



So you think your home is safe?

Important safety information. Please keep this leaflet as you may want to read it again.



ELECTRICAL

SAFETY
COUNCIL

Who are the Electrical Safety Council?

The Electrical Safety Council is an independent charity committed to reducing deaths and injuries through electrical accidents at home and at work.

We are supported by all sectors of the electrical industry as well as local and central government and work to promote safety and good practice.



For more advice on electrical safety matters, visit our website at www.esc.org.uk.

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Introduction

Electricity can kill. Government statistics show that over 15% of all fires in UK homes are caused by electrical faults. In 2006, this resulted in 19 deaths and 1117 injuries. There were also 21 deaths and 2788 injuries caused by electric shocks in homes. Because of this we support any initiative that could help to identify unsafe electrical installations or appliances.

Electricity is part of our lives. We use it from the moment we wake up (switch on lights or boil the kettle), throughout the day (the radio, TV, computer or vacuum cleaner) and while we sleep (alarms and electric blankets). As a result, we sometimes forget how powerful and dangerous electricity can be.

Modern living has meant we use more and more electricity in the home. For instance, just 20 years ago the average UK home had a hi-fi system and one TV or video, whereas today it is more likely that there are at least two TVs, a video, a DVD player and a computer, printer or scanner. So the possible risk of electrical accidents in the home is higher now than ever before.

This leaflet will help you put simple but effective procedures into practice for a safer home.



'Over 15% of all fires in UK homes are caused by electrical faults.'





What are the dangers?

The main dangers are:

- contact with live parts at 230 volts which can cause shock or burns and if these are severe, death and
- faults in appliances and installations which can cause fires.

Who should carry out electrical work in my property?

The UK has a fairly good record of electrical safety. However, there are over 30 deaths and nearly 4000 injuries from accidents in the home caused by electricity each year. There are also nearly 8000 electrical fires in homes across the UK each year.

Although many incidents are caused by faulty appliances, rather than the electrical installation itself, a properly-installed and well-maintained installation could save lives.

So, it is important that any work to install electrical appliances is carried out only by people who are competent. This means people who have the knowledge, skill and experience needed to avoid dangers to themselves and others that electricity can create. It's easy to make an electrical circuit work - it's far harder to make the circuit work safely - an essential requirement in case there is a fault.

Safety for you in your home is the most important thing and so we strongly recommend that you use an electrician registered with one of the

government-approved schemes to carry out any electrical installation work you need doing.

Registered electricians will work to the UK national standard BS 7671 (Requirements for Electrical Installations), and will issue a safety certificate for their electrical work to confirm that the installation has been designed, built, inspected and tested in line with that standard.

All of the scheme operators will have a complaints procedure where they investigate complaints about registered electricians who may not have kept to the appropriate technical standard.

The legal requirements for electrical installations in England and Wales are different from those in Scotland and Northern Ireland. Electricians carrying out electrical installation work in England and Wales have to keep to the Building Regulations whereas in Scotland it is the Building Standards system. At the moment, there is no equivalent legal requirement in Northern Ireland.

Get to know your electrics

Your property will have some of the following

Mains switch

The mains switch allows you to turn off the electricity supply to your electrical installation. Some electrical installations have more than one mains switch, for example, if your home is heated by electric storage heaters, you may have a separate consumer unit (fuse box) for them. The consumer unit should be easy to get to, so find out where the mains switch is to turn the electricity off in an emergency.

Fuses

Rewirable fuses have a piece of special fuse wire running between two screws. When a fault or overload current flows through the fuse wire, it will become hot, and melt when the current goes above an acceptable level. The melted fuse breaks the circuit, disconnecting the faulty circuit.

Circuit-breakers

Circuit-breakers are automatic protection devices fitted in the consumer unit which switch off a circuit if there is a fault.

Circuit-breakers are similar in size to fuseholders, but give more precise protection than fuses.

When they 'trip', you can simply reset the switch. However, you first need to find and correct the fault.

Residual current devices (RCD)

An RCD is a switching device that trips a circuit under certain fault conditions, and disconnects the electricity supply.

Under the national safety standard, all sockets in new electric installations and any new sockets added to an existing installation must have RCD protection.

If your electrical installation includes one or more RCDs, test them regularly. You can do this by following the instruction label, which should be near the RCD. The label should read as follows:

'This installation, or part of it, is protected by a device which automatically switches off the supply if an earth fault develops. Test quarterly (every three months) by pressing the button marked 'T' or 'Test'.'

The device should switch off the supply. You should then switch it back on to restore the supply. If the device does not switch off the supply when you press the button, contact a registered electrician.

