Guide

Kristiansand municipality

2026

FIRE SAFETY IN OLD WOODEN HOUSES

For residents and homeowners

Introduction

Almost all Norwegian cities have had major fires at some point in history. And it may happen again: at least 60 buildings were damaged by the fire in Lærdal in 2014. Fires are especially dangerous when it is windy. Only the direction of the wind saved Posebyen, the neighbourhood with old wooden houses in Kristiansand, from the fire that ravaged the town in 1892.

Only one thing really matters in the event of fire: to save lives. The purpose of smoke detectors, fire extinguishers and escape routes – which are required by law – is precisely to warn inhabitants and enable them to get out before it is too late.

In neighbourhoods with many wooden houses some more precautions are necessary. While the municipality and the fire department can do much to prevent fire, a lot also depends on inhabitants and houseowners. A fire can spread very quickly from one house to the next, and if the wind is strong – something which is often the case in Kristiansand – a fire may become very hard to control. Such neighbourhoods will be safer for everyone if all houseowners and inhabitants contribute.

This handbook is intended for everyone who lives in old wooden houses, regardless of whether they own or rent their home. The chapter for inhabitants provides advise as to what to do in case of fire, and how to prevent fires. The chapter for houseowners (which is also useful for tenants) describes how buildings can be safer in case of fire, and how to prevent fires from spreading. You will also find a list of useful references and webpages.

Please keep this guide. It may be useful as a reminder, and for new inhabitants.

Cover photo: This old house in central Kristiansand burned down on December 28th, 2025. The firewall saved the building next door.
Left: The fire department in Kristiansand in 1899.

Fire safety is a shared responsibility

Many fires are caused by forgetfulness, as for instance when someone forgets a pot on the cooker. If proper safety measures are in place, such fires can be either avoided or discovered in time, so they can be extinguished before they develop. This concerns everyone in a house, regardless of whether they own or rent their home, or whether they are only visiting.

Fires are quick and deadly. It is important to know how to get out in case of fire, and how to extinguish a small fire. And everyone should know the requirements for fire safety in a building, not only for their own safety but also because it is required by law. According to the regulation on fire prevention* everyone in a house must act in such a way as not to cause a fire. The regulation also establishes that everyone in a house is responsible for making sure that smoke detectors work, by checking them regularly and changing batteries when required. If such safety measures are lacking, or escape routes are blocked, those who live in a house are responsible for informing the landlord.

Knowledge about fire safety can be a matter of life or death.

If a fire really takes hold, the consequences can be difficult to comprehend. The picture shows a fire in Sandviken in 1935.

** You can read more on page 55.*

30 sekunder

By now, smoke alarms should have detected the fire and alerted your family.

60 sekunder

With no warning, the fire goes unchecked. It will quickly take hold, giving off poisonous smoke.

3 minutter

The fire has reached in excess of 800 degrees Celsius. All of the contents in the room will be on fire and it will have spread to other rooms in the house.

What to do in case of fire

Get out, alert others, extinguish. These are the essential rules in the event of fire. Keep calm. Don't try to extinguish a fire unless it is very small and avoid exposing yourself or others to danger.

Get out as soon as possible. Warn others in the building and call 110 as soon as possible. Close doors behind you to slow the fire down by reducing air supply.

Avoid escape routes that are blocked by smoke. Fire smoke can be very poisonous and could make you lose consciousness. It can be deadly in just a few minutes.

Get to know the escape routes when you move in, even if you are only staying a short while.

How to extinguish a fire

If a fire has only just started, it is safe to do so and you are not exposing yourself to dangerous smoke, you may try to extinguish a fire. If you are unsure, call 110 – better safe than sorry.

Different fires must be extinguished in different ways.

Grease in cooker hood filters can catch on fire, and must be kept clean and must be switched off immediately if a pot catches on fire as the flames can spread through ventilation ducts.

Use water or a fire extinguisher to extinguish fires in wood, textiles, paper etc.

Never use water on burning fat or oil: the flames will explode. Put a lid on, and switch the extractor fan off.

A fire in electrical appliances can be extinguished with water or a fire extinguisher.

Small batteries that catch fire may be moved out of doors. Take care as they can be very hot and they give off poisonous smoke. They may also be immersed in water.

How to extinguish a fire

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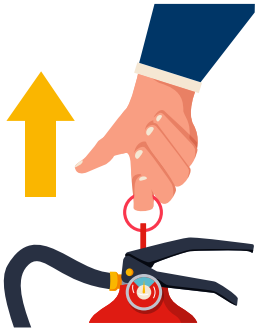


1. Pull out the pin to prepare the apparatus for use

2. Aim at the nozzle at the base of the fire

3. Press the handle intermittently

4. Extinguish the fire by pressing down on the handle, using short, controlled strokes.

A fire blanket is used to smother a small fire without danger. The container provides instructions on how to use it.

Small extinguisher spray bottles are small and light extinguishing apparatuses which may be used for small fires, as for instance in the kitchen (but make sure the apparatus is suitable for grease fires). It may be kept at hand in the kitchen or by a grill. Such apparatuses supply and cannot replace mandatory fire extinguishers.

When everyone is safe

If the house is on fire, the fire department has been informed and everyone is safe, the next step is to warn the neighbours. They may have to get out, and it may be advisable to spray their houses with water to reduce the danger of spreading.

Neighbours who are not at risk may provide temporary shelter for those who have had to leave their homes, until a more permanent solution has been found.

Once the firefighters have arrived, please do not get in their way. Smoke from a fire is very poisonous, so keep well away from areas with smoke.

Above: Firefighters, police and rescue services need to work unhampered. Don't get in their way.
Opposite: The spectators in this photograph from 1956 may get in the way of the fire brigade and expose themselves to danger.

Checklist when moving in:

- **Smoke detectors:** Is there at least one per floor? Do they work?
- If the smoke detectors are connected to an alarm company or the fire department: How does the system work, and how can it be reset in case of false alarm?
- **Fire extinguisher:** Where is it located, and how does it work?
- **Escape routes:** How does one get out in case of fire?

If you are renting, please ask the landlord for explanations if necessary

Every second counts when a house is on fire. If you know how to escape you can be outside long before the firefighters arrive. The photo opposite shows the fire brigade in Bergen drilling in 1916.

Smoke detectors save lives

Half of all deaths from fire in Norway happen in homes without working smoke alarms. The houseowner or landlord is responsible for installing smoke detectors, but if you rent it is your own responsibility to check that they are functional and to change batteries when required.

Smoke detectors should be checked at regular intervals, preferably once a month. Press the test button a few seconds. The smoke detectors should start beeping. If it doesn't you must either change the battery and test again or replace the detector with a new one.

You find more information about smoke detectors on page 34.

If smoke detectors had alerted the fire department, the fire could have been extinguished much earlier.

