capable of properly and adequately moving the boat. Check your trailer: tires, bearings and axle should all be in good condition. Too often a flat tire, frozen bearings or broken axle prevents the owner from moving a boat.
- Once at a "safe" place, lash your boat to the trailer and place blocks between the frame members and the axle inside each wheel. Owners of light weight boats, after consulting with the manufacturer, may wish to consider letting about half the air out of the tires, then filling the boat one-third full of water to help hold it down. (The blocks will prevent damage to the springs from the additional weight of the water.)
- Secure your boat with heavy lines to fixed objects. Try to pick a location that allows you to secure it from all four directions, because hurricane winds rotate and change direction. It can be tied down to screw anchors secured into the ground. Remember that trees are often blown over during a hurricane.

...IF your non-trailerable boat is in dry storage:

- Determine the safest, most realistic, obtainable haven for your boat, and make arrangements to move your boat there. When selecting a "safe" location, be sure to consider whether storm surge could rise into the area. Wherever you choose to locate your boat for the duration of the hurricane, lash the boat to its cradle with heavy lines and consider, based on the weight of the boat, adding water to the bilge to help hold it down.
- Never leave a boat on davits or on a hydro-lift.

...IF your non-trailerable boat is in wet storage:

The owner of a large boat, usually one moored in a berth, has three options that each requires a separate strategy:

- Secure the boat in the marina berth.
- Moor the boat in a previously identified safe area.
- Haul the boat.

...IF your boat will remain in marina berth:

- Double all lines. Rig crossing spring lines fore and aft. Attach lines high on pilings to allow for tidal rise or surge. Make sure lines will not slip off pilings. Inspect pilings and choose those that seem strongest and

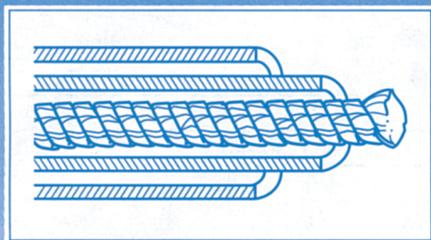
tallest and are properly installed. The longer the dock lines, the better a boat will be at coping with high tides. It is also essential to double up on all lines and use chafe protectors at any potential chafe points.

- Cover all lines at rough points to prevent chafing. Wrap with tape, rags, and rubber hoses, etc. Install fenders to protect the boat from rubbing against the pier, pilings and other boats.
- Assess the attachment of primary cleats, winches and chocks. These should have substantial back plates and adequate stainless steel bolt sizes.
- Batteries should be fully charged and checked to ensure their capability to run automatic bilge pumps for the duration of the storm. Consider backup batteries. Cut off all devices consuming electricity except bilge pumps.
- **Do Not Stay Aboard.** Storm conditions are extremely violent. First and foremost, safeguard human life.

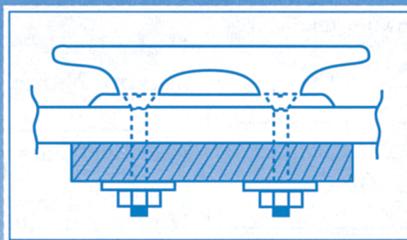
Sources:

www.boatus.com/seaworthy/hurricane/default.asp;
<http://seagrant.gso.uri.edu/factsheets/hurricane.html>;
Major Storm Preparedness, Aware Boaters Checklist, FEMA Region 1.

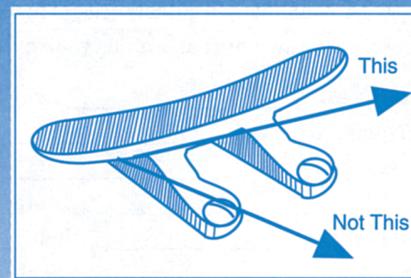
Critical Points



Using a polyester line from the cleat through the chock, secured to an existing nylon line to the piling or mooring, gives you better protection from chafe, while also absorbing shock. Make eye splices in both lines with at least five tucks.



A properly backed cleat: Note the washers and the backing plate. These are essential in a hurricane and a good idea in quieter times as well.



Lines led perpendicular from a cleat can wrench the cleat out of the deck. Two-hole cleats are more vulnerable than four-hole cleats.

Protecting Pets in the Event of a Disaster

Cape Codders are no stranger to some of nature's strongest forces. Everyone should know what to do in the event of a natural or man-made disaster...and those with pets should take extra precautions. Here's how you...and your pets...can prepare for emergencies.

