

A guide to

living safely with electricity



Keep this in a safe place and refer to it often



energysafetyservice
te ratonga whakaruru pūngao

Keep this guide in a safe place.

Refer to it whenever you have questions about electrical safety.

The Energy Safety Service has prepared this handbook as a guide to living safely with electricity.

In this guide you will find valuable information on how to use electricity safely in and around the home. It includes using electrical equipment and appliances, working with cables and wiring and working with electricity outdoors. There are also safety tips on getting electrical work done and doing it yourself.

Reading this for 20 minutes now may prevent an accident or save a life in the future.

The Electrical Safety Checklist at the back of the guide will help you identify and correct electrical hazards. Make sure you do a safety check at the beginning of summer and winter.

For more information visit our website at

www.ess.govt.nz

or phone 04 472 0030

or free fax 0508 723 336 (SAFE ENERGY).

Switch on to electrical safety, now.

For further information on electrical safety refer to the Directory on page 34 of this guide.

Contents

4	Electricity	24	Getting Electrical Work Done
4	Facts	25	Certificate of Compliance (CoC)
4	Risks	26	Electrical Safety Inspections
5	Warning Signs	26	Buying a Home
6	Key Safety Tips	26	Building or Renovating a Home
		27	Your Rights
		27	Doing Your Own Electrical Work
8	Electrical Equipment and Appliances	28	Electrical Safety Devices
9	Portable Electric Heaters	28	Residual Current Devices (RCD's)
10	Electric Blankets	29	Isolating Transformers
11	Stoves	30	Shuttered Sockets
11	Clothes Dryers	30	Recessed Sockets and Shrouded Plugs
12	Small Appliances	30	Insulated Metal Pins
12	Cords	30	Transparent Sockets and Plugs
12	Extension Leads	30	Four way Switched Socket Outlets
13	Multi-boxes		
14	Sockets and Plugs		
14	How to Wire a Plug		
15	Lighting		
15	Hot Water Cylinder		
16	Electrical Wiring in Your Home	31	Children and Electricity
16	Fuses and Circuit Breakers	32	What to Do in an Electrical Emergency
17	How to Replace a Fuse	32	Electric Shock
18	How to Check your Circuit Breaker	33	Electrical Fire
		33	Downed Electrical Wires
19	Electricity Outdoors	34	Publications
19	Overhead Powerlines and Underground Cables		
21	Using Electrical Tools and Equipment Outside	35	Electrical Safety Check List
22	Recreational Safety	44	Directory
22	Caravans	44	Electrical Safety Contacts
23	Boating and Water Safety	45	Emergency Phone Numbers
		45	Important Phone Numbers

Electricity

Facts

Electricity is energy. Through the movement of electrons, electricity has the power to heat, to light, to move things and to make things work. Electricity travels along a circuit. When you plug something in and turn it on, you complete the electrical circuit from the power station to your home.

Electricity can flow through some materials easily, such as metal and water. These are called conductors. Materials, such as rubber, plastic, glass and ceramics are called insulators because electricity does not travel easily through them.

An electrical current will flow to make a circuit. If something that conducts electricity gives it an easy path to the ground, it will take it. People are conductors of electricity as our bodies are mostly water. If you touch an electric circuit and the ground, or earth, at the same time, electricity will flow through you and this could be fatal.



Risks

Electricity is clean, efficient and instantly available for use. However, it cannot be seen or heard and has no smell. The risks involved with using electricity are electric shock, burns and fire.



Touching an electrical circuit and the ground at the same time can be fatal.

Electric Shock

Electric shock can cause muscle spasms, breathing failure, irregular heartbeat, severe burns, unconsciousness and can be fatal.

Burns

Burns caused by electricity occur along the path the electric current takes through the body, including the skin, nerves, muscles and tissues.

Fire

Fires occur when electrical appliances overheat, or when furniture and fittings come into contact with an electrical heat source such as a heater or stove. The New Zealand Fire Service estimates that 10% of all fires are caused through electrical accidents.

Warning Signs

To prevent electrical accidents, be aware of the warning signs, including:

- a tingling feeling when you touch an appliance or fitting,
- appliances or fittings hotter than normal to the touch,
- fuses frequently blowing or circuit breakers tripping and needing to be reset,
- dim or flickering lights ,
- unusual smells or noises,
- scorch marks on plugs or sockets or any electrical appliance or fitting,
- power going off in your home unexpectedly, and
- damaged insulation or fittings – such as cables, flexes, cords, and switches showing exposed wiring.