Alarm systems – and false alarms

Ordinary smoke detectors save lives, but not always houses. If no-one is home, it may take some time before the fire is discovered. If the house is equipped with an alarm system which transmits the alarm to the 110-central, so that the fire department is informed (either via a private alarm central or directly) at the first sign of smoke, small fires may be extinguished before they get too big.

If an alarm system is installed a false alarm, as for instance if a pot is forgotten on the cooker, will result in the arrival of a fire engine. If an alarm beeps and you know the reason, it is therefore important that you reset the system as soon as possible (but not before you know the reason) to stop the alarm from being transmitted to the fire department. If you fail to do so, please call 110 immediately and explain that it is a false alarm. Even if the fire department prefers to respond to a false alarm rather than risk missing a real emergency, it is best avoided.

If an alarm system is installed and you are renting, the landlord should explain how the system works so you can identify the alarm which has been triggered, and you know how to reset it in the event of a false alarm.

The fire in Havbukta in Ny-Hellesund (2013) was only discovered when the roof was burning.

Many fires begin in the kitchen

It is all too easy to forget food on the cooker or a pizza in the oven. One of the simplest ways to prevent a fire is therefore to install a stove guard.

At high temperatures (for instance if a pot is forgotten or grease catches fire) the stove guard will first beep and then turn the cooker off. A stove guard is mandatory for new homes, but not for older buildings (unless the kitchen or the wiring is upgraded). A stove guard is a cheap safety investment and could result in a discount on your insurance premium.

A timer is an inexpensive solution which may be used for other apparatuses than the cooker, which has a special socket.

Keep cooker hoods clean: grease in the filter may catch on fire, and the flames may spread through ventilation ducts.

Never use water to extinguish burning oil or grease! Place a tight lid on the flames and switch off the extractor fan.

Grilling should be avoided in areas with many wooden houses. Never leave the grill alone, and keep an extinguisher close at hand.

Electrical fire safety

Defective electrical appliances or incorrect use of apparatuses cause many fires. Make sure appliances, wires and sockets are undamaged. Abnormally warm or discoloured electrical parts are danger signs. All appliances should be switched off, and not left on standby when not in use. Plugs should whenever possible be removed from sockets.

Extensions cords and power strips are safe when used properly but should not be overloaded or connected to one another.

Never remove a plug from an outlet by pulling the cord. Damages to the plug can result in short circuits and fires.

A full lint filter is a fire hazard and the lint filter on the dryer must be kept clean at all times.

Never use electrical parts that get abnormally hot or are discoloured.

Portable electric heaters must never be covered and must be turned off when nobody is present.

Batteries and charging

All batteries may catch on fire, and no apparatuses should be charged overnight or when nobody is present. The batteries in e-scooters and e-bikes have caused many serious fires in the last few years. If they have been damaged, for instance if the battery of an e-scooter has hit a pavement, they may overheat and catch on fire. Interrupt charging and have the scooter or bike serviced in case of unusual sounds or chemical smells, or the battery becomes abnormally hot.

When this kind of battery catches fire, the fire may escalate and become very hard to extinguish. The smoke from such fires is very poisonous. E-bikes and e-scooters must therefore never be stored or charged in corridors, stairs or other places where they may block escape routes.

If an e-scooter catches fire and it is safe to do so, it should be removed to a place far away from flammable objects.

Telephones and other appliances must be placed on non-flammable surfaces when charging. They must never be placed, let alone charged, on a bed.

Even small used batteries may catch on fire. They should be stored in fireproof containers, and the poles should be isolated.

Liability insurance is mandatory for e-bikes and e-scooters. Uninsured owners may have to pay damages out of their own pocket.

Open flames

Candles must be placed in stable holders and at a safe distance from flammable materials such as curtains and wooden furniture. They must never be exposed to drafts.

Fireworks are prohibited in six areas in Kristiansand, including Kvadraturen (the historic town with its 54 blocks), in Ny-Hellesund, Lunde and Høllen in Søgne, because of the fire hazard. In other areas it is allowed to use fireworks on New Year's Eve. Use of fireworks on any other day of the year requires a special permit (it is necessary to apply for a permit from both the fire department and the police).

Open flames, especially smoking, have caused many deaths from fire. Avoid smoking unless you are fully awake. Use stable ashtrays. Remember that embers may spread from a draft, for instance from open windows. Make sure cigarettes are completely extinguished before they are thrown away.

Above: The fireplace creates atmosphere and the wood-burning stove serves both as source of heat and as cooker in this charming old kitchen.

Wood-burning and chimney fires

Wood-burning stoves and open fireplaces create atmosphere, and they are efficient sources of heat. They may prove invaluable in case of power failure. But it is very important that stoves and chimneys are in proper order. Before using a stove or fireplace you must make sure that it is permitted (ask the houseowner). It takes some skill and knowledge to use stoves and fireplaces safely. If you are inexperienced, it is safer not to try, but you can find more information about wood-burning permits and safe use of stoves and fireplaces on page 40.

Chimney fires should not occur if you follow the recommendations for safe use of stoves and fireplaces. In the unlikely event of a chimney fire, close all dampers and vents (to smother the chimney fire from lack of air) and call the fire department at 110. Don't close the damper if you have an open fireplace.

The extinction of chimney fires is best left to the fire department. Keep an eye on the chimney until the firefighters have arrived. Watch the points where the chimney meets the floors in basement and attic, and follow the recommendations given by the alarm central.

Above left: Candles must never be placed in a draught, or left burning when no-one is present.
Above right: Chimney fires should not occur if the recommendations on wood-burning are followed.

Spontaneous combustion

Some products and objects can develop heat and catch on fire without any external cause. Some examples are linseed oil and compost. Sun rays concentrated by a glass vase or reflected by a mirror can provoke a fire, and a cigarette can catch on fire after two-three days.

Embers from ashes or cigarette butts can rekindle after as much as two-three days.

Glass vases, water bottles and mirrors may act as magnifying glasses and set fire to curtains or furniture.

Rags or paper soaked in linseed or furniture oil can begin to burn after a few hours, but also after several weeks. They should be burned or immerged in water.

The embers in ashes from a stove can remain hot for several days and should not be thrown away before it is safe to do so.

Hay and grass may develop heat and catch on fire if not completely dry. Compost may also heat up and begin to burn and must be supervised.

Escape routes are not made for storage

Never store prams, furniture, bikes, boxes or garbage in stairways or corridors.

Make sure that no doors along escape routes are blocked, and that they are easy to open.

E-scooters, e-bikes and their batteries must never be charged or stored in places where they can block escape routes.

Corridors, stairways and other escape routes must always be kept free from objects. Every second will count in a fire. Not only can objects get in the way for those who have to get out, but they may also catch on fire, and the smoke may render escape difficult.

