

---

## Wildfire: Are You and Your Home Prepared?

---



## Wildfire: Are You and Your Home Prepared?

[Introduction](#)

[The Homeowner's Role](#)

[Understanding Wildfire](#)

[Your Building Site](#)

[Improving the Firesafety of Your Structures](#)

[Firewise Landscaping to Improve Fire Safety](#)

[Maintenance](#)

[A Home Check-up](#)

[Assess Your Home's Wildfire Safety On-Line](#)

[Download A Printable Home Wildfire Safety Assessment Form](#)

The information provided here was developed by the [Great Lakes Forest Fire Compact](#)

---

### ***Introduction to the Wildfire Problem***

After the last ice age, fire became the main natural cause of change in the Great Lakes region of North America. Fire has affected the location and ages of plants in the region and promoted tree species of white, red, and jack pine.

Before Europeans settled here, the intervals of natural fires ranged from 20 years in Northwest Minnesota and Ontario to 100 years in the pine forests of Wisconsin, Michigan, and central Ontario. Settlers first came to the region largely because of the abundant forests. This development upset the natural balance of fire by changing the landscape and increasing the number of fire starts.

The results of many of these fires have been huge losses of life and great damage. Some examples are:

- Wisconsin and Michigan - The Peshtigo fire on October 8, 1871, claimed 1,500 lives and burned 2,500,000 acres (810,000 hectares);
- Michigan - in 1881, a great fire took 169 lives and burned 1 million acres (400,000 hectares);
- Minnesota - The Hinckley fire on September 1, 1894, burned 1 million acres (400,000 hectares) and claimed 418 lives;
- Ontario - On July 29, 1916, the Matheson fire burned 500,000 acres (200,000 hectares) and 250 lives were lost.

In the Great Lakes region, 6,000 wildfires burn more than 740,000 acres (299,500 hectares) of forests each year. We use the name wildfire to describe any unplanned or unwanted natural or human-caused fire. Each year, wildfire costs millions of dollars. Firefighting is needed; business, industry, and recreation are interrupted, and there are huge losses of property and other resources.

Why are there more wildfires with more property losses than ever? Why is it likely that there will be even more fires in the region? First, reforestation has resulted in the return of pine forests, which are good conductors for fire. Second, more people are moving to rural and forest areas to get away from crowded cities. More people are also coming for recreation.

We can live in harmony with nature but we have to know how to prevent fire. Unlike the early settlers, we can easily find out about the hazards and risks of fire and how to prevent fire disasters.

This booklet is for permanent and seasonal residents of rural and forest areas, and for anyone planning to move into such an area. It explains how you can prepare yourself and your home and how to make sure fires don't start.

## **Causes of Wildfire**

Three-quarters of wildfires are caused by people being careless. These fires can be prevented. One-third of them are caused by recreationists such as campers, anglers, and hunters. In the Great Lakes region, more than one-quarter, or 1,500 fires annually, are caused from careless burning by residents, and children playing with matches.

Fires in rural and forest areas are hard to control. Homes are usually not close to fire stations, and tend to be far apart and hard to reach. Because there are fewer firefighters than in cities, when some are sent to protect homes and families from wildfire, the wildfire may spread more quickly. Properties that have not been fire-protected add to the fire hazard.

### **What can be done about it?**

Adding more firefighting resources is not the answer. The real solution is up to you. As a resident, you have to know the hazards and the risks and learn what you have to do to protect yourself and your property. Ask for help from your local fire agency.

When you do everything you can to reduce the risk of fire, you help to reduce wildfires. The cooperation of everyone is needed.

## **Wisconsin's Peshtigo Fire**

October 8, 1871 was the date of one of Wisconsin's most serious fires in terms of human lives lost. Known as the Peshtigo fire, it took more than 800 lives in Wisconsin and burned more than 1.5 million acres (622,000 hectares). In one hour, a village of 2,000 people was completely wiped out.