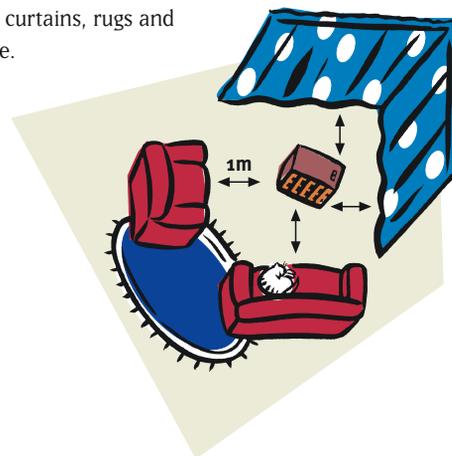
Key Safety Tips

We use electricity every day so it is easy to take for granted. This is when electrical accidents can occur. Follow the safety guidelines below to prevent electrical accidents and stay safe:

- Water is a conductor. To avoid electric shock, keep all cords and appliances dry and clear of water or damp areas, both inside and outside.
- Always have dry hands when touching electrical appliances or sockets.
- Use residual current devices (RCD's) in the damp areas in your home, such as the bathroom, laundry, kitchen, garage, pools and spas, or when working with electrical equipment outside (*see page 28*). An RCD monitors electric currents flowing along a circuit. If it detects a current being diverted to the earth (such as through a person), it cuts the power off instantly – preventing an electric shock being fatal.
- Make sure all electric cords are in good condition before using them. Check for any damaged or exposed wires, fraying or cracked leads, and cracked or broken power sockets or plug tops. Replace any damaged leads correctly or have them professionally repaired.
- Limit the number of appliances plugged into an outlet or extension cord to avoid overloading. Only use one heater per outlet.
- Check and replace any outlets where the plug does not fit firmly into the outlet – a loose contact is unsafe.



- Always supervise appliances when in use. When not in use, switch them off at the wall and unplug.
- Buy the latest electrical safety products when renovating and rewiring your home.
- Use safety devices such as recessed and shuttered sockets, shrouded plugs and RCD's.
- Always employ a licensed electrical worker for electrical repairs, to ensure the work is done to legal safety standards. Ask to see their practising licence and make sure you receive a Certificate of Compliance for all electrical work done on installations and fittings (except maintenance work such as replacing sockets and light fittings). Ask for an Electrical Safety Certificate for repair work done on appliances.
- When changing fuses or doing electrical work around the house, or if there is an electrical problem, always disconnect the power by turning the main power switch off first.
- Remember, a heater is a fire hazard. Follow the **'Heater Metre Rule'** and keep heaters at least one metre away from bedding, clothes, curtains, rugs and furniture.



Electrical Equipment and Appliances

All electrical appliances sold in New Zealand, including second-hand appliances, must be tested to Australian and New Zealand testing standards.

New appliances are more likely to have the latest safety features. If you are buying a second-hand appliance make sure it has been safety tested. Check that all the safety features work and that the appliance has the right plug and voltage for New Zealand.

Regularly check your appliances for broken parts and/or damaged cords. Turn off and unplug all electrical appliances first. Clean them with a dry cloth.

To avoid overloading a circuit, limit the number of appliances plugged into one outlet.

If an appliance repeatedly blows a fuse, trips a circuit breaker or has given you a shock, disconnect it immediately. Have it repaired by a licensed electrical worker, or replace it.



Always get your appliance repaired by a qualified person. Ask for an Electrical Safety Certificate when they have completed the work. This shows the appliance has been repaired to approved safety standards.

Portable Electric Heaters

Heaters can be a fire hazard. Heat can build up quickly causing flammable things to ignite. Always follow the **'Heater Metre Rule'**. Keep heaters at least one metre away from materials that can burn, such as bedding, curtains, clothes, furniture and rugs. Place portable heaters where they will not be accidentally knocked over and where the lead will not be tripped over or damaged.

Never leave a heater unattended. Unplug it when you leave home, when not in use, and before you go to sleep.

Only use one heater per outlet, as an electric heater will fully load an outlet.

Always keep young children away from heaters and never leave them unsupervised in a room when a heater is on.

Dust or debris in your heater can be a fire hazard. Keep your heater clean by blowing out or wiping/vacuuming up any dust. And ensure there are no broken parts or frayed cords.

Heaters should not be used in damp areas, such as the bathroom, unless they are properly installed and have an automatic shut-off mechanism.



Never leave a young child unsupervised in a room when a heater is on.

Electric Blankets

Each season, before using your electric blanket check for damage or wear and check again each time you change the sheets. Inspect the cord, control switch and plug for any damage and look for any kinks, worn or exposed wires, scorch marks, or breaks in the heating element.

To check, turn the blanket on for 15 minutes at the highest setting (don't leave the room) and then turn it off. Run your hand over the blanket and feel for hot spots. A hot spot means the heating coil has been kinked or damaged. This could lead to fire or electric shock. Take it to a licensed electrical worker for repair or replace it with a new one.

Use an electric blanket only to warm the bed. Switch it off before you get in, so as to avoid overheating. Overheating can be life threatening, especially for the very young, ill, or elderly.

When fitting the blanket, ensure it is flat on the bed as creasing can damage the heating elements. Secure the blanket firmly using the attached ties. Pins or sharp objects should not be used. Keep the cord and control switch clear of the bed so they don't get damaged.