PREPARE — BEFORE IT HAPPENS

- **Make sure your animals are wearing collars with securely fastened up-to-date identification.** Ask your vet about microchipping your pets—it's an excellent way to assure that they make it safely back to you. Birds can be identified by photographs and leg bands.
- **Identify a safe location to bring your pet**—a pet-friendly hotel, a shelter that accepts animals, or a friend's home—so you know where to take them in the event of a disaster. Most Red Cross shelters do not accept animals. The Public Shelter on the Massachusetts Military Reservation does have one pet shelter adjacent to it. If this shelter is open, then the pet shelter may be one option for you. Please visit the Cape Animal CARE website for lists of shelters and hotels on Cape Cod that accept animals. If a disaster is pending, prepare to evacuate, and do so early for your safety—and your pets'.



Photos courtesy of the Humane Society of the U.S.

- **In the event you can't get back to your house, arrange for a trusted friend or neighbor to retrieve your animals.** This person should have a key, be comfortable with your pets, and know where your pet's disaster supply kit is kept.

ESSENTIALS— CREATE A DISASTER KIT (BEFORE THE STORM)

INCLUDE:

- Up-to-date medications**
- Medical records and an information sheet on special needs/feeding and exercise regimens for the boarding facility or shelter**
- Veterinarian's phone number**
- Properly-sized carriers for transporting and housing** (especially if evacuation to a pet-friendly shelter is necessary)
- Sturdy leash**
- Food and potable water and bowls**
- Cat litter/pan**
- Can opener**
 - Pet toys and beds**
 - Current photo of your pets in case they get lost**
 - Out-of-state phone number of a friend or relative to contact should your home phone be out of service**
 - Pet First Aid Kit**



TAKE YOUR ANIMALS WITH YOU!

Leaving pets behind can result in their injury, loss, or death. Always take your pets with you! If they cannot stay with you during an evacuation, take them to a prearranged shelter out of the evacuation area.

After an Event:

- **Walk pets on a leash until they become re-oriented to their home** – often familiar scents and landmarks may be altered and pets could easily be confused and get lost. Also, downed power lines and other debris can all pose a threat to animals after a disaster.
- **If pets cannot be found after a disaster, contact the local animal control office to find out where lost animals can be recovered.** Bring along a picture of your pet if possible.
- **After a disaster animals can become aggressive or defensive** – monitor their behavior. If you see an injured or stranded wild animal, do not attempt to help them. Call your animal control officer.

For more information on caring for your pet in a disaster or to locate a Cape Cod pet-friendly emergency shelter go to:
www.CapeAnimalCare.org;
www.fema.gov/library/anemer.shtm

Driving in a Disaster

Safety Tips for Motorists

After almost every disaster, search and rescue teams find victims who might have survived if they had known whether to stay with or leave their cars. The following are safety tips for drivers in various types of emergencies. This information should be kept in the glove compartment of your car. In any situation, the most important rule is — **Don't panic!**

Listen to radio or television for the latest National Weather Service bulletins on severe weather for the area in which you will drive. In times of developing emergencies, keep a radio or television on and await instructions. If evacuation is recommended, move quickly but calmly, following instructions as to which route to be used, evacuation shelter to be sought, and other directions.

HURRICANES — EVACUATE EARLY

Flooding can begin well before a hurricane nears land. Plan to evacuate early, and keep a full tank of gas during the hurricane season. Learn the best evacuation route before a storm forms, and make arrangements with friends or relatives inland to stay with them until the storm has passed. Never attempt to drive during a hurricane, and wait until the "all clear" is given after the storm. Flash flooding can occur after a hurricane has passed. Avoid driving on coastal and low-lying roads. Storm surge and hurricane-caused flooding are erratic and may occur with little or no warning — and in some locations, such as Wellfleet Harbor, can occur hours after the storm appears to have passed.

FLOOD — GET OUT OF THE CAR

Never attempt to drive through water on a road. Water can be deeper than it appears and water levels can rise very quickly. Most cars will float for at least a

short while. A car can be buoyed by floodwaters and then swept downstream during a flood. Floodwaters also can erode roadways, and a missing section of road—even a missing bridge—will not be visible with water running over the area. Wade through floodwaters only if the water is not flowing rapidly and only in waters no higher than the knees. If a car stalls in floodwater, get out quickly and move to higher ground. The floodwaters may still be rising, and the car could get swept away at any moment.

TORNADO — GET OUT OF THE CAR

A car is the least safe place to be in a tornado. When a warning is issued, do not try to leave the area by car. If you are in a car, leave it and find shelter in a building. If a tornado approaches and there are no safe structures nearby, lie flat in a ditch or other ground depression with your arms over your head.