In 1977, the Saratoga fire on the outskirts of Wisconsin Rapids destroyed 90 buildings and burned more than 6,159 acres (2,490 hectares). Many people had to be evacuated.

Over the years, the number of large wildland/urban fires (those fires that occur in areas where homes, towns, or cities and wooded lands meet), building losses, and fire protection problems have increased. The fires have ranged from 2 acres (0.8 hectares) to the 17,590 acre (7,120 hectare) Brockway fire near Black River Falls. The Brockway fire threatened two entire communities.

The second home, or "place up North" has become an enjoyable source of family recreation. It has also become a fire protection problem for local fire protection agencies in Wisconsin. Many homes fall short of current fire-safety standards. Fire protection agencies are cooperating with each other to solve this problem by educating property owners through individual and group meetings, inspections, video tapes and self-help aids such as this booklet.

The solution to the wildland/urban fire problem is complex and will require the cooperation of everyone concerned.

## **Michigan's Stephan Bridge Road Fire**

It was May 8, 1990, near Grayling in North-central Michigan. In a little over four hours, the Stephan Bridge Road fire travelled 8 miles (13 kilometers), burning 5,916 acres (2,390 hectares) and destroying 76 homes, 125 other buildings, and 37 vehicles. More than 300 people had to be evacuated. Losses totalled over \$5.5 million for property, and \$500,000 in state-owned timber resources.

The fire was detected within minutes after it started and fire crews were close by. Despite this, it could not be stopped. The first firefighters at the scene said that the fire was already moving through the tree-tops and several buildings were on fire.

- A number of measures would have stopped the spread of the flames:
- allowing for more space between buildings and vegetation that could catch fire;
- keeping firewood away from buildings;
- keeping porches and decks (both on top and below) and roofs clear of dead leaves, needles, and twigs;
- having private roads and driveways that are fairly straight and wide so firefighters can get to the buildings and leave in a hurry when there is danger.

Fortunately, wood shake roofs aren't usually used in this area. Asphalt-surfaced roofs saved many homes because the burning embers falling on them usually went out. However, some homes with asphalt surfacing on their roofs were not protected because dead needles and twigs had not been cleared from the roofs.

A report on the fire from the National Fire Protection Association noted that a large number of area residents were unaware of or ignored fire hazards. Many residents had not protected their homes against fires, even though the area had a history of many large fires.

One resident said that he had been told for years that the surrounding jack pines could be a major element in supporting a destructive forest fire. However, he had never believed it. His home was destroyed.

## **Minnesota's Huntersville Fire**

At 11:28 a.m. on September 7, 1976, smoke was spotted 3 miles (5 kilometers) southeast of the Nimrod fire tower. The forester in-charge headed for the fire and notified a 20-person station nearby. By two-way radio, he asked for helicopter and water bomber drops.

The crew was only able to work on the rear and sides of the fire since there was no way the front could be stopped. By 1:00 p.m. the fire was one mile (1.6 kilometers) long and one-quarter mile (.4 kilometers) wide and burning faster. It raced through slash (a litter of dry twigs and branches left after logging) and later jumped a road and moved into dense stands of jack pine. During the next four hours, the fire raced another 8 miles (13 kilometers).

In the afternoon, the wind shifted from the southwest to the northwest. The fire's direction and strength changed, spreading to a 9-mile (14.5 kilometer) wide front.

Luckily, by night the wind slowed, the temperature dropped, and light rain began to fall. The giant fire was then brought under control.

The Huntersville fire consumed more than 23,000 acres (9,310 hectares) and cost almost \$1 million in firefighting resources. Six occupied and several unoccupied cabins, a store, and a few abandoned buildings were destroyed. Most unburned homes were saved because they had enough clearance from combustible vegetation. Others were saved because the residents had driveways suitable for fire vehicles to get to the homes

## **Ontario's Kenora 14 Fire**

It was a warm spring morning in April of 1988 - one of several during the month that had increased the fire danger to extreme in the Kenora area. A ban on campfires was being considered for Northwestern Ontario.