Never leave a switched-on electric blanket unattended for long periods of time.

Putting clothes or other things on the bed while an electric blanket is on could cause the blanket to overheat and may start a fire. Never leave an electric blanket unattended for long periods of time when it is switched on.

Never use an electric blanket that is wet. Dry it thoroughly according to the manufacturers instructions. Never drink in bed or place a hot water bottle in a bed when an electric blanket is in use. Electric blankets should not be used for young children until they stay dry through the night. If the blanket is faulty, any dampness could conduct an electric shock.

In summer, store your blanket rolled (in corrugated cardboard, if possible), or stored flat on your bed or in a dry area where no objects will be placed on it. Never fold your blanket, as this is likely to damage the heating elements.

Stoves

Cords from electrical appliances, such as kettles and toasters, should be kept well away from stovetops. So should anything that can burn easily, such as tea towels, plastic containers or paper towels.

Clothes Dryers

Always clean the lint filter from your clothes dryer before you use it. Lint build-up can cause a fire by creating an elevated temperature in the drum.

Never place flammable items such as rubber, fibreglass, plastic, or items containing oils or petroleum based products in the dryer.

Follow the manufacturer's instructions when installing the dryer.

Ensure the dryer completes its cool-down phase. Clothes removed from the dryer should be spread out to cool.

Small Appliances

Keep small appliances, such as toasters, kettles, irons, hairdryers, shavers and curling irons, unplugged when not in use. If an appliance accidentally falls into water, always make sure it is switched off and unplugged before retrieving it from the water.

Never stick a metal object into any appliance, especially toasters, heaters or dryers.



Cords

Make sure cords are in good condition. Frayed, cracked or damaged cords are dangerous and may result in fire or cause an electric shock. Replace the cord as soon as you notice any damage, or have it professionally repaired.

Prevent cords being damaged:

- Pull the plug rather than the cord when disconnecting an appliance or lead.
- Keep cords tidy by running the cord along a wall. Only use tape or specially designed clips to attach cords to the wall, floor or other structure. Never nail or staple an electric cord on to the wall, baseboard or any other object as this could damage the cord.
- Never stand furniture on an electric cord and never run an electric cord under rugs or carpeting.

Extension Leads

Extension leads should only be used as a temporary measure, not as permanent home wiring. They should be used for low power consuming appliances, such as home entertainment systems, table lamps and digital clocks. If possible, rearrange your furniture so that wall outlets can be used. If you must use an extension cord, place it on the floor against a wall where people cannot trip over it.

When buying a new lead, look for one with enhanced safety features such as recessed sockets and transparent plugs. These features help reduce the possibility of electric shock.

Multi-boxes

Multi-boxes are multiple electrical sockets mounted onto a portable case, allowing you to plug in several appliances at once. Check the maximum load and be careful not to exceed it. Multi-boxes are ideal for supplying electricity to appliances that consume minimal power, such as computers and TV's. They should not be used with appliances that draw a heavy load of electricity such as heaters, electric jugs, washing machines and stoves. These appliances should be plugged directly into a wall outlet.

Multi-box safety features can include:

- 1 an overload switch that automatically shuts off the power in the box if there is a problem,
- 2 shuttered sockets, which prevent children pushing something into them,
- 3 a built-in RCD that will automatically disconnect power in the event of a fault, and
- 4 a surge protector that prevents electric equipment being damaged by electrical surges (spikes).



Keep multi-boxes out of reach when there are young children around.

Always place multi-boxes out of the reach of young children.

Sockets and Plugs

Overloaded power points are a fire hazard. Install an extra outlet rather than risk a fire.

Make sure plugs are correctly inserted into sockets. Shocks may occur when the pins are partially exposed and still connected to the socket. Use plugs with insulated pins or recessed sockets (*see page 30*).

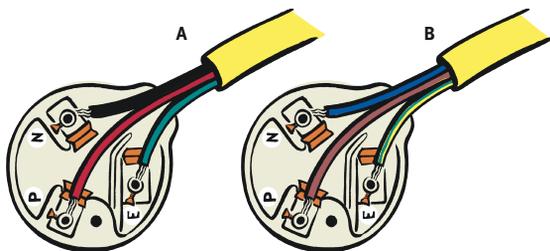
How to Wire a Plug

We recommend that you buy moulded plugs that do not need rewiring. However, if you do need to rewire, there is only one way to wire an electrical plug safely.

Study the diagram below and ensure that you always connect the correct colour to the correct letter.

In New Zealand, it is most common for the coloured wires inside power cords to look like either A or B. They should be connected as illustrated below.

A		OR	B	
P – Phase	Red		P – Phase	Brown
N – Neutral	Black		N – Neutral	Blue
E – Earth	Green		E – Earth	Yellow/Green



Lighting

Always install light bulbs that are the correct wattage and size for the fittings. Don't replace bulbs with a higher wattage than recommended as they can overheat, burn fixtures and fittings, and start fires. Make sure bulbs are inserted correctly as loose bulbs may also overheat.

