Trams go energy safe

Melbourne trams wrapped with ESV campaign messages
DIY = DIE

DON’T DIE TRYING TO BE AN ELECTRICIAN

IT TAKES FOUR YEARS TO BECOME A FULLY QUALIFIED ELECTRICIAN. IT TAKES JUST ONE SECOND FOR A FARMER TO BE ELECTROCUTED. DON’T IGNORE MINOR SHOCKS OR TINGLES. NO MATTER THE URGENCY, ALWAYS CALL A LICENSED ELECTRICIAN.

For further information visit Energy Safe Victoria
www.esv.vic.gov.au or call 03 9203 9700.
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Our cover
Pictured is Minister for Energy Lily D’Ambrosio with Vanessa Robinson in front of one of two ESV branded city trams. The two trams aim to remind Victorians of the dangers of carbon monoxide poisoning and do-it-yourself electrical projects.

Photo: Darren Tindale

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empowering apprentices by providing first-year apprentices with Lock-out Tag-out (LOTO) kits. The kits will go a long way to helping apprentices understand the importance of good safety practices.

ESV has submitted its Corporate Plan to the Minister, a strategic document that will guide the organisation for the next few years. The Plan sets out ESV's direction which includes a number of measures that will assist the organisation continue to deliver on its regulatory responsibilities in an ever changing energy environment.

Jonathan Granger
jonathan.granger@energysafe.vic.gov.au

I think I am only the third editor of this magazine but it’s a pleasure to be here as part of my role as ESV’s Head of Communications and Marketing. It was sad to say goodbye to Sharon Rainsbury who has been at the helm for such a long time. Sharon has headed off to greener pastures but leaves behind a wealth of achievements in top notch community safety campaigns and media management. I have big shoes to fill.

However, it doesn’t seem to matter what new beginnings take place when we are still grappling with old problems. A Venus Bay woman was electrocuted recently from a live window frame while working on her house. Incidents like this one remind us that the DIY=DIE campaign – warning people against doing their own electrical work without the benefit of a licensed electrician – is as important as ever.

That campaign hopped on a tram during May and June when we wrapped a Yarra Tram in our campaign advertising. We did the same with our CO is a Silent Killer campaign advertising and received a huge response from a wide cross-section of the community. There will be more of DIY=DIE later in the year but our CO campaign continues in earnest. Thanks to the support of CO victim Vanessa Robinson whose two young boys were killed by a faulty heater, we have received good media coverage of the campaign as well as the support of the Minister for Energy Lily D’Ambrosio.

ESV will be promoting apprentice safety over the next few months. Tragically we have lost too many electrical apprentices over recent years, so ESV is embarking on an awareness campaign, calling on contractors and employers to take better care of their apprentices. Also, we are empowering apprentices by providing first-year apprentices with Lock-out Tag-out (LOTO) kits.

The kits will go a long way to helping apprentices understand the importance of good safety practices.

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Jonathan Granger
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It provides readers with authoritative articles on safety, technical and regulatory information and news of prime importance to the electrical, gas and pipeline industries. EnergySafe goes directly to Victoria’s licensed electrical installation workers, registered electrical contractors, licensed electrical inspectors and gasfitting specialists as well as many other stakeholders including TAFE colleges.

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For advertising information and bookings contact Anitra Robertson
E Anitra.Robertson@energysafe.vic.gov.au
Never bring a portable gas appliance indoors

By Tyler Mason, Gas Engineer

In recent years, ESV has been running a successful campaign urging gasfitters and the public to have flued gas appliances in homes serviced regularly.

The campaign identifies carbon monoxide (CO) poisoning as the major factor in gas fatalities. As a result of this campaign Victoria has not had a fatality attributed to CO poisoning over the last seven years.

However, an often overlooked source of lethal CO gas is through the use of outdoor gas appliances indoors. This includes patio heaters, camping heaters and stoves, or barbecues.

These appliances are especially dangerous if they are operated in an indoor environment, such as an unventilated room, tent, car or caravan, as they can produce dangerous levels of CO gas.