SUMMER HEAT — STAY OUT OF A PARKED CAR

During hot weather, heat build-up in a closed or nearly closed car can occur quickly and intensely. Children and pets can die from heat stroke in a matter of

MINUTES when left in a closed car. NEVER leave anyone in a parked car during periods of high summer heat.

ALWAYS KEEP EMERGENCY SUPPLIES IN YOUR VEHICLE

Cars should be equipped with supplies that could be useful in any emergency. The supplies in the kit should include, at a minimum:

- Blanket/sleeping bag**
- Jumper cables and tools**
- Bottled water**
- Canned fruits and nuts and manual can opener**
- First aid kit**
- Flashlight and extra batteries**
- Rain gear and extra clothes**
- Necessary medication**
- Matches and candles**
- Shovel (not just for winter travel)**

Sources:
The American Red Cross.



Photos courtesy of the NASA Project at Prescott College, AZ.



Power outages can be very frustrating and troublesome, especially when they are prolonged.

SAFETY AFTER THE STORM

- If a power line has fallen on the car you are in, remain in the car until help arrives. Do not attempt to pull away. A cellular phone may be used to call 911 for help.
- Stay clear of all fallen tree limbs and electrical wires as well as anything they are touching - such as puddles and metal fences.
- Notify local fire, police, and electric utility officials about downed power lines.
- Do not enter damaged buildings with flame lanterns, candles or lighted cigarettes because there may be gas leaks.
- If possible, stay off the road. If you have to drive, watch out for trees and wires in the roadway. Do not drive across a downed power line. Treat all non-working traffic lights as stop signs and proceed cautiously at intersections.
- Try to keep people and traffic away from downed power lines until officials arrive.

SAVING YOUR PERISHABLE FOOD

Perishable food should not be held above 40 degrees Fahrenheit for more than 2 hours. If a power outage is 2 hours or less, you need not be concerned, but how do you save your food when the refrigerator is out for longer times? Being prepared can help. By planning ahead, you can save your perishables.

Power Outages

ALWAYS consider all downed wires energized and Dangerous!

Stay alert – don't get hurt.

First – Stay safe. Keep yourself and others away.

Second – Call 9-1-1 immediately (your local emergency services can contact NSTAR directly).

Or, report the location to NSTAR at 1-800-592-2000.

What do I need?

- Coolers.** Inexpensive styrofoam coolers can do an excellent job as well.
- Ice.** Surrounding your food with ice in a cooler will ensure that it will stay cold.
- Shelf-stable foods** – such as canned goods and powdered or boxed milk – can be eaten cold or heated on the grill.
- A digital quick-response thermometer** can quickly tell you the internal temperatures of food for doneness and safety.

What to do?

Do not open the refrigerator or freezer. An unopened door will keep food cold enough for a couple of hours at least. A freezer that is half full will hold adequate temperature for up to 24 hours and a full freezer for 48 hours.

If it looks like the power outage will be for more than 2-4 hours, pack all refrigerated milk, dairy, meats, fish, eggs, etc. in your cooler surrounded by ice.

If it looks like the power outage will be prolonged, prepare a cooler with ice for your freezer items.

Frequently Asked Questions:

- **What if I go to bed and the power is still not on?**
Before you go to bed, pack your perishable into your coolers (if you haven't already done so) and put in as much ice as you can. Also, leave a bedroom light switched on. When the power goes back on, it may wake you and you check the condition of things and return items to the refrigerator or freezer.
- **What food should be discarded after a power outage?**
As soon as the power returns, **check temperatures.** If the food in the freezer has ice crystals and is not above 40 degrees, you can refreeze. If your freezer is fairly full and you know it was not longer than 24 hours, the food should be okay. There will be a loss of quality with refreezing, but the food will be safe. Perishable foods in the refrigerator should not be above 40 degrees for more than two hours.

Sources:

American Red Cross Publication #1098; NSTAR Community Relations Department.



Generator Safety

BUYING A STANDBY GENERATOR:

Buying a standby generator is like buying fire insurance—you may never need it, but it is invaluable when trouble hits. Although your electrical system is highly dependable and reliable, it is subject to the whims of Mother Nature. How well are you prepared to handle a prolonged outage? How will you heat your home and keep foods from spoiling?

Now is the time to inventory your electrical needs. Assume you will experience long outages that could cause you inconvenience and financial loss. Standby generators are not normally stocked in any quantity, so don't plan on buying one after an outage occurs. Remember, too, the installation of standby equipment requires a double-pole, double-throw switch, which keeps electricity from the generator from going out onto the power suppliers' lines. Operating a standby generator without one is extremely dangerous and could result in financial liability.