An innocent but serious mistake by a local cottager would soon send the Kenora Forest Fire Headquarters into action and result in millions of dollars in damage to summer homes and area forests.

On April 30th, the cottager delivered a small trailer full of brush to an area garbage dump. Despite obvious "NO BURNING" signs at the dump site, the cottager ignited the brush.

The fire spread quickly through the dump site and into the adjacent forest before it was reported to the Kenora Forest Fire Headquarters. This fire was to be known as Kenora 14, the 14th fire of the season for the district.

Hot dry winds blew from the south, fanning the flames and causing Kenora 14 to spread quickly. It was headed for prime cottage country with more than 200 summer homes in its path.

Firefighters worked hard to save the cottages and, in some cases, risked their lives by pulling burning embers from underneath unskirted (foundations unenclosed) buildings.

Before it ended, the Kenora 14 fire burned 10 cottages, many out-buildings, several boats and other equipment. The loss of timber for local pulp mills was in the millions of dollars.

The loss of those 10 cottages could have been prevented if the owners had carried out a few, simple measures like those found in this article.

### **The Homeowner's Role**

As a resident in a rural or forest area, you play a key role in wildfire protection. Perhaps you are already a member of a group organized to protect yourselves from fire. Cooperative groups have been formed after almost every large fire in North America, to develop protection strategies to prevent future fires and the related losses.

You are responsible for protecting your buildings and property. If you already live in, or are planning to build in rural areas, you should take fire into account. It isn't difficult. Common sense will help you plan precautions.

## The Basic Steps to Wildfire Protection

1. Understand how wildfires start and spread
2. Choose a building site that offers natural protection
3. Build a house that is fire-resistant, or improve the fire-resistance of your present house.
4. Use firewise landscaping principles to reduce a fire's ability to spread easily.
5. Follow fire-safety rules.

These steps all work together. When you are weak in one factor, another strong step may make up for it. For example, wildfire has less chance to reach the foundation if you keep material that easily burns away from the building. This way, how the construction materials used for the foundation aren't quite as important. But, if a vital step is lacking in an important area, any improvements may mean nothing. If there is vegetation growing right by the building, the building may burn even though other measures were followed.

## Understanding Wildfire

It helps to understand how fire works. You can then be more aware of the things around your home and property that may catch fire. Every fire needs three things to start and burn: fuel, oxygen, and heat. Heat comes naturally from lightning, or it may come from man-made sources, such as chimney sparks, barbecue and incinerator coals, and matches. Oxygen is always in the air. Fuel is the trees, shrubs, and ground cover (including your lawn); it can also be your house and outbuildings.

### Heat Transfer

Heat transfer is heat passing from one place or substance to another. It is the main way that fire spreads. There are four ways that heat can pass.

Radiation is where heat moves out from the source in all directions. You feel radiant heat when you sit beside a campfire. As a fire gets hotter, more heat is radiated. This type of heat can make wood foundations catch fire when nearby plants and debris are burning.

Conduction is the movement of heat through an object. When a fire starts at one end of a log, the heat is conducted through it and the whole log catches fire. You depend upon conducted heat to cook foods in a pan on your stove.

Convection occurs when heated air rises from the heat source. Convection causes fire to spread up hills, into tree-tops, and to roofs. Strong winds bring convective heat into contact with unburned fuels, causing pre-heating.

Sparks can be carried for up to a mile (1.6 kilometers) ahead of a forest fire. They leap over any barrier and cause the fire to spread even faster. They also make the spread of fire very difficult to predict and control.

### Fuel

Fuel is any living or dead material, above, on, or below the ground that will burn. With enough heat, almost anything burns. Fuel is described in terms of loading and distribution.