Hot Water Cylinder

Keep the hot water temperature in your cylinder between 50° and 55°. It is important that the water in the cylinder is hot enough to kill bacteria such as legionella.

If there are young children in the home we recommend that you fit a tempering valve to your hot water cylinder and use it to lower the temperature further to 43° at the tap. This is a safe water temperature for children, ensuring they don't get burned. Ask your local energy supplier or a licensed plumber for advice on how to adjust it, if necessary.

Always ensure that the thermostat and element covers are in place to prevent electric shock.

Electrical Wiring in Your Home

The permanent cabling and fittings in your home are called electrical installations. A licensed electrician generally carries out work on electrical installations and fittings.

Electrical installations can age and become overloaded, particularly in old homes where the original wiring was not designed for the number of electrical appliances in use today.

Warnings signs that the installations in your home are becoming dangerous include plugs and sockets that are hot to the touch or have brown scorch marks on them, fuses that blow and circuit breakers that trip for no reason, and flickering lights.

These signs may mean that the wiring in your home needs upgrading. If you are concerned, contact a licensed electrician.



When buying a house, or if you notice any of the above warning signs, have a licensed electrician or electrical inspector check the internal wiring. They will be able to tell you if repairs are necessary and estimate the cost.

Fuses and Circuit Breakers

The switchboard protects your home's electrical wiring system. It contains the main power switch, as well as a number of fuses, or circuit breakers. Each fuse or circuit breaker corresponds to a different area of wiring in your home. If an electrical fault occurs, the fuse will blow or the circuit breaker will trip. The power to that area of the house will be shut off, preventing overloading and fires.

The main difference between circuit breakers and fuses is that circuit breakers can be reset. Once a fuse blows it must be replaced. Always turn off the main power switch and all appliances and lights that are on that fuse before you replace it. Always replace a fuse with the correct current rating. A fuse with too high a current rating will cause excessive current to flow through the circuit, leading to overheating and possibly fire.

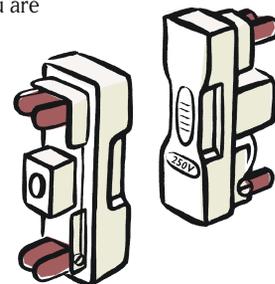
If a fuse keeps blowing call a licensed electrician.

If possible, swap the fuses in your switchboard with plug-in circuit breakers of the same rating, as these are safer to use and do not require replacing.

How to Replace a Fuse

Follow this guide when replacing some types of fuses:

- 1 **Turn off the main power switch at the switchboard.**
- 2 Look inside the switchboard for a list of the equipment or circuits each fuse controls. Usually one fuse controls a certain area of the house, such as the kitchen, or certain types of equipment, like lighting.
- 3 If you can't tell which fuse has blown, pull out, inspect, and replace each fuse, one at a time.
- 4 Once identified, switch off lights and unplug all appliances on the faulty circuit.
- 5 Replace the fuse wire. There are a number of different types of fuses. If you are not sure, the best way to replace a fuse is to examine one of the intact fuses in your switchboard and copy the way the wiring runs in the carrier.



- 6 Make sure you use the correct current rating wire. The current is generally indicated on the front of the fuse carrier.
 - Lighting circuits typically use 5 amp wire, but not greater than 10 amp.
 - Socket outlets use 10 amp wire but not greater than 15 amp wire.
 - Large appliances, such as electric stoves, may use a larger size.
- 7 Make sure no excess wire is sticking out of the fuse carrier.
- 8 Replace the fuse carrier and turn on the main power switch.
- 9 Check all appliances, light fittings and cords that were in use when the circuit failed. Replace or repair faulty equipment. Check that the fuse did not blow due to overloading the circuit.
- 10 If the fuse blows again, call a licensed electrician.

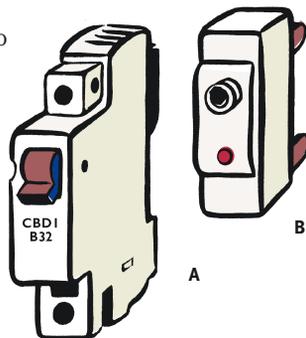
How to Check Your Circuit Breaker

If your power goes off because your circuit breaker has tripped, look for the lever in the 'off' position (A) or where the button has popped out (B).

Switch off lights and unplug all appliances on the faulty circuit.

Push the operating lever to the 'on' position (A), or push in the button on the circuit breaker (B).

If the circuit breaker continues to trip, call a licensed electrician.



Electricity Outdoors

Take special care around electricity outdoors. Whether you are working or playing near it, or using electrical equipment, be aware of the dangers.

Overhead Power Lines and Underground Cables

Electricity is supplied to your home through overhead power lines and underground cables. These service lines are live and cannot be turned off by your main power switch. If you touch them, or the bare conductors that connect them to the house, you may be seriously injured or killed.