Bringing a portable appliance indoors can lead to disaster. It can contaminate the atmosphere and be deadly within 30 minutes.

ESV urges Victorians to never use these portable gas appliances indoors; they are for outdoor use only. They have clear warnings and instructions attached to them.

A recent incident over the Queen’s Birthday long weekend involved a group of five in Campbellfield who were treated for CO poisoning after bringing an outdoor solid fuel barbecue indoors. The group had intended to keep themselves warm on a chilly Sunday afternoon when they developed headaches, dizziness and nausea. Paramedics were called, the group was treated at the scene and taken to the Royal Melbourne and The Northern hospitals. Whilst gas was not involved, the incident highlights the misconception surrounding this type of appliance.

There have been a number of similar incidents in recent years involving gas, some with tragic outcomes.

In 2012, a Ballarat man was overcome by CO poisoning and tragically, died in the lounge room of his flat. He had brought his patio heater indoors and operated it with all doors and windows closed. In 2014, two young people and their pet dog died in their station wagon. They had fallen asleep in the car while operating a small portable gas heater.

A young family almost came to grief in 2015, while camping at Walhalla. The family took a portable heater into their tent to combat the below zero temperatures. An adult, two children and a baby were found unresponsive by camping neighbours and transported by 4WD from their remote campsite to hospital. They all recovered.

ESV wants to make it very clear that considerable testing of gas appliances, including portable gas appliances, must be carried out before they are allowed to be sold in Australia.

However, no amount of testing can stop individuals doing the wrong thing. It is up to you as the purchaser of a gas appliance to read and follow the manufacturers instructions and use it appropriately. You are in the driver’s seat.

DON’T TURN YOUR SLEEPING BAG INTO A BODY BAG.

Deadly serious: ESV urges Victorians to refrain from bringing outdoor gas appliances indoors, both when camping and around the home.

Click here to read more on using gas safely around the home.
ESV launches apprentice safety campaign

By Anitra Robertson, Communications and Marketing Advisor

Last month, ESV launched the first of a series of presentations campaigning for safe work practices for electrical apprentices.

As briefly addressed in our last issue, the campaign aims to promote safe work practices in the electrical industry by focusing on the responsibilities and requirements of apprentices, supervisors and electrical workers.

ESV Compliance Officer, Vanessa Garbett, has been working on the project for a few months now and is excited about its rollout.

“It’s crucial that apprentices are trained how to work safely. Last year we had four young electrical workers lose their lives in circumstances that could have been avoided, had they voiced their concerns, or been supervised properly,” says Vanessa.

“Disturbing work practices have been identified in many of the electrical incidents that we investigate.”

Too often we see electrical contractors with no robust safety management in place. Too often we see electrical workers willing to take short cuts and not follow principles or procedures that ensure a safe approach to electrical work.

“We have to improve safety outcomes for electrical workers. Apprentices should feel safe in their work environment and be confident to speak up if they’re unsure about something.”

The first presentation was distributed to all Victorian TAFE institutes to be shown to all first year apprentices. First year apprentices will also receive a Lock Out Tag Out (LOTO) kit when they view the presentation.

The Electrical Installations Safety (EIS) team will roll out the campaign for at least the next four years. The second presentation, due to be released in August, is aimed at supervisors and employers of apprentices. The campaign, along with the ongoing work of the EIS, aims to change the culture in the electrical industry.

Below are a few of the key messages of the electrical apprentice safety campaign.

As the supervisor of an apprentice, the onus is on you

The employer and supervising electrician has responsibility to provide effective supervision to workers, especially their apprentices, to ensure they work safely.

A culture where apprentices and less experienced workers feel free to ask questions and raise concerns if they are unsure, should be developed and encouraged.

“Every job must be made safe to work on. Encourage apprentices, and other workers, to seek guidance when they need to,” Vanessa maintains.

A first year apprentice must be provided with constant supervision and specific guidance. As their employer or supervisor, you must be readily available in the immediate work area and within audible range.

Test before you touch

Pictured above is a domestic water pump located on a farm. Moisture had entered the electrical terminals of the pump motor, causing the frame of the pump to be live at 246 Volts.