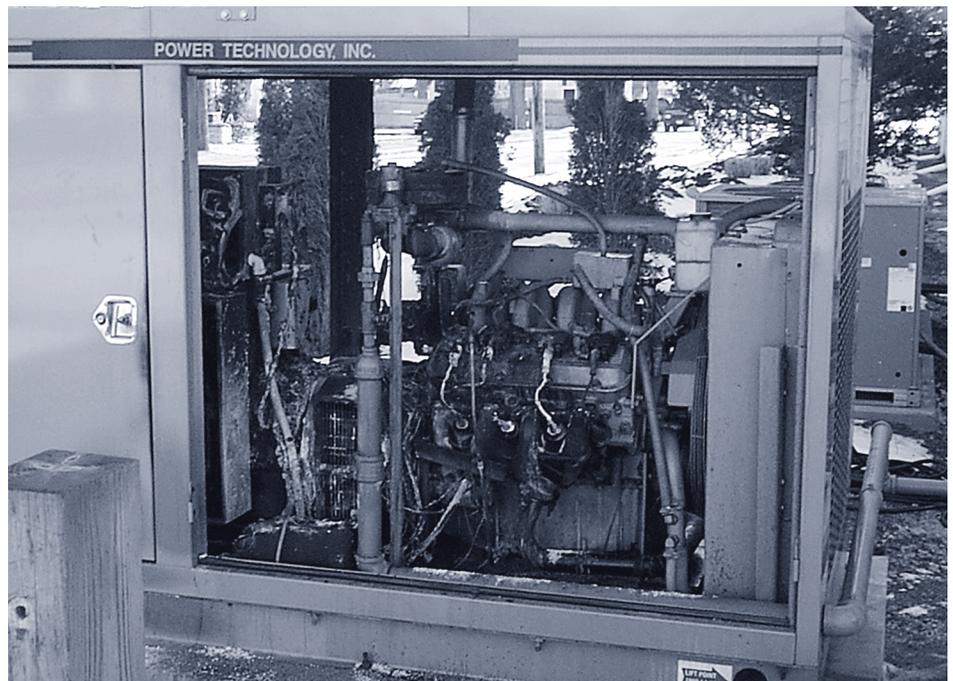
If your generator is improperly installed, it will pose a threat to the lives of utility line repairmen. A double-pole, double-throw switch, placed between the meter and the main fuse or breaker panel, will prevent electricity produced by the generator from returning to the distribution system. Without this switch, the generator's volts could travel through the transformer and over a wire that a lineman believes is safe to handle. The manual switch ensures that the generator's power only reaches select circuits in the home.

FOR OVERALL SAFE USE OF GENERATORS:

- ❑ **Be certain** that it has been installed following the Massachusetts and National Electric Safety Codes – have your local wire inspector check the installation to ensure compliance.

- ❑ **Be certain** that when you use your generator the main breaker is off and/or there is a manual disconnect from the NSTAR grid.
- ❑ **Never** connect generators to another power source such as power lines. Never connect it to your home's electrical system.
- ❑ **Always** follow the manufacturer's instructions and guidelines. Know your equipment. Thoroughly read all operating and maintenance instructions before use.
- ❑ **Always** use and maintain generators properly.
- ❑ **Always** refuel generators outdoors. Do not attempt to fill the gas tank while the generator is operating.
- ❑ **Always** use the appropriate size and type of power cord to carry the electric load.
- ❑ **Never** run cords under rugs or carpets where heat might build up or damage to a cord may go unnoticed.
- ❑ **Connect appliances directly** to the generator itself with properly sized power cords.
- ❑ **Provide adequate ventilation** for toxic exhaust.
- ❑ **Provide a cooling airflow** for the machine.
- ❑ **Keep children as far away from the generator as possible.** Teach them to stay away from the generator.

Sources:
American Red Cross Publication #1098; NSTAR
Community Relations Department.



Even when hooked up properly generators can be dangerous, as evidenced by a recent generator fire at the Barnstable Town Offices (Winter 2003).

(Photo courtesy of Stacey Justus.)

Understand Your Stormwater Drainage System



Photos courtesy of MEMA.

Generally, most rainwater is quickly absorbed into the ground or runs into estuaries or ponds and generally poses no flooding concern. If, however, recent rains have kept water levels high, if the ground is frozen, or in extreme droughts when the ground has hardened and is no longer as permeable, there is a greater likelihood of sheet flow, causing surface water “ponding” or standing water in streets and yards. Roadway and parking lot drainage systems are typically designed to handle 25 year storms (a storm that has a 4% (1/25) chance of occurring in any given year).

Even the best maintained drainage systems cannot totally prevent flooding. During and after extremely heavy rain or rapid snow melt, standing water in streets, yards, and low-lying areas for extended periods of time is expected and normal.