It is the homeowner's responsibility to ensure that, within the boundary of their property, power lines and cables are maintained in a safe condition. There should be a clearance between power lines and buildings, structures, and trees.

Always plant trees well away from power lines and keep branches trimmed and clear of the lines. Never cut or trim a tree that could fall onto power lines. Before you climb any tree, be sure no power lines run through it or near it. Even if power lines aren't touching the tree, they could touch it after your weight is added to a branch.

Always locate underground cables and services, such as water, gas and sewer before digging.



 Be aware of the location of overhead power lines before working outside

Always check where overhead power lines and cables are situated before using an object like a pool skimmer or putting up a clothesline, TV antenna, or any tall object near your home.

For example, metal ladders are excellent conductors of electricity. Anyone touching a ladder when it is touching a power line could be electrocuted. Wind, uneven ground or reaching to the side while on a ladder could cause it to shift position and you could come into contact with an overhead power line.

Keep in mind clearance requirements when undertaking house extensions and renovations, such as installing new windows or building a deck.

Before you do any work near power lines or underground cables, arrange with your power company to identify any problems or disconnect the supply. This work might be painting your house, trimming trees, cleaning guttering, replacing spouting, roofing, repairing chimneys or excavating a property.

Keep clear of power lines when playing with kites or any toys that could touch an overhead power line. Use these toys in an open space such as a field or park.

Never touch overhead power lines, underground cables or the bare conductors that connect them to the house as this could be fatal.

Using Electrical Tools and Equipment Outside

Special precautions are required when using electrical appliances outdoors or in a damp environment.

Electrical equipment and appliances used outside include electric lawn mowers, weed eaters, water blasters and power tools. It is especially important never to use any damaged leads or appliances outdoors.

Never use them in wet conditions. ***In addition, always use a residual current device (RCD) or an isolating transformer.*** These protect you from a fatal electric shock by cutting the current in the event of an electrical problem (*see page 28*).

Keep children and pets a safe distance away when you operate a mower or any other electrical equipment.

Pay particular attention to keeping the cord out of your path or work area so it does not get damaged and cause an electric shock.

Wear strong protective footwear when working with electrical appliances or tools outside. Never wear jandals or bare feet when using electrical appliances outdoors.



Recreational Safety

Caravans

Electrical installations in caravans must be maintained in a safe condition. Always have a current warrant of electrical fitness. You can get one from a licensed electrical inspector.

Only use approved cords, plugs and sockets to hook up your caravan. If you're using a caravan at home, get a licensed electrical worker to install the right socket for the caravan's power supply lead.

Always switch off the supply box before plugging in your caravan and check you are disconnected before driving off.

If you want to run appliances in the caravan's awning, always use an RCD or isolating transformer. If you are using an extension cord take care it does not get damaged.

Store power leads neatly rolled, to avoid kinks or damage. Always completely uncoil power leads before using them.



Boating and Water Safety

Water makes a good path for electrical currents, so never touch electric switches or wires when you are wet.

In addition, whether on the land, or in the water, carefully look around and up before raising or moving sailboat masts, oars or fishing poles. A sailboat mast, spar, rigging, antenna or flag mast poses potential danger around power lines. Power lines may cross small bodies of water and launching ramps, so watch out for overhead electric lines near boat docks and piers.

When hauling, docking or transporting a boat, be sure to remove or lower metal equipment that could come in to contact with power lines.

Also, when casting your fishing rod, look up for overhead lines.

When boating, watch for overhead lines – look out and look up.

Getting Electrical Work Done

The Energy Safety Service administers the principal laws governing electrical work in New Zealand. These are:

- Electricity Act 1992
- Electricity Regulations 1997
- New Zealand Electrical Codes of Practise

Copies of these laws can be found on the Energy Safety Service's website www.ess.govt.nz, in your local library or from your local Bennetts Government Bookshop.

The law allows homeowners to do a limited amount of electrical work in their home. (see page 27). Any person, other than a homeowner, who carries out prescribed electrical work, is required to be registered by the Electrical Workers Registration Board (EWRB). All electrical workers who carry out electrical work in return for payment or reward, must hold an annual practising licence.

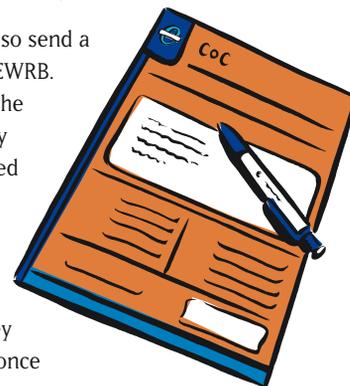
When you contract an electrical worker, always ask to see their practising licence and check the expiry date. This is proof that the worker is qualified to do electrical work safely. Note, the colour of the licence changes every two years. If you are unsure if your electrical worker is licensed get in touch with the EWRB. (See Directory on page 34).