Testing the button every three months is important. However, do not hold the test button for a long period if the device does not trip. If the RCD does not switch off the supply when you press the test button, get advice from a registered electrician.



For details of the scheme providers that register electricians in your part of the country, see pages 18 and 19 of this leaflet. Or, visit our website at www.esc.org.uk or phone us on **0870 040 0561**.

How old is your wiring?

Electricity is out of sight, out of mind - usually, cables are conveniently hidden inside our walls and consumer units (fuse boxes) and often hidden away in cupboards. So it's not surprising that we forget to check our electrical installations for wear and tear.

Faulty and ageing wiring is one of the major causes of electrical fires in the home. You can avoid these by finding out the age of the wiring in your home, and by carrying out regular checks on the condition of your cables, switches, sockets and other accessories.

There are clear signs that can help you tell the age of electrical equipment in your home. These are:

- cables coated in black rubber (phased out in the 1960s);
- cables coated in lead or fabric (before the 1960s);
- a fusebox with a wooden back, cast iron switches, or a haphazard mixture of fuse boxes (before the 1960s);

- older round pin sockets and round light switches, braided flex hanging from ceiling roses, brown and black switches and sockets mounted in skirting boards (before the 1960s); and
- wall-mounted light switches in bathrooms (before the 1960s).



Does your electrical equipment have similarities to those listed?

Yes - it is likely that your installation is over 40 years old and may need rewiring. Contact a registered electrician to carry out a condition survey - referred to in the trade as a periodic inspection. Don't forget, electrical installations should always be fitted and maintained by registered electricians.

No - you're one of the lucky ones, and your home will probably be wired with cables that use PVC insulation.

Remember – no matter how old your property and its electrical fittings, they will suffer from wear and tear, and you should get a registered electrician to check them at least every 10 years, or if you move into a new property. Do you even know when your electrics were last checked?



Electrical dangers around the home

Electricity improves our everyday lives - but only when used correctly. Don't create possible dangers by overloading sockets, and never ignore warning signs like burning smells, sounds of arcing (buzzing or crackling), fuses blowing or circuit-breakers tripping. Electrical accidents are most likely to happen when equipment is damaged or misused. Failure to correct the problem could have devastating effects. This sounds like common sense, but you would be surprised how many of us fail to follow basic safety guidelines.

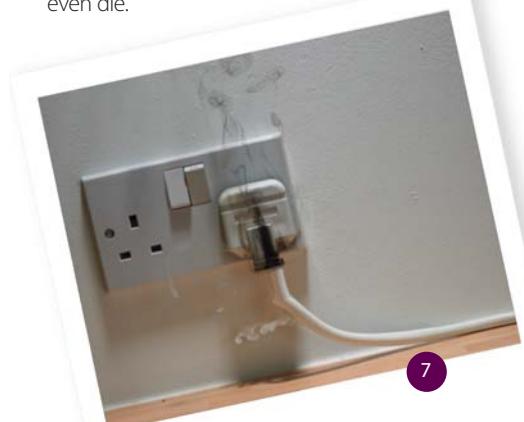
When did you last check the condition and safety of your plugs, sockets and flexes?

Damaged plugs, sockets and flexible cables can cause electric shocks, burns and fires. Follow these simple rules to avoid problems.

- Check the plug and socket for burn marks, sounds of 'arching' (buzzing or crackling), fuses blowing, circuit-breakers tripping or if it feels hot.
- Remove plugs from sockets carefully. Pulling out a plug by the cable puts a strain on it, and could damage the contact

between the plug and the socket. This could result in the plug overheating, its wires becoming loose or an electric shock (if the earth wire is disconnected).

- Use plugs with the British Standard safety mark - they have live and neutral pins with insulating sleeves that allow you to put them in and pull them out of sockets safely. (Nowadays, electrical equipment comes fitted with a plug.)
- Look to see that the shutter mechanism in a socket closes when removing the plug.
- Always replace damaged cables immediately. Touching exposed live wires may give you an electric shock or you could even die.



Obvious dangers – yet we all make these mistakes

Changing a belt on a vacuum cleaner while it is still plugged in

Always unplug an appliance before you try to do any maintenance. You risk injury from electric shock, burns and mechanical movement if you tackle maintenance before appliances are unplugged and have cooled down.



Drying clothes on an electric heater, with water dripping onto live parts

This is particularly dangerous, and could cause an electric shock or fire. Many electrical appliances, such as heaters, have ventilation slots to prevent overheating. If these slots are covered up, the appliance could overheat and catch fire, or if water drips in, there is a risk of electric shock.