How to make wooden houses more fire-resistant

In the last chapter we have seen how fires are avoided, and what to do in case of fire. This chapter is about how houses can be less likely to catch fire, and how to prevent fires from spreading.

Why do some houses burn down in few minutes, while others do not catch on fire even if the house next door burns down to the ground? And how can it be that people have kept their houses warm by burning wood for hundreds of years, when wood next to a chimney suddenly can begin to burn all by itself?

Preventing a fire from spreading is all about many little preventive measures. Every house can become more fire-resistant.

Keep this guide at hand! Some of the measures described here may be challenging if done as an isolated measure, but easy and inexpensive if done as part of a rebuilding or maintenance.

Clusters of old wooden houses in Ny-Hellesund, one of the most characteristis old outports from the Age of Sail along the southern coast of Norway.

What everyone in the house should know

Everyone in a house is responsible for preventing fires.

Smoke detectors are mandatory and must be installed on every floor by the owner, but the tenant is responsible for checking that they are in working order, and to change batteries when necessary. Similar regulations apply to fire extinguishers.

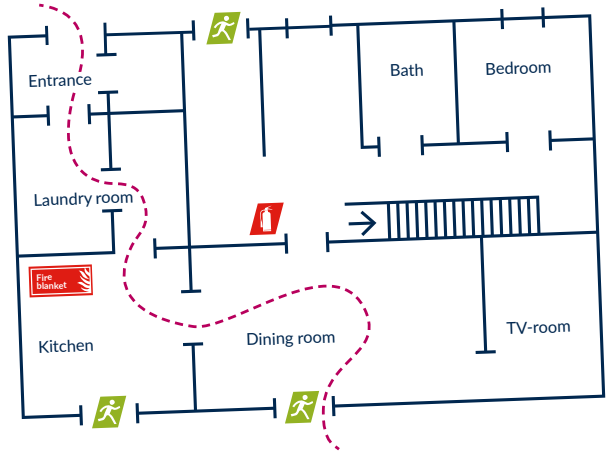
Everyone who lives in a house should know how smoke detectors work and how to test them, how to get out in case of fire (how windows and fire-escape ladders are folded out), how to alert the fire department in case of fire (by calling 110), where the fire extinguishers are located and how to use them. When someone moves in, the owner should show them around and explain all this.

An information sign on fire safety should be placed somewhere where everyone in the house sees it. The poster opposite is a suggestion and can be adapted with information on wood-burning rules, plans showing escape routes, how to reset smoke alarms, emergency numbers as 110 and other useful information.

A fire drill, where everyone in the house learns to get out in time, can save lives. More information about fire drills, and the laws and regulations that apply to fire prevention, are to be found on page 55.

Rescue, alert, extinguish

1. Get out in case of fire. Close the door behind you
2. Alert others in the house and the 110-central immediately
3. If it is safe to do so, you can try to extinguish.



Escape routes
ground floor: windows and doors towards the street and the backyard. First floor: windows, stairs to ground floor exit. Attic: Fold-out ladder from the window by the stairs. Open the window, remove the splint to open the ladder and climb out.

Smoke detectors in the house are connected to an alarm central which transmits to the fire department. You can reset a false alarm by pressing the smoke detector within 2 minutes. If not, call 110 (or the alarm central) immediately to avoid emergency reaction.

The fire extinguisher is by the stairs on the ground floor.
The fire blanket is in the kitchen.

Right: This is an example of a fire poster.

Smoke detectors and alarms

Ordinary smoke detectors are mandatory in all dwellings. There must be one smoke detector on every floor, and they must be placed in points where they can be heard from all bedrooms. Their purpose is to save lives by warning everyone in the building.

If no-one is home to hear them, the fire can develop unhindered. If an alarm system which alerts the 110-central automatically (either directly or via a manned alarm central) is installed the fire department will be alerted and can come to the rescue in case of smoke.

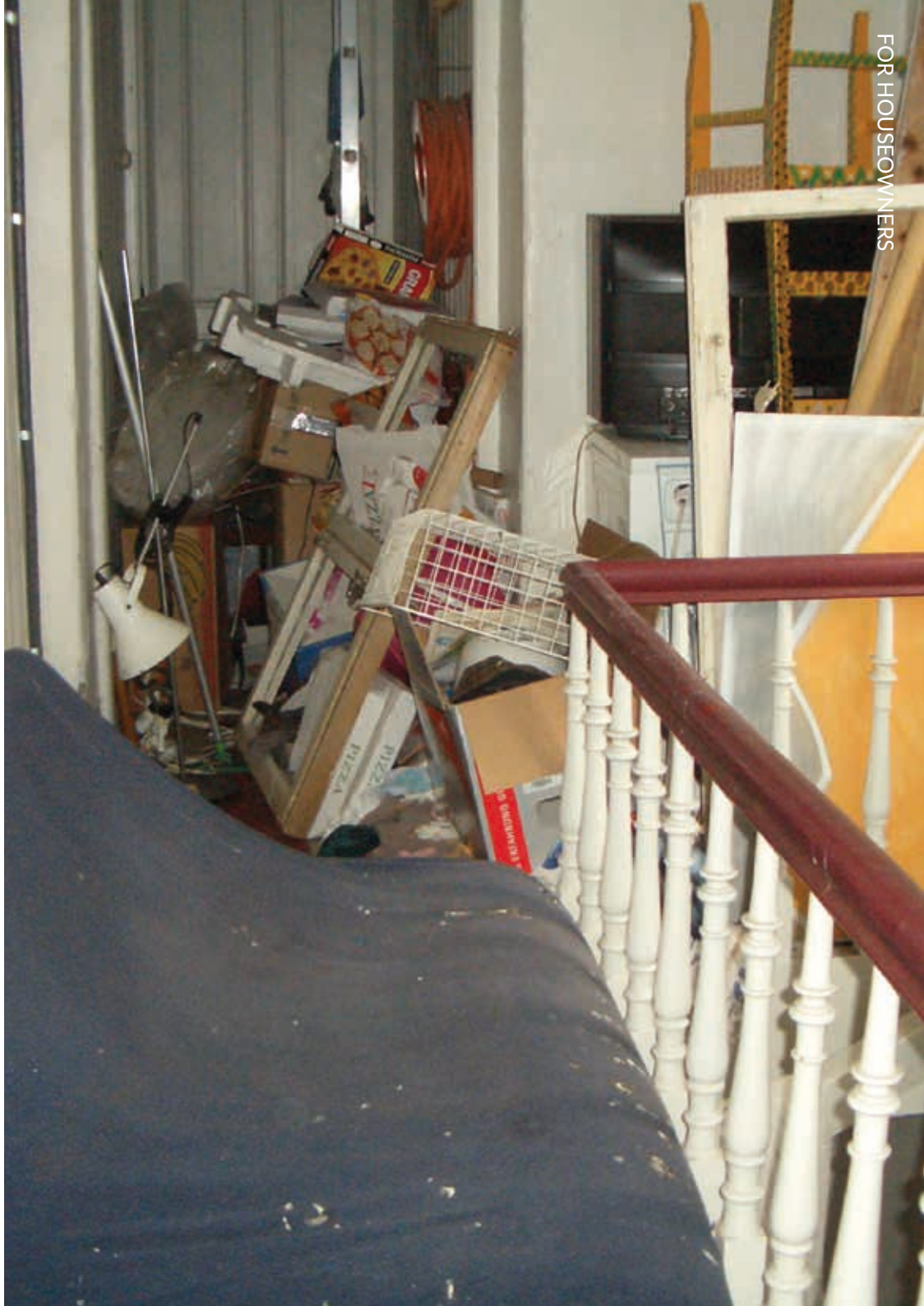
The thermal cameras which are installed in Posebyen will discover fires when heat is detected. They are very useful, but it may take some time before a fire that begins inside a house is detectable from the exterior.