A man was killed instantly when he made contact with the live pump. Do not let this happen to you or your co-worker. Always test before you touch.

Never work on or near live parts

Another industry principle is the elimination of risks. We all hear the saying ‘don’t work live’ often in the industry. It is also extremely dangerous to work live. The same risks apply.

The most effective way of eliminating the risk is to isolate or remove supply. The recommended action in reference to the domestic switchboard scenario, is to remove the service fuse.

How do you ensure you are demonstrating safe work practices?

After testing and isolating the circuits and/or equipment to be worked on, you must Lock Out and Tag Out (LOTO) the circuit and/or equipment. AS/NZS 4836 safe work on or near LV electrical installations and equipment provides further guidance on safe work practices and making your working environment safe.

Lock Out Tag Out (LOTO) kit registration

By Vanessa Garbett, Compliance Officer

ESV is now receiving registrations and distributing Lock Out Tag Out (LOTO) kits to first year electricians.

These kits are an integral part of ESV’s campaign to promote and encourage safe work practice in the electrical industry.

LOTO kit: essential tools to assist safe electrical practices at work.
City trams go energy safe

By Jonathan Granger, Head of Communications and Marketing

Energy Safe Victoria’s hugely successful awareness campaigns DIY=DIE and CO the silent killer have taken a ride on Melbourne trams.

Well known to Melbournians for its Skateboarding Rhino safety message, Yarra Trams gave ESV the opportunity to ‘wrap’ two trams in our campaign advertising through May and June. The trams were on route six, travelling through Melbourne from Coburg to Glen Iris and route 72 from Melbourne Uni to Camberwell.

The reaction to the trams has been fantastic, with the public, our stakeholders and ESV people not only seeing the trams (and riding them) but remembering the key messages which call on people to have their gas heaters checked regularly (CO is a silent killer) and never do-it-yourself when it comes to electrical work (DIY = DIE).

Both campaigns came about after tragedies. Long-time ESV collaborator, Vanessa Robinson lost her two sons, eight-year-old Chase and six-year-old Tyler, to carbon monoxide poisoning from a faulty gas heater in their rental property in 2010. Vanessa has campaigned tirelessly to warn Victorians about the dangers of faulty gas heaters since the death of her boys. She formed the Chase and Tyler Foundation and has been a steadfast supporter of ESV’s ongoing campaign calling on Victorians to have their gas heaters serviced at least once every two years.

The 2017 CO campaign heralded the seventh consecutive year without a death caused by CO poisoning from a faulty gas heater, indicating that the campaign message is getting through.

Vanessa said she is happy to see that the awareness has never been greater.

“Now is not the time to rest on our laurels and think everything is ok,” she said.

“It’s such a relief that no-one has died in seven years. It is what I have worked towards with the Foundation and the Energy Safe Victoria campaign. But that’s not a reason to think everything will be fine from now on.

“People need to get their gas heater serviced by a qualified gasfitter who can test for CO leakage. Just as you get your car serviced, it is something that has to be done.

“No-one should have to go through the nightmare that I did.”

Minister for Energy, Lily D’Ambrosio said she was heartened by the response of Victorians to the Energy Safe Victoria campaign which warns people ‘carbon monoxide is a silent killer’.

“We don’t want to hear stories of Victorians, especially young children, falling victim to something that is so preventable,” she said.

“Having your gas heater serviced will give you peace of mind. Keeping warm shouldn’t be a risky business.”

ESV Director of Energy Safety, Paul Fearon, said gas heaters should be serviced at least once every two years.

“Many people think that only old heaters are affected but this is not the case,” he said.

“All gas heaters need to be serviced by a registered gasfitter a minimum of every two years to reduce the risk of carbon monoxide poisoning.

“This applies to every type of gas heater including wall units, ducted central heating units and space heaters, whether they are old or new appliances.”

Carbon monoxide can leak from gas heaters when dust or dirt builds up and flues become blocked or the combustion process does not occur properly. Gasfitters have equipment to test for carbon monoxide spillage and maintain heaters to minimise the risk.