HOW CAN YOU HELP?

❑ **Learn** about the drainage system supporting your development or individual home and how it is tied into the area system. Your town engineer can provide this information.

❑ **Report** the location and condition of clogged, damaged, or malfunctioning facilities to town Departments of Public Works or Engineering, or to Homeowners Associations if you live on private streets. They may then have the opportunity to make the necessary repairs and ensure that the drainage systems are functioning properly in advance of a serious storm or rain/melt event.

❑ **Clear debris** from drains or catch basin grates that are near your home or business. During a major weather event while town staff is stressed and likely to be dealing with emergencies, it is not realistic to expect that they will be available to ensure that all drains are clear of leaves, trash, and other debris. Please help enable your community’s drainage system to function by ensuring that the drains in front of your home or business are clear of debris. This simple “good neighbor” measure can go along way to

preventing street and yard flooding and its related property damage.

❑ **Do not treat your drainage system like a garbage disposal.** Keep catch basins, ditches, swales, drainage grates and retention ponds clear of debris, trash and other discarded material, and contaminants.

❑ **Do not pump** flooded basements or empty swimming pools into streets or catch basins as this could clog drainage facilities and pollute nearby water bodies.

Hazardous Household Products

Proper Disposal, Use and Alternatives

WHY IS HAZARDOUS HOUSEHOLD WASTE A PROBLEM?

Overexposure to household products containing toxic ingredients may weaken the immune system or cause chronic health problems. They adversely impact the most vulnerable: the very young and the very old. Discarded improperly, they can contaminate air, water and soil.

Groundwater supplies are at risk of being contaminated by household hazardous wastes disposed of in the trash, on land, or down drains. Surface waters are also at risk of being contaminated in the same way.

WHAT ARE HAZARDOUS HOUSEHOLD PRODUCTS?

Hazardous household products (HHPs) are any materials used around the home that pose a threat—actual or potential—to human health or the environment when handled, stored or disposed of carelessly or dangerously. These materials can be solid, liquid, sludge or compressed gases. They have one or more of the following characteristics:

Corrosive: can burn or destroy living tissue and other materials

Toxic: can cause injury or death when eaten, inhaled, or absorbed; can cause contamination in the environment

Ignitable: can easily catch fire

Reactive: may generate excessive heat, noxious fumes, or explosion when mixed with other substances

A HHP becomes a *hazardous waste* if you throw it away. If the hazardous product is used up or recycled it is not considered hazardous waste. Nor are empty containers, no matter what product they once contained.

COMMON HAZARDOUS PRODUCTS

- Pesticides, Herbicides, Fungicides
- Outdated Pesticides – DDT, Chlordane, Silvex, Pentawood Preservatives
- Rodent Poisons, “No Pest” Strips, Flea Collars
- Gasoline, Brake and Power Steering Fluids
- Radiator Flush, White Wall Cleaner, Bug and Tar Remover
- Furniture Polish, Metal Polish, Moth Balls
- Drain Cleaners, Spot Removers, Solvents, Cesspool Cleaners, Acids
- Oil-based Paints and Stains, Marine Paints, Auto Paints, other Solvent-based Paints
- Solvent-based Paint Thinners and Strippers, Turpentine, Mineral Spirits, Acetone
- Solvent-based Wood Finishes, Varnish, Shellac, Wood Preservatives
- Photo and Pool Chemicals, Chemistry Sets
- Thermostats, Switches, Thermometers, Jars containing Mercury

HOW CAN I TELL IF A PRODUCT IS HAZARDOUS?

Before you buy or use a product, read the label—carefully. And because labels are sometimes incomplete or misleading, watch out for key words that indicate hazardous ingredients: *Flammable, Corrosive, Toxic, Caustic, Warning, Danger, Caution, Contents Under Pressure, Petroleum Distillates, Keep Out Of Reach Of Children.*

Choose products that give clear instructions and explain the hazards involved in the use of the product. Carefully follow instructions and warnings. Until all manufacturers list ingredients and warnings on product labels, be wary of inadequately labeled products.

WHAT SHOULD I DO WITH HAZARDOUS PRODUCTS IN MY HOME?

Above all, be careful when *storing* hazardous products and the tools used with them. Keep these products out of living areas, preferably in a locked storage area if you have children or pets. Store hazardous products in a high and dry location in original containers, away from heat or flames. Check on containers to make sure they don't leak. In an emergency, chemicals should be packed in water proof containers with lids so they can't spill into the ground or water.

With common-sense precautions and handling, hazardous products can be used safely in your home. They only become *hazardous waste* when you throw them away!