Trailing the cable under the carpet or rug to keep it out of the way

Flexible cables trailed under carpets, rugs or across walkways are not only a major danger in terms of tripping, but a possible fire risk. Repeated stretching and treading on the cable may damage the cable insulation.

Our hallway is so dark, I'll change the 60-watt bulb to a 100-watt bulb

Using a bulb with a higher wattage than allowed by the light fitting can cause overheating. In very rare circumstances the lampshade or lampholder may overheat and start a fire. Try using a low-energy compact fluorescent lamp, which can last around eight times longer than a normal tungsten lamp, can run cooler, and can provide as much light while saving on electricity.





Having found the perfect spot to hang your picture, you begin to fix it to the wall

Never drill holes or fix nails in walls or partitions without knowing what is hidden behind them. Walls and partitions hide electrical cables and gas and water pipes. Drilling through a live cable is extremely dangerous, and could cause electric shocks, burns or even fire. A cable-and-metal detector will help find any cables and metal pipes.

In modern electrical installations, cables are normally run in a straight line, either horizontally or vertically, to an accessory such as a switch or socket. Cables may also run within 15 centimetres (cm) from the top of the wall or partition or within 15 cm of an angle formed by two walls or partitions.

How much do you rely on adaptors and extensions around your home?

An average room in a house has four sockets. Although this is enough for most purposes, using computers, games consoles and other appliances has led to the number of sockets being needed in an average room to increase to eight. Extension leads and adaptors often provide a quick and easy solution but, in reality, these leads and adaptors are often misused, and can present a very real danger. In extreme cases they can overheat, which can lead to a fire.



Don't:

- use adaptors plugged into other adaptors, and check that the adaptor keeps to British Standards; or
- overload adaptors, particularly with high-current appliances such as kettles, irons and heaters. (Low-current appliances include radios, televisions, computers and hi-fi equipment.)

The most sensible action would be to **install extra sockets**. While you are at it, ask a registered electrician to install twin sockets rather than single ones.



Kitchen safety

We all know that water and electricity make a lethal combination. So it's important that fixed electrical equipment is installed correctly, and that you use appliances in your kitchen with care.

- To avoid water coming into contact with electricity, make sure that your sockets or switches are fitted at a safe distance (at least 30 centimetres horizontally) from the sink.
- If appliances such as fridges, dishwashers and washing machines are fitted under worktops, getting to sockets may be difficult. Ideally, these appliances should be controlled by a switched fuse-connection unit mounted above the worktop where you can reach it easily.
- If a socket in the kitchen, or anywhere else in the house is likely to be used to supply portable equipment outdoors, it should have an RCD fitted. Under the national safety standard, all sockets in new electric installations and any new sockets added to an existing installation must have RCD protection.

Take special care when using electrical appliances in the kitchen - the mixture of water, hot surfaces, flexes and electricity can be very dangerous. Check that flexible leads and appliances such as kettles and toasters are in good condition.

Don't:

- use any electrical equipment or switches with wet hands;
- wrap flexible cables around any equipment when it is still warm;
- clean an appliance such as a kettle while it is still plugged in;
- try to get toast that is stuck out of a toaster while it is plugged in, and especially not with a metal knife - there are often live parts inside; or
- fill a kettle or a steam iron while it is plugged in.



Bathroom safety

Water carries electricity efficiently. When the two mix, the result can kill. Because of this, from an electrical safety point of view, the bathroom is possibly the most dangerous room in the home. The consequences of an electric shock are far more severe in a bathroom or shower room as wet skin reduces the body's resistance. There are special requirements for electrical installations in bathrooms.

Sockets

- Sockets are not allowed in bathrooms or shower rooms (apart from shaver-supply units), unless they can be fitted at least three metres from the bath or shower.
- Shaver-supply units must be a safe distance from the bath or shower to avoid splashes.

Don't

bring mains-powered portable appliances such as hairdryers, heaters or radios into a bathroom. You could be severely injured or die. You can get a fixed hairdryer with hot air delivered through a flexible plastic pipe installed in bathrooms.

Lights

- Enclosed ceiling lights are preferable to pendant (ones that hang down) light fittings. All light fittings, that are not enclosed, should be out of reach of someone using, or still wet from using, the bath or shower.
- A ceiling-mounted pull-cord switch with the cord made of insulating material is the safest option for a bathroom. Standard wall-mounted light switches are a possible danger because of dampness and wet hands.