Fuel loading is the size of the material and the amount available. Fine leafy or woody debris, such as that found on forest floors, acts as kindling. It easily catches fire, and, as it burns, it creates heat that dries out, preheats, and sets fire to larger fuels such as trees.

Fuel distribution includes the fuel on the ground and above the ground.

- Fuel that lays evenly on the ground lets fire spread easier.
- Fuel that spreads upward, such as shrubs, small trees, and low branches, is called a fuel ladder. Fire climbs to tree-tops on fuel ladders.
- Crown fuels are the branches and leaves to tree-tops.

Wildfire can easily spread from tree-top to tree-top in areas where the crown fuels are close together and where there is a lot of ground fuel. For protection against this type of fire, create fuel breaks and get rid of most of the growth beneath the trees.

## **Weather**

Weather is the most important factor influencing how a fire behaves and therefore its potential to threaten your property. Weather includes temperature, wind, relative humidity (amount of moisture in the air) and precipitation (rain or snow).

Weather influences wildfire by the way it affects the moisture content of forest fuels. The drier the fuel, the less heat needed to start a fire and keep it burning.

Temperature affects drying and preheating of fuels, making them easier to ignite.

Wind can act to dry fuels. It also affects the size and direction of a spreading fire. In the Great Lakes region, the wind comes mainly from the west, from southwest to northwest.

Relative Humidity affects the moisture content of fine fuels like leaf debris, grasses, twigs and needles. The lower the relative humidity, the easier fuels will ignite.

Precipitation increases the moisture in forest fuels. A dry spring, or even a few days of drying after a rain, can leave forest fuels very dry, creating hazardous conditions.

Morning and evening tend to be cooler, with lighter winds and higher relative humidity. Afternoon tends to be drier and warmer.

Season affects moisture content of ground cover and trees. In early spring and late fall, ground cover made up of dead, loose material from the summer before is at its driest. Fires start easier and spread faster. In spring and fall fire spreads so quickly it can get out of control in minutes. In summer, when vegetation is moisture-laden, fires do not spread as quickly, but they are usually hotter.

## **Topography**

Topography describes land features such as lakes, rivers, swamps, hills and their relationship to one another. Water areas increase the moisture in the land and air around them.

Fires spread faster uphill due to heat radiation and convection. The steepness or slope of a hill affects how fast a fire will spread. The greater the slope, the faster the spread. As well, hillsides facing west or south have a greater fire risk because they get more sun and so are drier.

How a fire burns is complex and influenced by many uncontrollable factors; however, understanding basic fire behavior can help homeowners to assess their home's risk and its most unprotected areas.

## **Your Building Site**

Choose the location of your house and the type of site carefully. The chance that your property will survive a wildfire could depend on the decisions you make. Read all the information in this article to find out how to avoid common and perhaps costly mistakes.

What if you already own a site? You can make many fire prevention improvements around your house and land, as suggested in this article.

## **Choosing a New Site**

### **Fire Protection**

You may have chosen to live in either a rural or forest area to get away from a busy city. Don't forget that the fire department may be only a small group of volunteers, located far away. Before you buy property, it is a good idea to ask local fire officials if the fire department will have trouble getting to the site that interests you. More information can be found in the subsequent section titled "access."

### **Slopes**

Don't be tempted to build on a hillside because of the marvelous view. It could cost you your home. Level building sites are the best protection from wildfire.

If your site is near a ridge, set your home back 30 to 100 feet (10 to 30 meters) from the crest. Clear vegetation downslope from the house. Avoid narrow valleys or canyons. These act as natural chimneys during a fire, and would draw heat and flames to your home.

## **Improving Sites**

### **Access**

Firefighters need to get to your home quickly and safely. They also need room to move their equipment around.