Smoke detectors which alert the 110-central in case of smoke is therefore the one most efficient precautionary measure to prevent small and big fires.

Escape routes

Every second counts if a house is on fire, and there are strict mandatory requirements for escape routes. If a house has more than one floor (if the attic is used as a dwelling then it counts as a floor) there must be at least two alternative escape routes, for instance the stairs and a window which is sufficiently big and easy to reach. If the distance to the ground is more than 5 meters, an escape ladder must be installed. Escape routes should be checked regularly, for instance by holding a fire drill. A window that is impossible to open can be a matter of life or death.

See page 55 for more information about laws and regulations.



Right: Every second counts in the case of fire. Not only do these objects block the way, they may also catch on fire.

Fire extinguishers

The houseowner is responsible for ensuring the house is equipped with at least one extinguisher which can be used in all rooms. If there are several dwellings in a house, the extinguisher must be easily available to everyone (otherwise every dwelling must have its own). Most apparatuses work with either foam or powder.

The extinguisher should be checked regularly to ensure the sealing is intact and that the pressure gauge is in the green area. Powder apparatuses should be turned upside down every three months to prevent the powder from compacting on the bottom. All extinguishers carry a date stamp, and must be serviced (or replaced) after 5 years. It is the responsibliity of the houseowner to ensure extinguishers are available, but the tenant is responsible for checking them and for informing the landlord if any apparatuses must be replaced with new ones.

Links to webpages with more information about the different types of apparatuses are to be found on page 55. On page 10 you find more information about how to use extinguishers.

Sprinkler systems

Sprinkler systems extinguish fires and can help prevent fires from spreading. There are different systems, for indoor and outdoor installation. In systems for indoor use the water is under pressure. Such systems can function automatically. Systems for outdoor installation can be used to wet roofs and facades, both to stop a fire in the house and to prevent a fire from spreading. Such installations are seldom filled with water because they may freeze, and are therefore also called dry sprinklers. It is expensive to install sprinkling, but it may be a solution for especially valuable buildings or in case of high fire hazard, or when safety requirements cannot be met in other ways.

Electrical installations

Faulty electrical installations represent a major cause of fires. If you are uncertain as to whether fuse boxes, cords or outlets are correctly installed and in good condition, you should contact an authorized electrician for a control. We use more electricity today than for just a few years ago, and we do so in different ways. Older installations may therefore require an upgrade. Frequent power outages could mean that the whole system should be checked. The same applies to outlets, junctions and fuses that become abnormally hot.

Above: If your fuse box looks like this, it is time to call an electrician.

Storage and charging of e-bikes and e-scooters

E-bikes and e-scooters must never be stored or charged in escape routes as stairs, corridors, entrance areas or other escape routes. This is because the batteries in these bikes can oveheat and catch on fire, even if they are not being charged and especially if the battery is damaged, for instance if an e-scooter has hit a curb or a stone.

Chemical smells, crackling noises, unusual heat or visible damages on the battery are signs of danger. Battery fires emit gases which can be deathly to inhale. Such fires can spread very rapidly, and the poisonous smoke can block escape routes.

Solar panels should be avoided

Solar panels should not be installed in wooden neighboorhods. This is above all because fires may spread very rapidly in the cavities underneath such panels, and because such installations can make it difficult to extinguish a fire. Firefighters often have to open the roof to extinguish a fire from above, and such panels can get in the way.

Installation of solar panels on listed buildings and in conservation areas require a building permit, and the same applies to all houses when the installation represents a major alteration (the roof counts as a facade).

Above: The fire department in Ålesund have opened the roof of a building to extinguish a fire. A solar panel could have hindered their work.

Wood-burning is healthy for old wooden houses

Wood-burning warms the house and creates atmosphere. Even if there are other sources of heat stoves and fireplaces should be used once in a while, because it helps to keep chimneys and wooden elements dry. This may in its turn create a better indoor climate, as well as protection against insects and dry rot (which thrive in damp wood). Last but not least, a functioning wood-burning stove may prove invaluable in the event of a power failure. Safe and efficient wood-burning requires some familiarity with the different parts of stoves, flue pipes and chimneys.

Above: In the 1930s, when this picture was taken, most people knew how to use stoves safely and efficiently for heating and cooking.

Advice for wood burning

Use only dry wood. Wet wood provides little heat and a lot of soot.

Never use cardboard, plastic and similar, as they form soot.

Light up with a fire starter cube and kindling, never with ignition fluid.

Open the vent on the oven completlely to light up, and close it partly (not completely) when the wood is burning properly.

Don't overload the stove – the firewood needs plenty of room.

Overfiring (overloaded stove with open vent) can lead to chimney fire or to overheating of wood near the stove and chimney and must be avoided.

Empty the ash drawer at regular intervals, place the ash in a metal container and wait a few days before throwing it away.