Mr Fearon said that while there had been no carbon monoxide deaths connected to wall heaters in the last seven years, a number of deaths had been caused by portable LPG appliances.

“Do not run inside your generator an outdoor heater or anything that is designed to operate in the outdoors,” he said.

“The golden rule is if an appliance is attached to a portable gas bottle, don’t bring it inside. Without proper ventilation, CO can build up and quickly reach fatal levels.”

Vanessa agrees that misuse of outdoor gas-fueled appliances is resulting in an alarming increase in CO poisoning incidents.

“The Foundation’s research is indicating this is a growing issue and there’s a need for awareness-raising and education about the risks of this potentially fatal practice”

ESV and the Chase and Tyler Foundation is working together to develop educational materials and target appropriate messages to the wider community and specific communities identified as at-risk.

Carbon monoxide can kill in less than 30 minutes. Our top tips for protecting your family from CO poisoning are:

» get your gas heater serviced and tested for CO spillage every two years
» never bring an outdoor gas heater, such as a patio heater, or your BBQ, inside
» always follow the manufacturer’s instructions
» if you’re in a rental property, be aware of your rights and your landlord’s responsibilities
» When camping, never use a portable gas heater in a tent, car or caravan.

More information can be found on our site here, or at The Chase and Tyler Foundation.
The NECA 2017 Excellence Awards are here

The 2017 Excellence Awards are proudly brought to you by NECA Victoria. These prestigious awards acknowledge and congratulate members of the electrical and communications industry for outstanding work, commitment and innovation over the past 12 months.

11:30AM - 3PM
Friday 4th August 2017
Crown Palladium, Melbourne

To book your company table/s or tickets visit neca.asn.au/vic/excellence-awards
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BOOK NOW
In late April, ESV presented its 2017 ESV Achievement Awards for Certificate III at Victoria University.

Congratulations to this year’s winners 4th year plumbing and gas fitting apprentices, Thomas Dunn and Bryce Williamson.

Thomas, contracted with Downer Gas, currently works on gas fitting lines and meter assemblies, seeing out his fourth year working at the Maroondah Hospital.

Bryce works for Accurate Plumbing and is involved in a wide variety of maintenance plumbing work on both commercial and local government sites. By all accounts, a willing and capable employee, Bryce already has both the skills and initiative to enable him to attend most job sites on his own, and Thomas hopes to expand his career into Type B gasfitting.

Thomas and Bryce received their awards in recognition of their academic achievements and commitment to their course of study.
Kangan Institute Electrical Apprentice of the Year

By Sue Sizer, Electrical Compliance Officer

On Tuesday 27th April, ESV attended the Kangan Institute Apprentice and Industry Awards Night, where ESV sponsored the award for the Electrical Apprentice of the Year.

This year’s award winner was Steve McKinnon. Currently in his final year and having passed his LEA, Steve is excited about gaining his electrician’s licence.

Working for Quick Smart Contracting Steve predominantly carries out domestic work on both new and existing homes, and occasionally works on smaller commercial projects.

The awards ceremony was held at Aerial, South Wharf, and Steve was joined by his proud parents on the night. They recounted how one Friday their son was a high school student living at home in Melbourne with his parents and three sisters, and on the following Monday he was an apprentice electrician in outback NSW living with fellow tradesmen, eight hours from Sydney.

Steve was away from home for three months, working on the construction of a new IGA store and coped admirably.

When asked what he likes best about the trade, Steve spoke of how he particularly enjoys the variety of work the trade provides.

As his current employer does not retain apprentices once they complete their apprenticeships, Steve is looking forward to the opportunity of gaining more experience in the commercial area. Outside of work, Steve enjoys playing footy, motorbike riding and 4WDing.

ESV would like to congratulate all candidates on the night for their continued hard work in the industry throughout their apprenticeship program. Furthermore, an honourable mention to all other award winners on the night.

ESV visits country towns for 2017 field days

By Rob Oldfield, Work Practices Advisor

Over the past few months, ESV’s Regulatory Assurance team have attended various farming field days across the state, to promote and educate farmers on safe work practices in rural areas.