- A gate with a strong lock could stop firefighters from reaching your home in time to save it. If you must have a locked gate, leave a spare key with your local fire agency.
- Access roads should be two-way, with broad shoulders to let emergency vehicles through. Avoid steep and winding roads. Plan grades that have no more of a rise than 10 feet in 100 feet (3 meters in 30 meters). Provide a minimum unobstructed width of 12 feet (4 meters), and a minimum unobstructed height of 14 feet (4.2 meters).
- Try to put your driveway on the downhill side of your home or the side that faces the wind. This makes a good fire barrier.
- Bridges have to be wide and strong enough to hold a fire truck. We recommend that the bridge should support a minimum weight of 40,000 pounds (18,100 kilograms). Ask your local fire officials what they require. They may have a small truck now, but could buy heavier equipment in the future. Ask them to check out bridges on your property, and on roads leading to your property.
- A turnaround is ideal for the end of your private drive or road. Make sure it is at least 100 feet in diameter. Don't park on it. Clear a separate area for parking.

## **Make Your Home Easy to Find**

Firefighters need to find your property quickly. At the entrance to your property put up a sign with your house number, road name, and any other needed details. Make sure the sign can be read from the main road. Use large, easy-to-read letters and numbers in a color that contrasts with the background. Keep trees and bushes cut back so that sign always stands out.

## **Structures**

When we think of having a home in a rural or forest area we tend to dream of a cedar shake chalet with a broad, open deck and a cozy fireplace, nestled among tall pines. To protect yourself from fire, this is not the type of structure and surroundings you want. However, if this is what you already have, you can still do a lot to make your home more "firewise."

## **Start With Design**

Your home can be fire wise and still be attractive. Protective features such as smoke detectors, sprinkler systems, water taps and enclosed eaves are easy to add. If you are building or renovating, you and your architect or builder should talk to fire safety experts and have them review your plans.

## **Construction Materials**

### **Roofing**

Roofs are the largest surface areas exposed to airborne sparks. Studies show that sparks setting fire to wood shake roofs are the major reason for home losses in rural and forest areas. The best roofing materials are those that have the best resistance to fire.

Metal, tile, and fiberglass roofing materials offer the best protection because they are not likely to catch fire.

Asphalt shingles and tar paper are less protective because they are made of oil-based products which can catch fire when exposed to enough heat. Wood, such as cedar shakes, offers the least protection. The smallest spark can set fire to dry, sun-baked wooden shingles. Note: fire retardants are available, but must be applied at regular intervals. Follow the manufacturer's recommendations.

### **Eaves troughs**

Metal eaves troughs are the best. Wooden and plastic eaves troughs are a hazard. All eaves troughs can be a danger if they are not regularly cleaned; airborne sparks can set fire to debris in them.

### **Outside Walls**

Like roofs, walls should be built with fire-resistant materials. Stone, brick, and metal are the best. Wood and vinyl give the least protection.

## **Foundations**

The foundation area of a building is often the first area to come into contact with a spreading wildfire. Stone, brick, and cement are the materials to use here. A closed foundation is safer than an open foundation.

**Closed** - The best foundations are made of cement block or stone. The material will not burn, and fire can't be trapped under the building, where it would set fire to beams and floor bases.

**Open** - A foundation of wood posts or cement-block pillars with no skirting around has the greatest risk and should be fire-protected. It can be improved by covering open areas with one-quarter inch (6 mm) wire mesh. If there is a good fire break around the building (see the Landscaping section), wooden or fiberglass skirting is acceptable. Skirting also helps to reduce the accumulation of debris under the building. Note: never store flammable materials underneath.

## **Structural Hazards to Watch For**

### **Roofs**

A flat roof holds sparks that heat up and set fire to the roof. Sparks will roll off a steep roof, but can get caught in any roof valleys or grooves.

Eaves (the projecting roof edges) should be boxed in or have little overhang. This lessens the chance of heat or flames becoming trapped there. Eaves troughs should be cleaned regularly.

Attic and under eave vents can draw sparks into the attic, starting a fire. Under eave vents should be put near the roof line and away from the wall.