Heaters and towel rails

- Central heating is the safest way of keeping a bathroom warm. But, if you do have an electric room heater, it must be fixed at a safe distance from the bath or shower.
- Electric and gas water heaters in a bathroom must be fixed and permanently wired, unless they are powered by a socket fitted three metres from a bath or shower.
- Electric heaters should preferably be controlled by a pull cord or a switch outside the bathroom.

Showers

- An electric shower must be supplied on its own circuit direct from the consumer unit.



Supplementary bonding

Supplementary bonding involves connecting together the metal parts of electrical equipment (such as a heated towel rail) and the metal parts of a non-electrical item (such as a pipe) to prevent a dangerous voltage between them, if a fault happens.

- Supplementary bonding is often needed in the bathroom to reduce the risk of electric shock. It can happen as a result of touching the metal casing of electrical equipment (such as a light fitting or heater) and at the same time touching a metal non-electrical item (such as a pipe or radiator) when there is an electrical fault anywhere in the premises.
- An electrician can carry out supplementary bonding by connecting together the electrical and non-electrical items referred to above with a suitable cable (having green and yellow insulation). You may not normally be able to see existing supplementary bonding.
- Supplementary bonding is not needed for new electrical installations if all circuits in the bathroom have RCD protection.

Supplementary bonding should only be installed by a registered electrician.



Garden safety

What are the dangers of using electrical equipment in the garden?

Although electricity makes gardening much easier, wet conditions and contact with the ground means that the risk of injury or death from electric shock is greatly increased compared to using electrical equipment indoors.

Many garden accidents are the result of handling equipment carelessly, lack of concentration and failure to follow the manufacturer's operating instructions. By following simple safety guidelines every time you work in a garden, you can easily avoid a serious accident.



Why do I need a residual current device (RCD) when using electrical equipment outdoors?

Using an RCD when using electrical equipment outdoors can be a lifesaver. Without it, if you cut through an electrical lead, a simple job like mowing the lawn could turn into a deadly disaster. An RCD is a safety device that switches off electricity automatically if there is a fault. All equipment such as lawnmowers, hedge trimmers and other power tools, when used outdoors, should only be plugged into a socket protected by an RCD.

For protection against electrical shock, the rated tripping current of the RCD must be 30mA or less. If you haven't got sockets that are RCD protected, or there is any doubt whether the device in the fusebox is suitable and working correctly, you should buy and use a good-quality portable RCD. Check that any portable RCDs are clearly marked to confirm that they have been made to the relevant British Standard, which is BS 7071 and their rated current must be 13A.

Whatever the type of RCD you have in your home, you must regularly test it by using the

'test' button on the device. For portable RCDs, you should test these every time you use them. However, do not hold the test button for a long period if the device does not trip. If the RCD does not switch off the supply when you use the test button, get advice from a registered electrician.



Extension leads, cables and connections

If you do not check the condition of extension leads, cables and connections and use them correctly, you could get an electric shock.

For safety make sure they are:

- suitable for outdoor use – weather-resistant with moulded connections that prevent moisture seeping in;
- rated correctly to suit the equipment connected;
- uncoiled to prevent overheating;
- kept clean and free from damage;
- replaced if damage is found;
- used according to the manufacturer's instructions;
- positioned appropriately to prevent them being damaged; and
- kept dry.

Mowing the lawn

Lawnmowers have sharp blades and rapidly turning parts, which can cut through electrical cables as easily as grass. As a result, the chances of electric shock are high.

For safety:

- do not cut the grass in wet conditions;
- wear sensible footwear to protect your feet;
- check the cables, connections and plugs before use;
- keep the cable clear of the cutting area; and
- before clearing grass blockages or carrying out maintenance, unplug the lawnmower and wait for the blades to stop turning.



Helpful tips

from Domestic & General for maintaining electrical equipment

Fridges and fridge-freezers

Make sure you don't keep the door open for longer than you need – it takes three to four minutes for it to get back to its temperature.

Clean door seals to remove mould. The seals should be tight enough to hold a piece of paper securely when the doors are closed.

Washing machine

A water softener will help reduce limescale if you live in a hard-water area.

If the water isn't draining away quickly, make sure there are no kinks in the hose.

Don't overload the washing machine.

After you have used the washing machine, wipe the detergent drawer and door seal with a dry cloth to prevent damp and bad smells.

Oven

Try to wipe down the outside of your cooker with a damp sponge every time you wipe down the worktops.

If the dish you're cooking is likely to spill, put a baking sheet covered in foil in the bottom of the oven. (Make sure the foil doesn't touch any heating elements.)



Computers

Don't expose your computer to extremes of temperature. Make sure fresh air can reach it so the fan can keep the electronics cool.

Don't block air vents by stacking books or magazines at the back of the computer.