Inspections, anomalies and prohibitions to use stoves

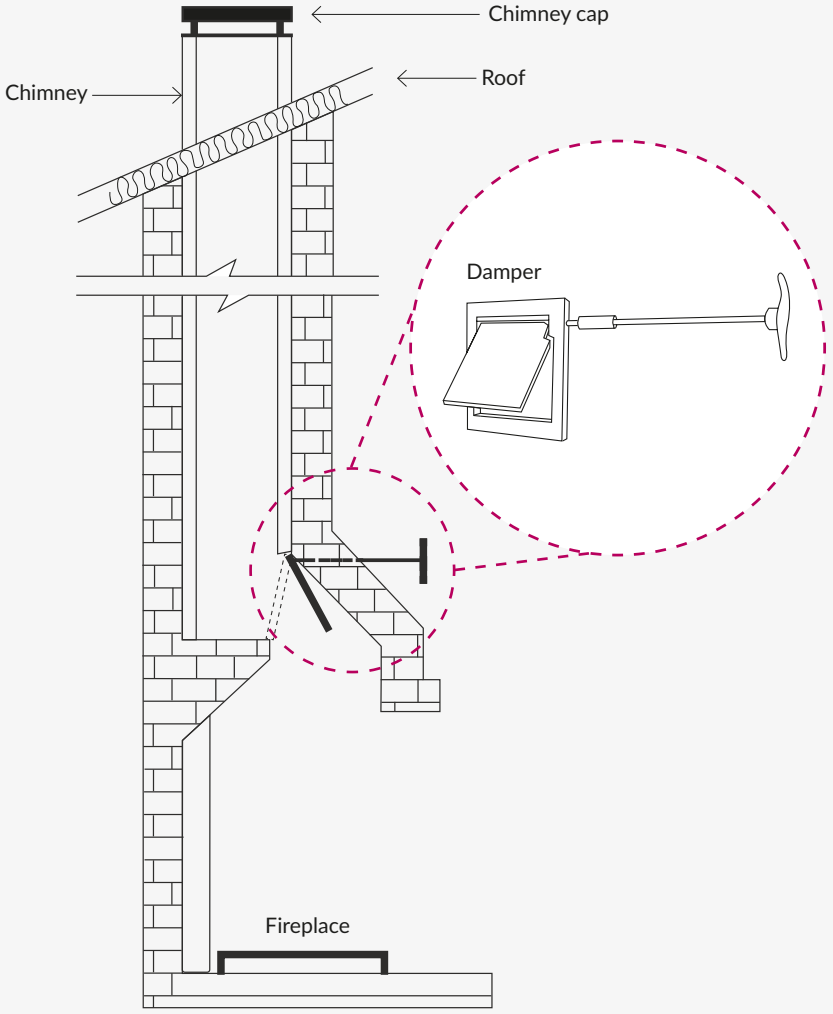
The fire department inspects all wood-burning stoves and chimneys at regular intervals. If an inspection should reveal anomalies, as for instance flammable materials too near stoves or leaking flue pipes, the houseowner will be given a deadline for setting matters right. If this is not done, or the issues are very serious, a prohibition to use stoves and fireplaces will be issued. Violation of this prohibition will represent a serious fire hazard, and may entail reduced insurance compensation in case of fire.

Keep old cast-iron stoves

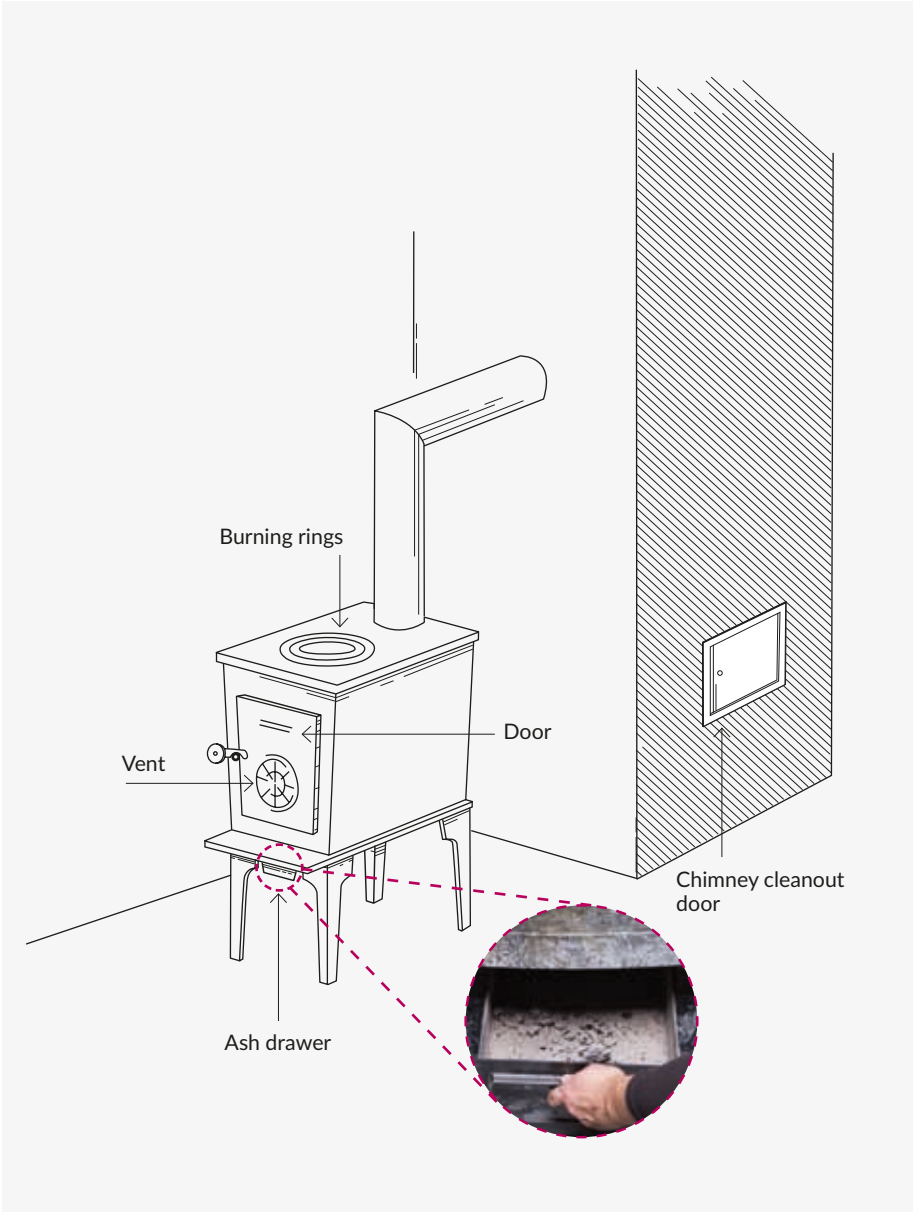
Cast-iron stoves are an important part of Norwegian heritage. They are collector's items and characteristic elements in old houses. Stoves from before 1940 are almost as environmentally friendly as new stoves, both as to emissions and as to efficiency. It is allowed to use and to install such antique stoves, while stoves from between 1940 and 1998 should be replaced. Remember that stoves, flue pipes and chimneys must be adapted to one another as to capacity and size. Replacing of stoves and alterations of chimneys should therefore be done by qualified professionals.

Avoid chimney fires

If wet wood is burned and the air intake is insufficient a layer of soot and tar may accumulate in flue pipes and chimney. This layer (which is removed by a chimney sweeper) can catch on fire if warmed to about 100 degrees Celsium (this can happen if you overfire). A rumbling sound will be heard, and sparks and flames will issue from the chimney. The fire department must be alerted immediatelly if this happens. Chimneys are made to withstand such fires, and if the system (stoves, chimneys etc) meets safety requirements the fire is unlikely to spread. A chimney fire extinguisher may be installed on top of the chimney as an extra safety measure.