Cover all outside vents with wire mesh, not larger than one-quarter inch (6 mm). Do not use plastic or nylon mesh as it will melt and burn.

Keep chimneys above the roof line.

Roof sprinklers can give a false sense of security. Don't forget that the pumps will fail if electricity stops, high winds can blow the water away, and water pressure is often lowered when firefighters open hydrants in public water systems.

### **Windows**

Windows are often overlooked as fire hazards, but they can be a serious risk. Radiant heat can pass through them and set fire to curtains. More heat is radiated with large windows and they break more easily. Cracked windows shatter with heat, letting in fire and sparks.

Multi-pane windows provide insulation from trapped air and give more protection from radiant heat than single-pane windows. Tempered safety glass should be used for picture windows, sliding doors, and other large glass areas.

Protect windows from the outside with fireproof shutters. Fire -resistant draperies and metal flashing around skylights will also add protection to your home.

## Heating Systems

The choice of heating systems will not affect the survival of your home in a wildfire, but it affects the extent to which your home is a fire hazard. Heating a building with a wood-burning stove or furnace increases fire hazards. The hazard increases even more when the chimney is not insulated and has no spark arresters. Spark arresters and regularly cleaned chimneys will greatly reduce the risk of starting a fire.

## Firewise Landscaping

Fire wise landscaping means changing, reducing, or eliminating the amount or type of fuel near your building by creating a fuel break. The fuel break should be around all buildings and be at least 30 feet (9 m) wide, with more width on the downhill side of a slope.

Clear a 3 foot (1 m) strip around the outside of each building, right down to sand or gravel (mineral soil). This cuts down on the treat of a surface fire burning across the stip and reaching the building. This strip is the first section of your fuel break.

Trees in the 30 foot (9 m) fuel break should have all branches removed up to a height of 6 to 10 feet (1 to 3 m). Space the trees so that the edges of the crowns are at least 10 to 16 feet (3 to 5 m) apart.

Keep the fuel break clear of everything that could burn. Remove small trees, household debris, ground fuel, and shrubs.

A green lawn or a rock garden are good fuel breaks. Grass must be kept watered and cut, and dead grass removed.

Stone, brick, or masonry walls, free of vegetation, are good fire barriers. They can be located inside or outside of the fuel break area.

**Beyond the 30 foot (9 m) fuel break area**, prune branches away from power lines and outbuildings. Remove ladder fuels by cutting lower branches and any dead branches. Remove small shrubs, scrub growth, ground litter, dead trees, and older trees.

## Fire-Resistant Plants

Many common plants naturally resist fire and can keep fire from spreading. Generally, well-watered green plants burn slowly. Select plants that have little oil content, or that don't produce much litter, or have leaves that stay moist. All of the plants listed below will survive in the Great Lakes/St. Lawrence Forest Region. Your local garden center can provide more information.

### Ground Covers

Goutweed (Aegopodium)

Bugleweed (Ajuga)

Lily-of-the-valley (Convallaria)

Japanese Spurge (Pachysandra)

Spotted Lungwort (Pulmonaria)

Stonecrop (Sedum)

Spurge (Spurge)

Periwinkle (Vinca)

### **Shrubbery**

Native Bearberry (Arctostaphylos)

Bearberry (Cotoneaster)

Euonymus (Euonymus)

Lilac

### **Keeping Your Property Safe**

Proper maintenance of your structure and the surrounding grounds helps considerably in protecting your home from wildfire. The guidelines presented here apply at any stage of construction or occupation of the site.

#### **Fire-safe Storage**

Store items that could easily catch fire at least 30 feet (9 m) away from your home. They should be outside your 30 foot (9 m) fuel break. These items include:

Fuel

Fire wood

Oil and propane tanks

Brush and slash

Gasoline

Paint and Solvents

Get rid of brush and slash by chipping or composting. Gasoline, paint, and solvents can be very dangerous; store these materials in a cool, well-aired area, away from other flammable materials. Clean up spills and safely dispose of soiled rags, following local environmental rules for disposal.