Certificate of Compliance (CoC)

Electricians must issue a Certificate of Compliance (CoC) to customers when doing any fixed wiring work, including fitting new power points. CoC's are not issued for maintenance work, such as replacing sockets and light fittings or repairing appliances.

Your electrician must also send a copy of the CoC to the EWRB. The CoC indicates that the work done is electrically safe and has been carried out in accordance with New Zealand's electrical safety standards and codes. It also shows they have tested their work once completed.



Keep your CoC in a safe place as a record of the work done on your property. It is an important document and may be required for insurance claims or when you are selling your home.

A CoC guarantees that the work:

- has been completed by a licensed electrician,
- meets safety standards set by law, and
- has been tested.

Make sure you get a Certificate of Compliance from your licensed electrician at the completion of a job, and keep it in a safe place.

Electrical Safety Inspections

The law also requires some electrical work to be inspected, particularly work on the main switchboard, the main cable, and the main earth. The electrician you employ is responsible for arranging for a licensed electrical inspector to carry out the inspection. Keep the inspection report with your CoC's, a copy of this guide and other important information.

If you have any concerns about your home being electrically safe, have it checked by a licensed electrical inspector.

Buying a Home

Before buying a home, get a licensed electrician or inspector to verify that all installations, outbuildings, and electrical equipment are electrically safe. They can also identify any electrical problems you may face in the future.

Ask the vendor about all electrical work undertaken and sight all Certificates of Compliance (CoC). This acts as an assurance that a licensed electrical worker has performed the job safely. The CoC is also important for liability and insurance purposes, should something go wrong.

Building or Renovating a Home

When building a new home or renovating an existing one, plan for your present electrical needs and for what you may need in the future. Make sure you have adequate power points and fittings and ask your electrical worker to advise you of the latest electrical safety devices available (*see page 28*). Although you may have to spend a little more up front, it may save a life in the future.

Your Rights – How to Complain about Sub-standard or Unsafe Electrical Work

If you have a problem with electrical work done in your home, first discuss it with the electrical worker or company who did the job. If you are still unhappy, you can lay a formal complaint with the EWRB. For more information about making a formal complaint, contact the EWRB at 0800 66 10 00 or check their website at www.ewrb.govt.nz.

Doing Your Own Electrical Work

The law allows you, as a member of the public, to do certain electrical work on your own home. You must follow set standards, it must be for your own use and you cannot take payment or reward for it.

Never do any electrical work unless you are sure you have the skills and knowledge to do the job safely and legally. Accidents, and in some cases fatalities, can occur because people don't know what they are doing.

For more information on the requirements for doing your own electrical work, contact the Energy Safety Service (see Directory) for a copy of their brochure 'A Guide to Doing Your Own Electrical Work Safely and Legally', or download it from their website www.ess.govt.nz.

Electrical Safety Devices

When buying electrical fittings and appliances, always ask for products that have an enhanced level of safety, such as a built-in RCD or recessed sockets.

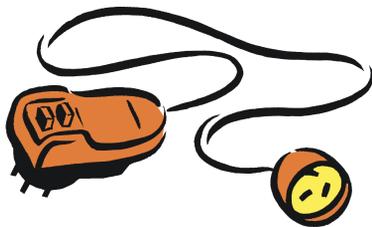
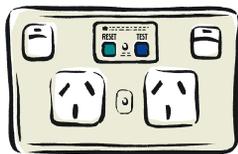
Residual Current Devices

An RCD constantly monitors the current flowing along a circuit. If it senses any loss of current, where electricity is diverting to the ground rather than through the circuit, it will immediately shut off.

If your body is providing the path for the electricity to divert to the ground, you could be seriously injured, burned, severely shocked or electrocuted. An RCD will prevent the shock being fatal by shutting the system down instantly.

RCD's should be installed in damp areas of your home where there are electric fittings, such as bathrooms, laundries, kitchens, garages, pools and external electric outlets.

Different types of RCD's include fixed RCD's, which can be installed in standard socket outlets and wired in a way that protects other outlets downstream, circuit RCD's, which are wired into your switchboard, and portable RCD's.



Testing Your RCD

Test your RCD regularly by plugging in a small electric appliance. Press the test button. If the appliance turns off, the RCD is working. If it stays on, get your RCD checked by a licensed electrical worker. Make sure you press reset once the test is complete.

Isolating Transformers

An isolating transformer protects you from an electric shock by providing an electricity supply that is isolated from earth. For maximum protection, the transformer should be placed as near as possible to the electrical outlet.

Always use an RCD when working with electrical appliances outdoors or in damp areas.

Shuttered Sockets

Socket outlets fitted with internal protective shutters make it more difficult for children to poke things into them.

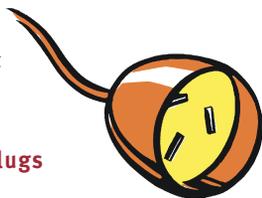
Recessed Sockets and Shrouded Plugs

Recessed sockets and shrouded plugs on electrical fittings, extension cords and double adaptors help to prevent contact with the metal pins on a plug if they become partially exposed.