WHERE CAN I SAFELY DISPOSE OF HAZARDOUS WASTES?

All Cape Cod towns offer residents free HHP collections each year. You can take part in these collections to get rid of hazardous materials.

Residents also have year-round options for recycling many hazardous materials



at their town's recycling center. Recycle these items instead of saving them for the hazardous household collections, as most towns will not accept them on collection day. Usable oil and latex paints and stains may be recycled in many towns during the warm months.

FOR PROPER DISPOSAL OF:

- Latex and acrylic paints, water-based stains and water-based finishes – open cans and allow the liquid to dry, or add kitty litter to the cans to absorb the liquid. When the liquid is dry or fully absorbed, dispose of the open can in your household trash. These are not considered hazardous.
- Smoke Detectors – place in cardboard box, tape shut, dispose of in trash.
- Ammunition and guns – take to your local police station.
- Auto and marine flares – take to your local fire station or recycling center.
- Explosives – call your local fire department for instructions.
- Lancets and household syringes – call your local fire department for instructions.

BRING TO YOUR TOWN'S RECYCLING CENTER (*ask where to deposit – DO NOT simply throw away with regular trash!*):

- Used Oil and Oil Filters
- Spent Antifreeze (where accepted)
- Old Gasoline (where accepted)
- Rechargeable Batteries
- Fluorescent Bulbs and Mercury-containing Devices
- Empty Fire Extinguishers
- Empty Propane Gas Cylinders
- Empty Cans, including dry paint and aerosol cans
- Televisions, Computer Monitors, and Electronics

ALTERNATIVES TO COMMERCIALLY AVAILABLE PRODUCTS

<u>If you use:</u>	<u>Try:</u>
Air freshener	White vinegar in an open dish or open the window.
All-purpose cleaner	White vinegar undiluted for tough stains, diluted with water for regular cleaning.
Bleach	Borax
Drain cleaner	Use plunger, then pour 1/2 cup baking soda and 1/2 cup warm white vinegar down the drain. After 15 minutes, flush with boiling water to dissolve crystals.
Furniture polish	1 teaspoon lemon oil in 1 pint mineral oil
Glass cleaner	Mix 3 tablespoons white vinegar, 1/2 teaspoon liquid soap, and 2 cups water.
Oven cleaner	Sprinkle spills with baking soda, cover with wet paper towels, and let stand overnight, then wipe up and rinse. Or set a dish of ammonia in the oven overnight. Add water to the ammonia in the morning and wipe the interior.
Metal polish	Clean copper, bronze and brass with a paste of white vinegar and salt; rub metal, then rinse and dry.
Scouring cleanser	Use baking soda, salt, borax or a non-chlorine cleanser.
Toilet bowl cleaner	Pour 1/2 cup borax into bowl and let stand overnight, then scrub with brush.

HOW CAN I REDUCE MY USE OF HAZARDOUS PRODUCTS?

Several methods exist to eliminate or reduce the need for hazardous household products. There are many natural or nontoxic products commercially available, and many can be made from common household products such as baking soda, salt, and white vinegar.

Homemade cleaners allow for individual control over ingredients. Not only can you avoid dangerous ingredients, but irritating dyes and perfumes also. You should remember, however, that some alternative methods may not be completely non-toxic. Using them helps to reduce hazardous waste and contributes to the overall effort to create a healthier environment.

When buying products in the home, auto and yard categories listed on previous pages, take the time to compare labels. And don't let words like

“organic,” “natural” or “nontoxic” mislead you. Take note of the ingredients because some products classified as nontoxic do contain toxic ingredients. And not all natural ingredients are safe.

Use water-based products whenever possible.

Use cleaners wisely:

- Use heavy-duty cleaners only for heavy-duty jobs.
- Use elbow grease instead of solvents.
- Avoid aerosols by using pump sprays or wipe-on products.
- Avoid chemical air fresheners by correcting the source of the odor.
- Use a plunger or hand snake for unclogging drains.

Examine your painting needs and practices:

- Use latex or water-based paints whenever possible.

- Buy only what you need and use it all up.
- Use wood preservatives only if water repellants won't do.
- Reuse solvents and thinners by letting solids settle and pouring off the clean liquid.

Reduce or eliminate pesticide use:

- Plant native species and maintain plant health.
- Learn about pests and plant diseases and how to target them effectively.
- Use non-chemical controls first.