Right: The illustration opposite shows a fireplace with damper. Remember to close the damper when the fireplace is not used to avoid draught.



Draught and air supply

In order for the smoke to be carried up and out of the chimney, the outdoor air must be colder than the indoor air, and there must be a supply of fresh air to replace the air that rises up and out. It is easy to burn wood when the air supply is good: the wood burns readily and the danger of chimney fire is minimal. On the contrary, if the house is airtight, all windows are closed and a kitchen fan is switched on, the lack of draught can prevent air from rising, and cause smoke to enter the room. Open dampers and vents in other rooms can also interfere with draught. An open damper is like an open window: Remember to close it when the fireplace is not in use.

Safe and moderate wood-burning

The stoves and chimneys in old houses are based on many hundred years of experience. Such houses are seldom completely airtight. It is usually easy to light a fire and to keep it burning in such houses. But it must be done properly. Too much wood or wet wood, overfiring or burning with insufficient air supply can cause a fire. If wood close to a chimney or pipe flue gets overheated too many times it may self-ignite at only 80 degrees Celsius. Burning of wet firewood with insufficient air can cause a chimney fire. Houses have been kept warm with wood-burning for hundreds of years without catching on fire, and they can continue to do so in hundreds of years yet with careful wood-burning.

Insufficient draught is a sign of anomalies

Draught can be insufficient in any house in some weather conditions. A cold chimney which has not been used for a long time may need to be warmed up gradually. But if it is hard to light a fire very often, or the flames often die out by themselves, the air supply and draught may be insufficient. Possible causes may be that the size of the pipe flue is not suited to the stove (for instance if the stove has been replaced), leaking stoves, chimneys, inspection hatch, damper or ventils or insufficient air. It may also be because of soot and tar layers in the chimney. If the reason is unclear, contact a professional for an inspection of the whole system.

Left: Wooden stove. Remember to empty the ash drawer before it is overfilled. The rings on the cooker surface should be removed when cooking.

How to prevent a fire from spreading

If the advice provided by this guide is followed, it is very unlikely for a fire to begin. And should it happen, an alarm system which automatically alerts the fire department will ensure a minor fire gets extinguished before it escalates.

But if worst comes to worst it is important that all houseowners in wooden neighbourhoods contribute to prevent spreading. Many of the measures described here are simple and inexpensive, while the more costly ones can be done at the same time as maintenance or alterations.

And last, but not least: Openings in firewalls and other alterations that increase the danger of spreading must be avoided.

Left: There should not be any openings on firewalls. Windows should be avoided, and replaced with fire-resistant windows.

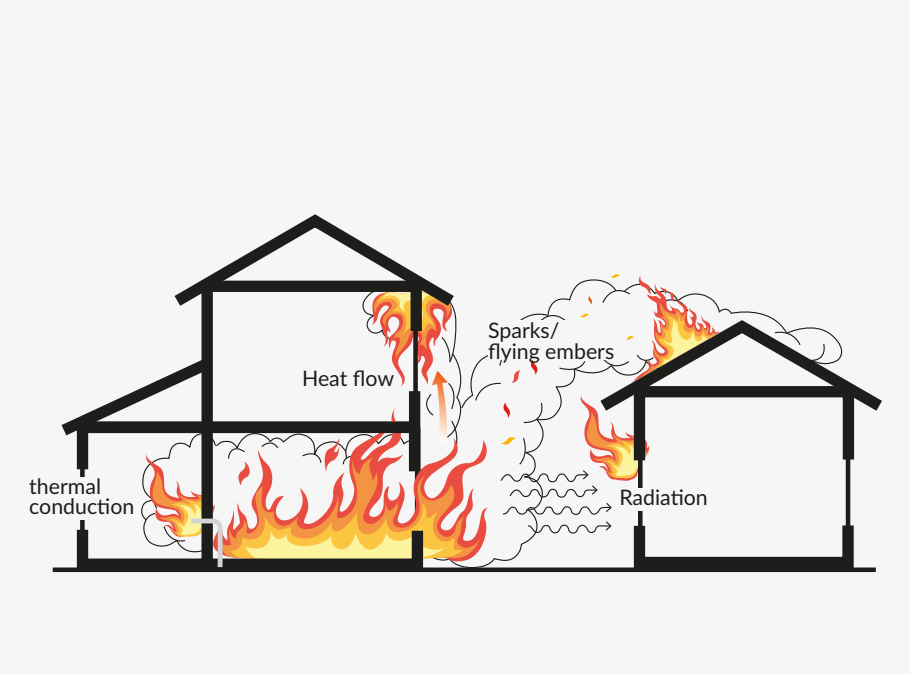
Firewalls

It did not become mandatory to have firewalls or distance between houses in Norway before 1896. There are nevertheless many houses with firewalls in the old neighbourhoods of Kristiansand. They should be kept in good condition and improved, and windows or ventilation openings must not be installed on such walls.

Even if there is no proper firewall, log walls are quite fire-resistant. A fire will therefore principally spread through doors, windows and other openings. Walls between row houses should therefore be without openings. When ventilation openings cannot be placed elsewhere, they should be equipped with an excess-flow valve to block fire and sparks. When it is time to replace a window on this kind of wall, it should be replaced by a fire-resistant window (but consult the building authorities first if the building is listed).

A fire may spread to a neighbour via buildings and objects in a backyard. Anything flammable should be placed far from firewalls and neighbours.

Above: Examples of firewall in masonry, and one in metal on a wooden wall. Neither have any openings, and provide good protection if the next-door house should burn.

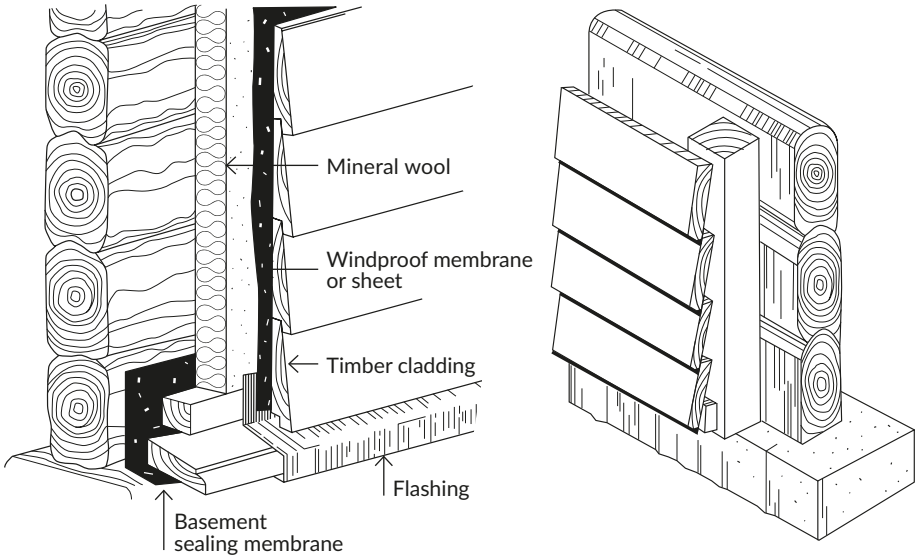


Doors and windows

Doors should be as airtight as possible. If a fire breaks out, a closed door will reduce air intake and prevent spreading. Old doors do not always fit perfectly in the frame, and the threshold may be worn. Frames can be repaired and thresholds may be replaced, and sealing strips can make doors both tighter and more soundproof.