In March, ESV representatives travelled out to Longerenong for the Wimmera Machinery Field Days, as well as to Ballarat for the Ballarat Lifestyle Expo, before hitting up East Gippsland Field Days in April.

More recently, ESV’s Work Practices Advisors, Barry Heywood and Rob Oldfield, attending Mildura Field Days partnering with Dial Before You Dig’s (DBYD), Joe Fiala.

The two-day event attracted large crowds, with farming and trades-based groups on the first day, and many families strolling through the complex on Saturday.

There were also a number of familiar faces showing support for rural communities, including Australia’s Deputy Prime Minister, Barnaby Joyce (pictured right).

Over the two days, ESV distributed over 500 showbags containing information on our key messages Look Up and Live, No Go Zones, Look Before You Cook and Dial Before You Dig, as well as a couple of goodies to help remind farmers to work safely.

Up next, ESV heads to Hamilton for Hamilton Pastoral and Agricultural Society’s ‘Sheepvention 2017.’

Held on 7-8 August at the Hamilton Showgrounds, Sheepvention showcases competitions and events including the Ram Sale, Victorian Farm Dog’s Competition and Wool Fashion Show.

If you’re thinking about coming along, make sure you stop by the ESV/DBYD marquee and say hello!

Click here to find brochures promoting safe work practices in rural areas.
The Essential Service Commission details the requirements for the design of distribution networks to ensure continuity of supply at all times.

The correct selection of protective devices within the installation must ensure supply during normal operation of the network or during emergencies when safety services are required to run flawlessly while providing protection to the cables and devices.

**AS/NZS 3000**

**2.5.7 Reliability of supply**

**2.5.7.1 General**

The electrical installation shall be designed to provide a reliable supply by dividing the electrical installation into appropriate circuits and selecting protective devices with appropriate discrimination so that in the event of a fault occurring, the loss of supply resulting from operation of a protective device is minimized. The selection and setting of protective devices shall be verified by inspection (see Clause 8.2.2 (c) (iii)).

To obtain this level of operation, protective devices can be used individually or in combinations that afford a level of discrimination and in the long time curve (LT), short time curve (ST) and in the instantaneous settings (I) of the device).

In a well-designed system, this level of discrimination can be performed many ways, however the most commonly used method is the discrimination tables from the manufacturer or from software that calculates these settings. A deemed to comply method is to the guidance in Clause 2.5.7.2.3 which will provide the correct level of discrimination.

**2.5.7.2 Coordination of protective devices**

**2.5.7.2.1 General**

Coordination of various protective devices requires consideration of both discrimination and backup (cascading) protection.

Discrimination between protective devices depends on coordination between the operating characteristics of two or more protective devices such that a downstream device with a time/current curve below that of upstream protective device(s) shall operate for a given fault current while the other protective device(s) shall not operate.

An electrical system designed around these principles offers a reliable level of service and can be used in the safety services where multiple circuits are deployed.

The design of this system can take a number of forms; in the use of circuit breakers, fault current limiters and circuit breakers with only the magnetic component operable in the device. All of these components provide circuit protection and safe operation of the installation.

By definition, a magnetic only breaker is one that has had the long time, short time tripping ability removed or disabled, however its instantaneous section or magnetic protection of the breaker is still operable and offers high fault current protection only.

The circuit in Figure 1 has a magnetic only component as the protective device for the safety services to enable a combination of devices to be used and maintain supply to safety services.

**2.5.7.2.2 Safety service circuit discrimination**

Protective devices shall be selected such that, in accordance with 7.2.2.2—

(a) a fault on one safety service will not result in loss of supply to other safety services; and

(b) a fault on the general electrical installation will not result in loss of supply to safety services.

This example shows an installation with an ACB (Air Circuit Breaker) as the incoming protective device supplying safety services via a magnetic only breaker (must be padlockable) and the general Light and Power system controlled by a separate main switch.