Avoid products that contain these ingredients:

- Chlorinated compounds such as trichloroethane or methyl chloride found in solvents and paint strippers.
- Creosote or penta wood preservatives.
- Lye or sodium hydroxide found in drain and oven cleaners.
- Phenols found in disinfectants and germicides.
- Petroleum distillates found in furniture and metal polishes, pesticides, and paint thinners.
- Aerosols, because spraying causes contents to break into particles small enough to be inhaled.

Older products should be handled with care. They may contain toxic chemicals that are no longer sold. Dispose of them at your town's Hazardous Household Products Collections.

Call for information about HHP collections/disposal:

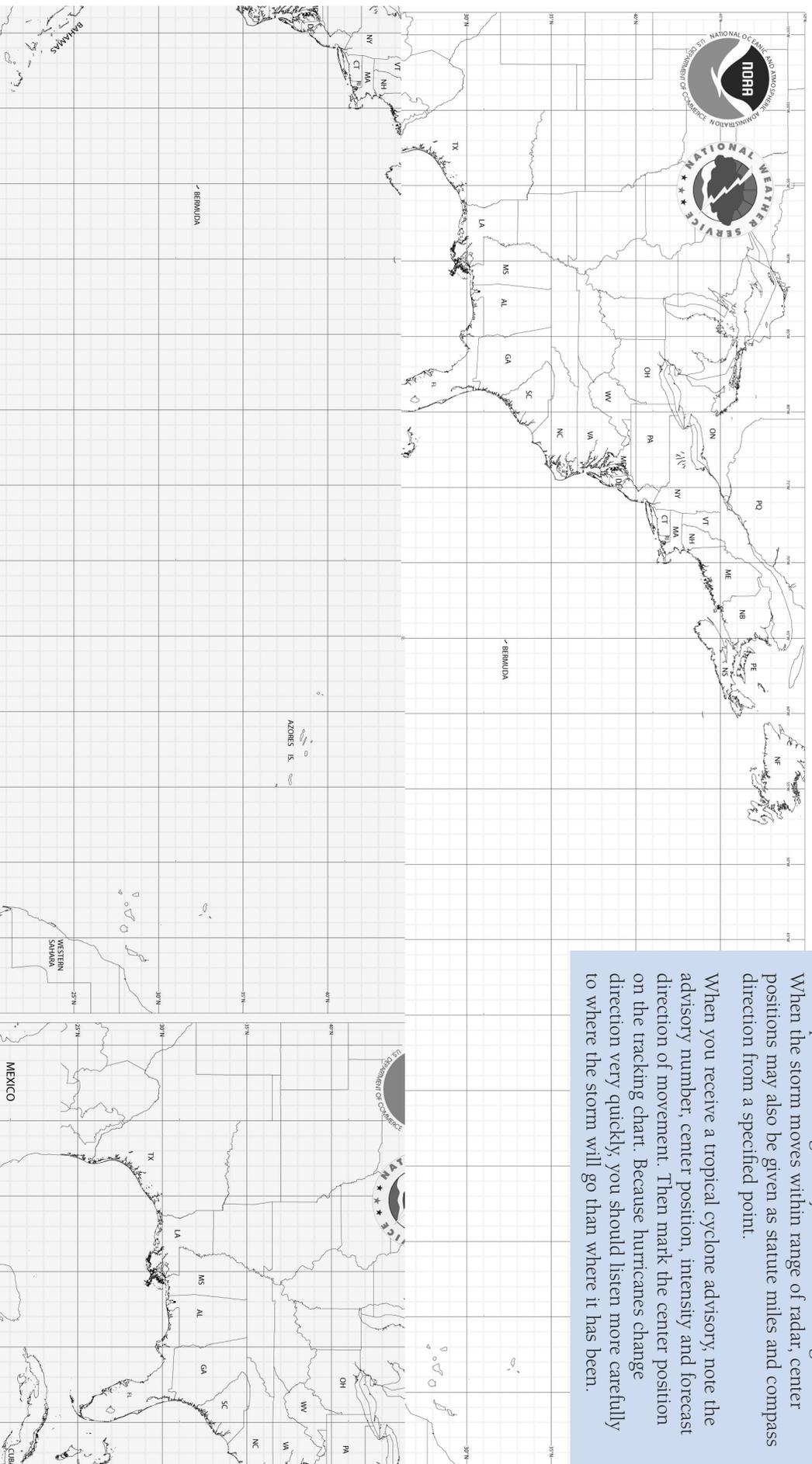
Barnstable	508-420-2258
Bourne	508-759-0651
Brewster	508-896-3701 x120
Chatham	508-945-5165
Dennis	508-760-6158
Eastham	508-240-5907 x229
Falmouth	508-495-7485
Harwich	508-430-7558
Mashpee.....	508-539-1420
Orleans	508-240-3770
Provincetown	508-487-7000 x537
Sandwich	508-833-8003
Truro	508-349-7004 x32
Wellfleet.....	508-349-0308
Yarmouth	508-394-0141