Exterior doors on old buildings should be repaired whenever possible, and only replaced by good copies (after checking with the building authorities). More information about fireproofing of old doors is to be found at www.byggogbevar.no (see page 55 for more information). Windows with more than one layer of glass will have greater resistance to fire.

The illustration above shows how flames, sparks and heat spread through openings in the walls.

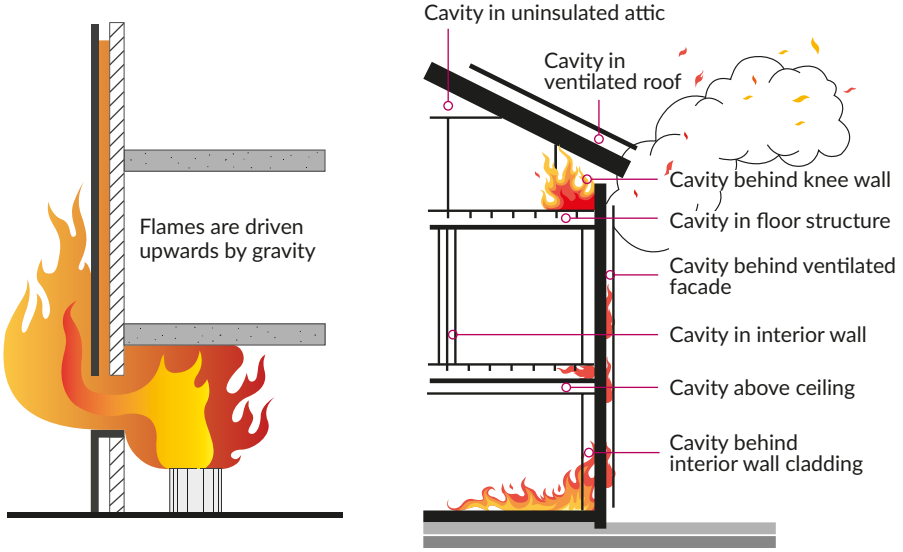


Exterior walls

Most old wooden houses have log walls coved by cladding. Such walls are quite fire-resistant, but a fire can spread through cavities. Old outhouses are usually built with a wooden frame with cladding. Newer houses (and renovated old wood-frame constructions) are usually made from materials that are less fire-resistant than log houses.

All kinds of paint protects against fire. Worn-down or flaky paint (with more than 2 mm wide cracks) can allow sparks to ignite the wood. Smaller cracks may be painted over, while bigger openings can be sealed with construction foam. Fire-resistant construction foam should be used whenever possible. Such products must be covered as they are not weather-resistant.

The illustration above shows an insulated timber wall with cladding to the left, and a simple timberwall without insulation but with cladding to the right.



Fires may spread through old wooden houses through cavitites in the construction.

Cavities

Cavities in walls, floors, attics and ventilation ducts can be a major problem in case of fire. Fires may spread unseen through cavities, from floor to floor and to neighbouring buildings.

Vertical cavities, as those between a log wall and cladding (ventilated cladding) are especially dangerous. It is quite inexpensive and simple to block such cavities, but it must be done properly so that air can pass, to avoid humidity and rot. Fire-resistant cavity barriers are available, but should be installed by expert builders.

Vertical cavities can contribute to very fast spreading of fire from floor to floor. This can be avoided by installing cavity barriers.

Roof and attic

If the roof is tiled it is important to make sure that no tiles have shifted or are missing. Sparks can enter between loose tiles and ignite the wood structure underneath. Sparks can be prevented from entering the building by sealing openings under windscreens, roofing sheets, tiles and joints between roof and wall. Bird guard strips or other sealing may be installed. Sealing must block flames but not air (to avoid humidity and rot), and such work should therefore be done by a professional builder.

Gutters should be kept clean and leaves, branches and similar removed. Not only can old leaves block the water flow, they can also contribute to fire spreading in dry weather.

This attic passes through three old wooden houses. Firewalls and fire-resistant doors should be installed to prevent a fire from spreading from house to house.

Garbage

Waste bins usually contain a lot of flammable materials, and some objects can begin to burn spontaneously (see page 26 for more information). Waste bins can therefore be a fire hazard, and should never be placed close to a wall. Make sure they are not accessible to passers-by, who could throw cigarette butts in them and cause a fire.

Leaves, weeds and other flammable materials can easily accumulate in light wells, and may catch on fire if someone throws a cigarette butt. They are especially dangerous and must be kept tidy at all times.

Above, left: If a cigarette butt thrown in this bin catches on fire, the fire may spread to the house. Above, right: A warm cigarette butt in a light well with dry weeds can easily cause a fire.

More information

Fire prevention

The Norwegian regulation on fire prevention provides detailed information about mandatory smoke detectors and extinguishers: where in the building smoke detectors must be installed, and the kind of extinguishing apparatuses that are approved. The landlord is obliged to install such equipment. However, also the tenant or those who live in a dwelling have responsibilities, among others to avoid unnecessary fire hazards and to make sure that escape routes are unobstructed. Search for “brannforebygging” or use this link:
www.dsb.no/brannsikkerhet/veiledning-til-forskrift-om-brannforebygging/

Sharing of responsibilities between tenant and landlord

While it is the duty of the landlord or houseowner to ensure smoke detectors and extinguishers are installed, it is the responsibility of the tenant or user of the dwelling to verify that batteries are charged, that the installations are in functional order and that extinguishers are not expired. More information about this is to be found in section 5 of the Tenancy Act. Search for “husleieloven” or use the following link:
www.regjeringen.no/en/documents/the-tenancy-act/id270390/

Fire drill

A house on fire may result in chaos and panic reactions. This may be prevented by holding a fire drills. If everyone knows where to find the nearest escape route, agrees on who is to do what, and where to meet when everyone has gotten out, the chances that everyone gets out in time are greater. No two fire drills are alike: they must be tailored to the house, its number of escape routes, inhabitants etc. Search for “fire drill at home” or “brannøvelse hjemme” or use the following link:
www.dsb.no/en/Safe-everyday-life/fire/hold-your-own-fire-drill/, and/or
www.youtube.com/watch?v=KLZNluvQmQI

Left: Wooden houses in the south-western part of the city around 1875. All these houses were lost in the fire in 1892. Only the direction of the wind saved Posebyen.