As it is clearly demonstrated, the magnetic only device offers \( I^2t = k^2 S^2 \) which affords the cable protection in the event of a short circuit while ensuring that the safety service supply bus will remain available even if the fire pump experiences a short circuit event which will be handled by the fire pump breaker. Neither will result in the tripping of the incoming protection device thus maintaining supply to all safety services.

This configuration allows the designer to take advantage of the current limiting abilities of breakers to achieve fault current selectivity which is supplied by manufacturers in accordance with AS/NZS 3000 Wiring Rules.

Figure 2 specifies the device combinations recommended to achieve selectivity and cascading, permitting the downstream device to interrupt much higher currents than its individual rating.

The final consideration is AS/NZS 3000 Clause 7.2.2.2 Discrimination of circuit-protective...
By Mirna Bukic, Digital Communications Advisor

ESV, in conjunction with NECA Victoria, are on the road to present the new Wiring Rules, and what you need to know!

The Wiring Rules have recently been amended and updated. As a registered electrical worker, it is your responsibility to be aware of these important changes and comply with them.

To help you understand these changes, ESV and the National Electrical and Communications Association (NECA) have joined forces to present informative sessions on the amendments to AS/NZS 3000 Wiring Rules, AS/NZS 3003 Medical and AS/NZS 3010 Generator changes.

Each session involves a panel of industry

Full house: registered electrical workers attend one of a series of roadshows in Geelong.

and regulator informants to provide you with expert training and advice on the new rules, and an understanding of how the amendments will affect your work. The roadshow will visit up to 24 locations across the state including TAFE centres, town halls and local clubs.

To date, the sessions have seen large crowds of registered electrical workers attend, with a number of sessions selling out.

Registered electrical workers can book early bird ticket/s for $20 per ticket, or at the door for $40 per ticket. Current apprentices receive free entry. Present your student ID card at the sign in desk on arrival, no pre-booking required.

Tickets for each location are limited so NECA encourages you to book online now to avoid disappointment.

Click here to book your NECA
ESV Standards session.

NECA/ESV Australian Standards roadshow
Live window frame shocks
Venus Bay resident

By Vanessa Garbett,
Electrical Compliance Officer

Energy Safe Victoria attended an electric shock incident at a residential property in Venus Bay.

The resident had been cleaning the window frames in the kitchen when she received an electric shock. The shock threw her off the chair she was standing on.

Before reporting the incident to ESV, a local REC attended the property and discovered the window frames were live at 240Vac.

Further investigation discovered the active cable supplying the air conditioner unit had a mounting screw pierced through the copper conductor of the active cable, where the air conditioner isolator was mounted.

It was identified that the isolator mounting screw that pierced the active conductor, was in contact with silver insulation, which was also in contact with the window frames, causing them and other conductive parts of the house to become live at 240Vac.

The resident had the air conditioner unit installed 12 months prior to the incident.

Upon examination, the house appeared to be well insulated from earth causing a difference of potential between the window frames and earth.

ESV conducted an interview with the REC who installed the air conditioner unit, who advised inspectors that he had used an existing cable to supply the air-conditioner. He did not carry out any tests. A test such as Insulation Resistance Test on the supply cable eluded the isolate to the supply back at the switchboard.

The Electrical Safety Act (ESA) section 43 states the following:

43 Safety of electrical installations

(1) A person must not install any electrical equipment if the person knows or should reasonably be expected to know that—

(a) the electrical equipment is unsafe or will be unsafe if connected to an electricity supply; or

(b) the installation will make any other electrical equipment unsafe if connected to an electricity supply; or

(c) the installation will make a building or structure unsafe if that building or structure is supplied with electricity.

Penalty: 40 penalty units.

It is expected that a trained, qualified and licensed electrical contractor would be reasonably expected to know that this electrical equipment could be unsafe, if not tested.

The REC in this case was using an existing cable to supply the air-conditioner. He inadvertently pierced the supply cable with the mounting screw that supplied the air-conditioner, but did not carry out any tests. A test such as Insulation Resistance Test on the supply cable could have revealed that the cable was unsafe, and prevented the electric shock incident.