## **What to do with yard waste**

Don't burn yard wastes. This may start a wildfire. You can make use of all material such as grass clippings, hedge trimmings, or dead plants. Plow or roto-till it into your garden. Or make compost or mulch with it.

## **Composting**

There are several ways to do this. The easiest is to put all garden and yard waste in one pile in a back corner of your property. The waste will slowly decompose (break down). If you want it to break down faster, your environmental agency or Cooperative Extension Service office can advise you of various methods.

## **Mulching**

Spread garden and lawn waste in thin layers on the ground. For example, grass clippings, leaves, and compost can be placed around garden vegetables and flowers to keep down weeds and retain moisture. Mulching will also keep the soil around your plants cooler in summer and warmer in winter.

If you must burn yard wastes, check with your local fire agency for fire permit regulations and safety information.

## **Fire Safe Lifestyles**

Make sure you and your family are prepared for a fire emergency.

- Keep firefighting equipment handy. This includes fire extinguishers, buckets, shovels, ladders, and lengths of hose.
- Develop a fire escape plan. Practice it with your family regularly.
- Have at least two ground-floor escape exits.
- Install smoke detectors or alarms and test them monthly. Replace batteries annually, or as recommended by the manufacturer.
- Set up a fire-watch with neighbors. This can protect your home when you are not there.

Have reliable telephones or two-way radios and keep the local number for reporting fires handy.

## **Your Home Check-up**

- Mark the entrance to your property with a sign that can be easily seen and read.
- Cut grass short around your buildings.
- Clear a 3-foot (1 m) strip right down to sand or gravel around all buildings.
- Create defensible space around your buildings by creating a 30 foot (10 m) wide fuel break with additional space on downward slopes.
- Extend this defensible space by removing dead wood, ladder fuels, and thinning out grown beyond the 30 foot (10 m) fuel break.
- Store materials that easily catch fire away from main buildings.
- Put skirting or mesh around open foundations.
- Replace wooden shingles with fiberglass ones, metal, or regularly treat the wooden shingles with a retardant.
- Put fire retardant on wood siding, or, better still, brick the outside of your home. Metal and stone are also good, fire resistant siding materials.

- Close in the ends of eaves, and put metal screens on vents.
- Insulate chimneys, and put spark arresters on them.
- Keep roofs and eaves troughs clear of debris.
- Keep firefighting equipment handy. This includes fire extinguishers, buckets, shovels, ladders, and lengths of hose.
- Develop a fire escape plan. Practice it regularly with your family.
- Have at least two ground-floor escape exits.
- Install smoke detectors or alarms and test them regularly. Replace batteries annually, or as recommended by the manufacturer.
- Set up a fire-watch in your neighborhood. This can protect your home when you are not there.
- Have reliable telephones or two-way radios and keep the local number for reporting fires handy.

**Tips if you are planning to build or purchase in a rural or forested area:**

- Choose as flat a site as possible.
- Avoid narrow, steep, or winding roads and driveways.
- Place driveways on the downhill side of your home, or the side toward the prevailing wind, to act as a fire barrier.
- Do not build on poles or pilings.
- Use roofing and siding material that won't catch fire.
- Keep chimneys above the roof line.
- Install water taps on two sides of your home and near each outbuilding. Attach hoses to each tap.
- Use firewise landscaping techniques in the design of your yard. Using your yard to create defensible space is the most important fire safety practice.
  - Manage the vegetation to provide a fuel break of 30 feet (10 m).
  - Use fire-resistant plants.
  - Masonry walls at least 2 feet (60 cm) high provide additional protection.

The guidelines on this page are generally accepted in most states and provinces. However, check with your local officials to find out what local regulations may apply. Rural and forested areas sometimes have special building and zoning codes.

The information presented here was developed by the Great Lakes Forest Fire Compact.