Technical requirements for firewalls, escape routes etc.

Chapter 11 in regulations on technical requirements for building works (English translation is available) provides a complete overview of all requirements concerning fire prevention. It sets forth detailed requirements for escape routes, fire extinction equipment and smoke detectors. The regulation applies to all types of buildings (everything from garages to assembly halls) and for new building initiatives. This means that stricter requirements may become applicable if a building is altered or is put to a new use. It can be difficult to adapt older buildings to all the requirements in the regulation and at the same time preserve their heritage qualities. This is one of the reasons why the precautionary measures described in this guide are so important in neighbourhoods with many wooden buildings. Search for “TEK17 + “English” or use the following link: *www.dibk.no/regelverk/byggteknisk-forskrift-tek17/11/i/11-1*

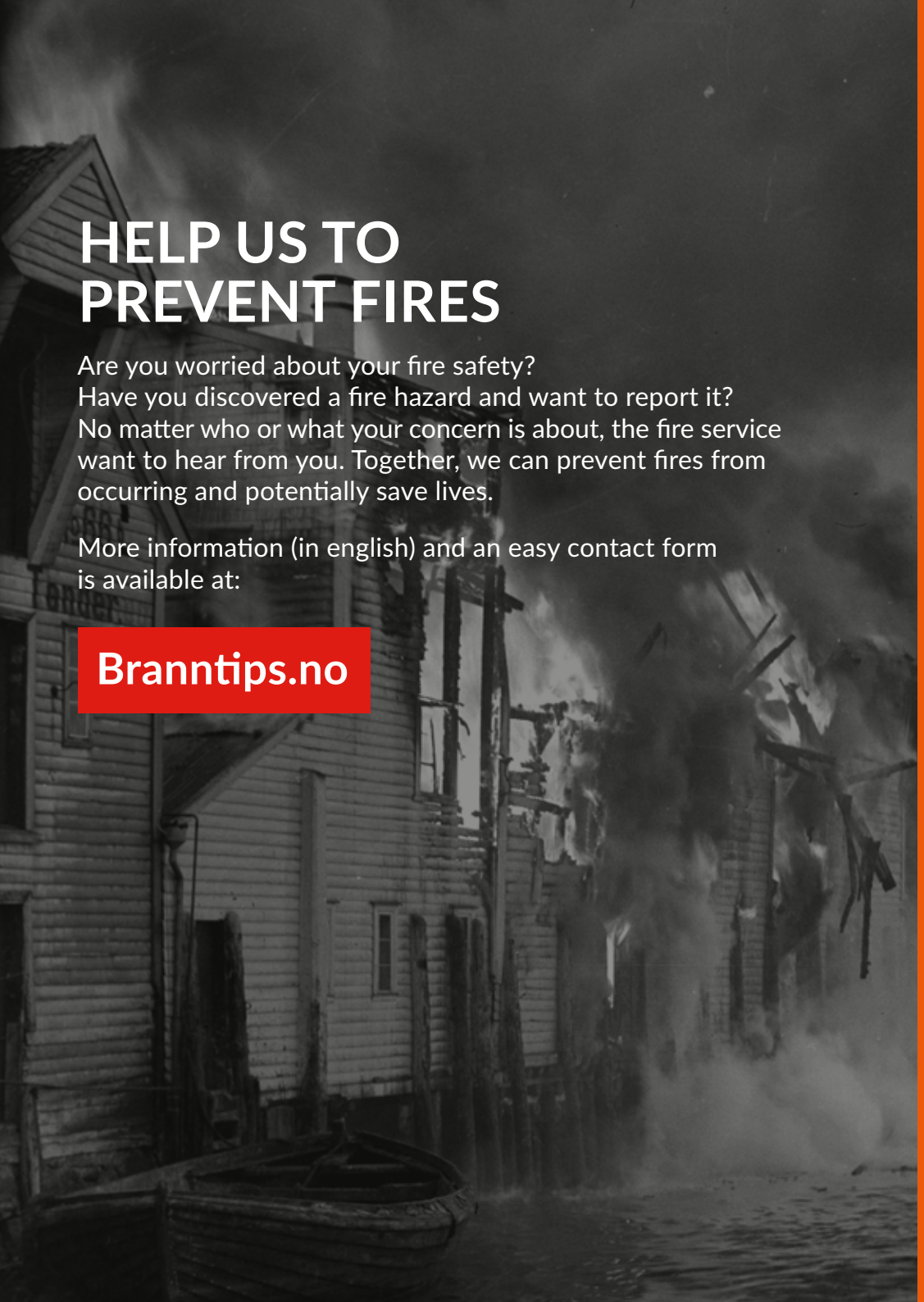
The municipality of Kristiansand’s web page on fire prevention in wooden neighbourhoods

Two fire safety plans have been prepared for the municipality of Kristiansand, for Ny-Hellesund and Kvadraturen. These plans, and information on the precautionary measures adopted by the municipality to prevent fire in the wooden neighbourhoods (among others a contribution to those who install alarms) is published under “brannsikring av trehusmiljøer” under the main menu heading “bolig, kart og eiendom”, or by using the following link: *www.kristiansand.kommune.no/navigasjon/bolig-kart-og-eiendom/Brannsikringavtrehusmiljoer*

Advice on maintenance, upgrading and fire safety for old houses

Old houses are not built in the same way as newer ones, and it is necessary to know how to carry out maintenance and altering them in order to avoid rot from humidity and other damages. ”Bygg og bevar” is an invaluable webpage for houseowners, builders and craftsmen. It contains, among other things, advice on wood-burning stoves, chimneys and insulation. The website also has a section on fire prevention. Search for “bygg og bevar” or go to: *www.byggogbevar.no*

Right: Firemen in Bergen around 1880. They are carrying life nets, which were used as shown on page 14.



HELP US TO PREVENT FIRES

Are you worried about your fire safety?
Have you discovered a fire hazard and want to report it?
No matter who or what your concern is about, the fire service want to hear from you. Together, we can prevent fires from occurring and potentially save lives.

More information (in english) and an easy contact form is available at:

Branntips.no

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Fires can spread to a whole house in just a few minutes and in neighbourhoods with many wooden houses they can easily spread from house to house. Everyone who lives in such an area should therefore know what to do in case of fire, how to avoid starting a fire, and how fires can be detected and extinguished before they become difiifcult to control.

Knowledge about fire safety can save lives. Please read this handbook carefully, and keep it at hand so everyone who moves in or visits can read it.