The ESA section 44 states the following:

44 Compliance and testing of electrical installation work

(1) A licensed electrical installation worker must ensure that all electrical installation work carried out by that worker—

(a) complies with this Act and the regulations; and

(b) is tested in accordance with and at the intervals required by the regulations before it is connected to the electricity supply, or if the electrical circuits or electrical equipment handled in the course of that work were not disconnected from the electricity supply, before the work is first used after it is completed.

Penalty: 40 penalty units.

As a licensed electrical worker, if you fail to carry out the mandatory tests as prescribed in section 8 of AS/NZS 3000: The Wiring Rules, you are in breach of the Electrical Safety Act 1998. You cannot guarantee the installation work you have carried out is safe until tested. Failure to do so leaves you open to prosecution and/or civil action.

ESV maintains that all electrical workers are responsible for the electrical installation work they carry out and are required to comply with the Act and Regulations. Despite the fact that this electric shock incident did not cause ongoing injury for the victim, the difference between a minor and serious electrical incident is very small. It can be as little as the position a person is standing in, the material or object they may be in contact with, or the path in which the current may take through the body.

Do not put yourself in a position of potentially causing injury to someone else. Test your electrical installation work!

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Introduction of rapid earth fault current limiters to selected 22kV zone substations

By Robert Skone, Strategic Adviser for Bushfire Safety

Energy Safe Victoria (ESV) has commissioned a survey of selected high voltage customer sites across Victoria to examine the safety risks when HV customer sites are supplied by rapid earth fault current limiter (REFCL) protected networks.

This survey has been completed and Dr Tony Marxsen has provided his final report titled “Customer Assets Directly Connected to REFCL Networks: A Preliminary Risk Survey” (The Marxsen Report), which is now available on the ESV website.

The Marxsen Report concludes that there is a small but real risk posed from the operation of a REFCL potentially affecting the HV customer sub-network as well as compromising the effectiveness of the REFCL protected network to reduce fire ignitions.

The report provides insights into the potential solutions and the work required to address these risks.

ESV welcomes any comments that stakeholders might have on the final report and with the agreement of the stakeholder will post those comments on our website.

Click here to view the full report.
You can also read the Letter to ESV from United Energy – HV customers and REFCL protected networks report June 2017.

Marxsen makes his mark: Dr Tony Marxsen is an original member of the Powerline Bushfire Safety Taskforce, and is the current Chairman of AEMO.
ESV issues first switchgear licence

By Anita Roberston, Marketing and Communications Advisor

Last month Energy Safe Victoria issued the first Switchgear Worker’s Licence.

The Switchgear Worker’s Licence enables the holder to carry out electrical installation work relating to the assembly, alteration, repair and maintenance of switchgear and controlgear assemblies, both at the point of manufacture and onsite.

Licence holders are required to sign and submit Certificates of Electrical Safety (COES) for their work.

ESV’s Director of Energy Safety, Paul Fearon, proudly presented the first Switchgear licence to Wayne Walker last month at a small ceremony attended by representatives from each of the key stakeholders who have been involved in the process from the beginning.

Mr Fearon remarked on the efforts and perseverance of each of the parties, all of whom collaborated to reach this important milestone.

“It is testament to the commitment of everyone involved from industry to the training organisations and our ESV teams that we see this new licence class come to fruition.

Congratulations to Wayne, for championing the importance of switchgear workers and being our first licence holder”, he said.

In accepting the licence Wayne spoke about how he felt both honoured and humbled to be the recipient of the first switchgear licence issued by ESV.

“My father taught me that great things are achieved by passionate people. This is truly the case with the development of the Switchgear Worker’s Licence. It was driven by passionate people who, like me recognised that we could make the industry safer and better.”

The team at NESMA relied heavily on the support provided by EnergySafe Victoria and the RTO’s without whom it just wouldn’t have happened.

Wayne explained the importance of the Switchgear licence to the industry. “It means our trade is formally recognised, the specialist work we perform is now legitimate and we can add value to the work of electricians. It sets the demarcation between the switchgear worker and the licensed electrician”.