Insulated Metal Pins

An additional safety feature is a plastic insulation sleeve on the metal pins on a plug. Like recessed sockets, these prevent contact with the metal pins.



Transparent Sockets and Plugs

Clear-backed sockets and plugs expose any problems with the wiring.

Four-way Switched Socket Outlets

These can be installed as part of your home's permanent fittings to give you four sockets at an outlet, eliminating the need for multi-boxes and extension cords.

Children and Electricity

Young children are curious and will play with anything. Ideally, they should never be left alone in a room where electric appliances or fittings are in use. It only takes a moment for a child to post something into a heater, pull on a cord, topple an appliance over, or poke something into an electrical outlet.



Arrange your furniture so that children have room to play away from heaters and other appliances.

Always choose shuttered sockets and recessed outlets when new electrical work is being done.

Use plastic safety plugs in all unused power points that don't have safety shutters. Ensure safety plugs are a firm fit and impossible for little fingers to remove.

Multi-boxes should be kept out of reach, preferably on a wall bracket. If this cannot be done, use a multi-box cover. If possible buy multi-boxes with shuttered outlets and an RCD installed.

When you finish using appliances, like hair dryers, put them away so children don't play with them.

Use short cords on your electric jugs and kettles to prevent burns and scalds from children from pulling them down onto themselves.

Keep metal objects like keys, scissors or nail files out of reach so they can't be poked into sockets, heaters or other electrical outlets.

Teach your children about the dangers of electricity and demonstrate safe behaviour. They will generally follow your example.

What to Do in an Electrical Emergency

Electric Shock

If someone comes into contact with a live electrical source around the home **do not touch them**.

Switch the power off, either at the source or at the main power switch. If you touch the person while they are still in contact with the electrical current you will also get an electric shock or be electrocuted.

The longer a person is in contact with the power source, the more likely the shock will be fatal.

If it is not possible to turn the power off, use an insulated object such as a broom with a **dry wooden handle** to push the victim clear of the source of shock. Wear rubber soled shoes if possible. **Never choose anything even slightly damp to help rescue the victim.**

Phone for an ambulance immediately – dial 111.

Administer appropriate first aid such as CPR. If you have not had first aid training, the emergency operator may be able to give you directions until help arrives.

In all cases of electric shock, even if the victim feels fine, seek medical treatment and advice immediately. Visit your local doctor or after hours medical centre.

Report all electrical accidents to the Energy Safety Service by calling free 0800 10 44 77.



Learn First Aid – It may save a life.

For a list of First Aid courses available in your area call your local Red Cross branch or the St John's Ambulance.

Electrical Fire

Never throw water on an electrical fire. If possible, disconnect the faulty appliance or turn off the power. Keep a multi-purpose fire extinguisher handy at all times.

If necessary, phone the Fire Service – dial 111.

Report electrically caused fires to the Energy Safety Service by calling free 0800 10 44 77.

Dispose of faulty appliances or get electrical installations checked by a licensed electrical worker.

To be prepared, install smoke detectors in your home and have an evacuation plan that all members of the family know and have practised. Your local fire station can advise on the best routes out of your house in the event of a fire.

Downed Electrical Wires

Stay away from all electric wires that have fallen down, as they may be live. Get help immediately by calling your local electricity supply company. The company will disconnect the downed wire from the power source and repair the damage. The emergency services pages in your phone book will list these numbers.

Publications

Please call the Energy Safety Service on 04 472 0030 or email us on info@ess.govt.nz to receive one or more copies of the following documents:

- A Guide to Doing Your Own Electrical Work Safely and Legally (pamphlet)
- If it Can Heat You, it Can Hurt You (Electrical Safety Awareness Kit and A1 poster)
- 2 Bright Sparks (children's booklet)
- Summary of Reported Electrical and Gas Accidents 1998-2000 (booklet)
- Watch the Overheads (pamphlet and poster)
- Electricity the Powerful Energy ... But Use Safe Cords and Fittings (pamphlet)
- Simple, Convenient and Accurate Control of Your Electric Hot Water Thermostat (pamphlet)
- Caravan Electrical Safety Requirements and Recommendations (pamphlet)
- All You Wanted to Know About Electricity on the Farm (pamphlet)

The following are also available in PDF format on our website:

- If it Can Heat You, it Can Hurt You (booklet 1682KB)
- Summary of Reported Electricity and Gas Accidents (1998-2000) (booklet 241KB)
- A Guide to Doing Your Own Electrical Work Safely and Legally (pamphlet)

Electrical Safety Check List

Keep your home and family safe.

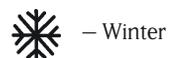
Do an electrical safety check in and around your home twice a year.