Sources:
 This information and all photos were provided by Barnstable County's Cape Cod Cooperative Extension. See www.capecodextension.org



Tracking a Hurricane

Atlantic Basin Hurricane Tracking Chart National Hurricane Center, Miami, Florida



HOW TO TRACK A HURRICANE

Tropical cyclone advisories are issued at six-hour intervals by the National Hurricane Center/Tropical Prediction Center. Each message gives the name, center (eye) position, intensity, and forecast movement of the tropical cyclone. Advisories are numbered consecutively for each storm. Present location and intensity are described, and expected movement is given. Hurricane center positions are given by latitude and longitude.

When the storm moves within range of radar, center positions may also be given as statute miles and compass direction from a specified point.

When you receive a tropical cyclone advisory, note the advisory number, center position, intensity and forecast direction of movement. Then mark the center position on the tracking chart. Because hurricanes change direction very quickly, you should listen more carefully to where the storm will go than where it has been.

Important Contacts

For further information regarding natural hazards and disaster preparedness in your community contact your town's Local Emergency Manager at:

Barnstable(508) 775-0920	Bourne(508) 759-0607
Brewster(508) 896-7011	Chatham(508) 945-1213
Dennis(508) 394-1313	Eastham(508) 255-2324
Falmouth(508) 548-7611	Harwich(508) 430-7541
Mashpee(508) 539-1454	Orleans(508) 255-0050
Provincetown(508) 487-7099	Sandwich(508) 888-0136
Truro(508) 487-8730	Wellfleet(508) 349-3702
Yarmouth(508) 775-0445	

Should a weather event threaten Cape Cod, residents and visitors can tune to the following stations for up to date information:

MASSACHUSETTS NOAA				
WEATHER RADIO TRANSMITTER:	CALL	FREQ (MHz)	WATTS	NWS Programming Office
BOSTON	KHB35	162.475	500	BOSTON, MA
EGREMONT	WXM82	162.450	300	ALBANY, NY
GLOUCESTER MARINE	WNG574	162.425	300	BOSTON, MA
HYANNIS (Camp Edwards)	KEC73	162.550	1000	BOSTON, MA
MT. GREYLOCK	WWF48	162.525	100	ALBANY, NY
WORCESTER	WXL93	162.550	500	BOSTON, MA

LOCAL RADIO STATIONS:

WCAI	90.1 FM	Woods Hole, MA	WCCT	90.3 FM	Harwich, MA
WKKL	90.7 FM	West Barnstable, MA	WNAN	91.1 FM	Nantucket, MA
WSDH	91.5 FM	Sandwich, MA	WOMR	92.1 FM	Provincetown, MA
WMVY	92.7 FM	Martha's Vineyard, MA	WDVT	93.5 FM	Harwich Port, MA
WXTK	95.1 FM	West Yarmouth, MA	WRZE	96.3 FM	Nantucket, MA
WJFD	97.3 FM	New Bedford, MA	WCTK	98.1 FM	New Bedford, MA
WPLM	99.1 FM	Plymouth, MA	WQRC*	99.9 FM	Barnstable, MA
WTWV	101.1 FM	Mashpee, MA	WCIB	101.9 FM	Falmouth, MA
WPXC	102.9 FM	Hyannis, MA	WOCN	103.9 FM	South Yarmouth, MA
WKPE	104.7 FM	Orleans, MA	WCOD	106.1 FM	Hyannis, MA
WFCC	107.5 FM	Chatham, MA	WRKO	680 AM	Boston, MA
WBZ**	1030 AM	Boston, MA	WBUR	1240 AM	West Yarmouth, MA

*In case of an emergency the Massachusetts Emergency Management Agency, the State Police, the Governor, or the National Weather Service can activate the **Emergency Alert System**. Cape Cod's designated primary regional recipient of this EAS is **WQRC 99.9 FM**. Other Cape stations monitor WQRC for these emergency broadcasts and then rebroadcast the information.

****WBZ 1030 AM** is the state alternate primary regional recipient of the Emergency Alert System. Tune here if WQRC is unavailable for some reason.



This publication was produced collaboratively as a public service by:

American Red Cross – Cape Cod Chapter
Barnstable County Fire Chief's Association
Cape Cod Animal Emergency Coalition
Cape Cod Commission
Cotuit Fire Department

Barnstable County AmeriCorps
Barnstable County Sheriff's Office
Cape and Islands Emergency Medical Services System
COMM Fire Department
Harwich Fire Department