Don't eat or drink while using your computer, bits can damage delicate contacts and circuits.



Checking a plug

All modern appliances in the UK use the familiar square-pin 13-amp plug. These plugs are used for handheld appliances such as hairdryers and vacuum cleaners, and appliances like microwave ovens. The plug and cable can suffer damage, particularly if they connect to handheld appliances. Checking a plug and its cable does not need a lot of detailed electrical knowledge and these tips should help. With the plug removed from the socket, check the cable from end to end and ask the following questions.

- 1 Is the cable securely attached to the appliance and the plug?**
- 2 Is the cable cut, nicked or damaged in any way?**

There should preferably be no joints in the cable, and certainly no repairs with insulating tape.

Checking the plug

- Remove the plug from the socket and check the plug is not damaged.
- Look for signs of overheating, such as discoloured casing or cable.
- Check that the plug meets British Standard BS 1363 - it should be marked on the back of the plug.
- Check that the cable sheath is firmly clamped in the plug and that no coloured wires are showing.



For plugs that did not come fitted to the appliance, check that the cable is connected correctly as follows.

- Remove the plug from the socket, and remove the cover. Check that:
- the **brown** wire goes to live (L);
- the **blue** wire goes to neutral (N); and
- the **green-and-yellow** wire goes to earth (E).
- Check that the cord clamp holds the cable securely and that both of the screws are tight.
- Check that the screws holding the three wires are tight.
- Check that the fuse is the correct size and meets British Standard BS 1362 - see the manufacturer's instructions if you are not sure what fuse to use. The fuse should clip securely into its holder. It should not be loose and there should be no signs of overheating.
- Replace the cover securely.

Correctly wired plug

Most table lamps, standard lamps, televisions, videos, computers, mixers, blenders, power drills, jigsaws, soldering irons will use 700W or less. Larger appliances such as washing machines, dishwashers, and toasters, irons and heaters will use more than 700W. For the convenience of users, companies who make appliances have standardised two plug fuse ratings (3A and 13A). For the appliances up to 700W, you use a 3A fuse. For those over 700W, you use a 13A fuse.



Details of organisations that register electricians carrying out domestic electrical installation work

England and Wales

The following organisations are approved by the Government to register electricians so they can carry out domestic electrical installation work which meets Part P of the Building Regulations.



BRE Certification Ltd
working in partnership
with the Electrical
Contractors' Association
Phone: 0870 609 6093
www.partp.co.uk



**British Standards
Institution**
Phone: 0845 076 5600
www.kitemarktoday.com



ELECSA Ltd
Phone: 0845 634 9043
www.elecsa.co.uk



NAPIT Registration Ltd
Phone: 0870 444 1392
www.napit.org.uk



NICEIC Group Ltd
Phone: 0870 013 0382
www.niceic.com

Limited domestic electrical installations

As well as the above, there are other government-approved scheme operators that register installers who carry out electrical work. This work is limited to certain electrical installation work in connection with some other non-electrical work. Examples of this work and the type of installations that fall within this category are shown below.

Plumbing • Kitchens • Bathrooms and bedrooms • Security systems • Gas heating • Loft conversions • Telecommunications • Oil-fired heating • Extensions • Door and gate entry • Solid-fuel heating • Conservatories • CCTV • Extractor fans • Garden installations • Maintenance • Air conditioning • Swimming pools • Stairlifts • Spa baths



Corgi Services Ltd
Phone: 0870 401 2200
www.trustcorgi.com



OFTEC Ltd
Phone: 0845 658 5080
www.oftec.co.uk



The Association of Plumbing and Heating Contractors
Phone: 0247 647 0626
www.aphc.co.uk

Scotland

The following organisations are approved by the Scottish Executive to register electricians to carry out domestic electrical installation work which meets the Building Standards system:



NICEIC Group Ltd

Phone: 0131 317 8444
www.niceic.com



SELECT

Phone: 0131 445 5577
www.select.org.uk

Northern Ireland

There are currently no legal requirements for domestic electrical installation work in Northern Ireland. However, the following organisations do register electricians who should be competent to carry out this type of work.



Representing the best in electrical engineering and building services

ECA

Phone: 0207 313 4800
www.eca.co.uk



NICEIC Group Ltd
Phone: 0870 013 0382
www.niceic.com



NAPIT Registration Ltd
Phone: 0870 444 1392
www.napit.org.uk



The Electrical Safety Council

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Registered Charity No. 257376

The Electrical Safety Council is an independent charity committed to reducing deaths and injuries through electrical accidents at home and at work.

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DOMESTIC & GENERAL