At the beginning of summer and winter, check each room in your home for electrical safety. Work through the check list below. Invest 10 – 20 minute of your time now. It may save a life or prevent an accident in the future.

Once you have finished your inspection, record the date in the space provided so you know when your last check was done and what needs to be fixed. Make sure you fix the areas that you have marked with a cross as soon as you can.

2002		2003		2004	
					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

In each box: mark ✓ for 'OK'
mark X for 'Needs Fixing'.



– Winter



– Summer

Electrical Safety Check List

	2002		2003		2004	
						
Cords (see page 12)						
Are all electric cords in good condition, with no cracking or fraying in the outer cover or any internal wires exposed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all electric cords clear of rugs and furniture?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all extension cords used for temporary purposes only?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all cords out of the way so they can't be tripped over or damaged by furniture?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sockets and Switches (see pages 13–14)						
Are all sockets, switches and multiboxes working properly with no damaged or broken plugs, sockets, light switches or light fittings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all sockets and switches cool to the touch?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do all electric plugs fit snugly into the sockets?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all multi-boxes placed up high out of the reach of children?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have safety devices installed such as RCD's, shuttered sockets and recessed outlets?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have you limited the number of appliances plugged into one outlet so not to draw too heavy a load on the circuit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have only one heater per outlet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Electrical Safety Check List *continued*

	2002		2003		2004	
Lighting (see page 15)						
Do you have the correct bulbs in your light fittings and lamps?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Portable Electric Heaters (see page 9)						
Do you follow the 'heater metre rule' with all heaters at least one metre away from things that can burn?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all heaters in good working condition with no broken parts, funny noises or smells?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have you recently maintained and cleaned your heater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electric Blankets (see page 10)						
Are all electric blankets in good condition with no scorch marks, kinks, exposed or damaged wiring?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are your electric blankets stored flat or rolled in corrugated cardboard when not in use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have you had your electric blanket tested recently?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Large Appliances (see page 11)						
Do you check and clean the lint from your clothes dryer filter regularly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you consistently make sure the stove-top is kept clear of things that could burn, such as paper towels and plastic cords, keeping them at least one metre away from the elements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Electrical Safety Check List *continued*

	2002		2003		2004	
Small Appliances (see page 12)						
Are all small appliances around your home in good condition with no exposed wiring, funny noises or smells?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do all your small appliances operate correctly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all small appliances unplugged when not in use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all cords to electric appliances stored out of the way so a child cannot pull them down onto him/herself?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Residual Current Devices (RCD's) (see page 28)						
Do you have RCD's installed in the damp areas of your home where you have electrical outlets such as the bathroom and laundry?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you test your RCD's regularly, and are they working correctly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you use an RCD or isolating transformer with all electrical equipment outside?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fuses and Circuit Breakers (see page 16)						
Can you change a fuse correctly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all fuse wires the correct size for the circuits on your switchboard?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is it a rare occurrence for a fuse to blow in your home?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Electrical Safety Check List *continued*

	2002		2003		2004	
						
Outdoors (see page 19)						
Are all power lines well clear of buildings, structures and trees?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all outside electrical outlets protected by an RCD or an isolating transformer?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electrical Emergency (see page 32)						
Do you know what to do in an electrical emergency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have you taught your family to be safe around electricity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have smoke alarms installed in your home?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have you tested your smoke alarms recently/regularly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have a multi-purpose fire extinguisher in your home?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do all people who live in your home know the safest evacuation route in case of an emergency. Do you have an emergency plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have an emergency plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Directory

Electrical Safety Contacts

Energy Safety Service

PO Box 1473

Wellington

Tel: 04 472 0030

Fax: 04 460 1365

Free Fax: 0508 SAFE ENERGY (0508) 723 336

Email: info@ess.govt.nz

Website: www.ess.govt.nz

The Energy Safety Service is part of the Ministry of Consumer Affairs. It is responsible for safeguarding people and property from the dangers of electricity and gas.

To report electrically caused fires or electrical accidents call us free on 0800 10 44 77

For general enquiries about electrical safety or for questions about your licensed electrical worker contact:

Electrical Workers Registration Board (EWRB)

Free phone: 0800 66 10 00

Tel: 04 472 3636

Fax: 04 473 2395

Website: www.ewrb.govt.nz

Electrical Contractors Association of New Zealand (ECANZ)

Tel: 04 494 1540

Fax: 04 494 1549

Website: www.ecanz.org.nz

Emergency Phone Numbers

Ambulance, Fire, Police

Dial 111

Electric power line problems

(check with your electricity supply company)

For non emergencies, check your telephone book.

Important Phone Numbers

Your electricity supply company

Downed electric wires number

(ask your electricity supply company)

Electrical worker / Electrician

Electrical Inspector

Insurance Company

Doctor

After Hours Medical Centre

Plunket

.....

.....

.....

.....

Published by the Energy Safety Service

May 2002

ISBN 0-478-24280-8



energysafetyservice

te ratonga whakaruru pūngao