The Switchgear Worker’s Licence addresses the Electrical industry’s need to have switchboards installed, modified, repaired and tested on site. Until recently we could design and manufacture switchboards in our workshops however we were not permitted to carry out alterations, additions and repairs once the switchboards were on site. This new measure will enable licensed switchgear workers to carry out and verify these works and importantly, issue a Certificate of electrical safety for the works.

Until now the installing electrician had to sign off that the installation was safe and compliant. Whilst their licence permits them to do this they often do so without the necessary skills and experience required therefore exposing themselves to risk. Utilising the skills of a licensed switchgear worker ensures that the installation, testing and operation of the switchboard is compliant and meets regulatory requirements.

The process of establishing and issuing this new licence type has been a long, and sometimes difficult road. It began back in 2007/2008 when ESV was pressed by industry to create a licence type to enable switchgear workers to work on switchboards onsite.

In the 2010 Licensing Regulations the Switchgear Workers Licence was established. This was just the beginning as there was no formal training and the cost of obtaining switchboards for training and assessment was prohibitive.

In 2014, a committee was established to deliver this licence, including representatives from the National Electrical Switchboard Manufacturers Association (NESMA), Higher Education and Skills Group (HESG), Melbourne Polytechnic and Holmesglen TAFE, Energy Skills Australia and the Victorian Curriculum Maintenance Manager.

The committee secured government funding which allowed training equipment to be purchased for the RTOs and the training resources to be developed.

Licensing theory and practical assessments were also developed with the assistance of industry experts.

In May 2017 the first group of existing switchgear workers received refresher training and completed their licensing assessments at ESV.

To date, eight licences issued have been to the first group of existing electrical fitters working in the switchboard manufacturing field.

The future is also looking positive for young electrical workers, as an apprenticeship pathway for electrical fitters specialising in switchboard manufacture has been developed and delivered, ensuring a licensed outcome for apprentice fitters.

ESV expects the first group of apprentices to complete training and gain their Switchgear licence later this year.

ESV would like to thank the following people who have enabled the development and establishment of this new licence type: Matt Bensleed, Don Robertson, Wayne Walker (NESMA), Sue Wells (HESG), Sue Sizer and Neil Fraser (ESV), Grant Collis, Michael Salvage and Tony Taylor (Melbourne Polytechnic), Alex Newman and Michael Cullen (Holmesglen TAFE), John Ingram and Angela Nix (Energy Skills Australia), George Adda (CMM), and the many others who have assisted behind the scenes over the ten years.

An example of the new Electrical Switchgear Worker’s (SW) Licence.
### Your electrical questions answered!

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
<th>Standard</th>
<th>Clause</th>
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</thead>
<tbody>
<tr>
<td><strong>What do you use for circuit protection for street lights? RCD at the board? Or circuit breaker at the board and RCD at each light pole?</strong></td>
<td>The RCD is required to be installed at the origin of the circuit, as per Clause 2.6.3.2 of AS/NZS 3000:2007. Additional protection by RCDs with a maximum rated residual current of 30 mA shall be provided for— (b) final subcircuits supplying lighting where any portion of the circuit has a rated current not exceeding 20 A. NOTE: The final subcircuits referred to in item (b) include, without limitation, those supplying the following equipment: (a) external lighting installations, such as bollard-type luminaires (b) illuminated signs (c) in-ground lighting (d) ground-mounted lighting for the illumination of public features.</td>
<td>AS/NZS</td>
<td>2.6.3.2(b)</td>
</tr>
<tr>
<td><strong>Can you put socket outlets in a flush mount enclosure for gas instantaneous hot water?</strong></td>
<td>A gas appliance connected to the electricity supply shall be provided with a means of electrical isolation that is both adjacent to the appliance location, and is accessible to the appliance in the installed position. The means of isolation shall be— (a) a plug to a switched socket-outlet; or (b) a plug to a socket-outlet that may be located in an inaccessible position but has a separate switch operating in all live (active and neutral) conductors located in an accessible position; or (c) a switch operating in all live (active and neutral) conductors. NOTE: If the appliance has an open cooking surface incorporating both gas and electric cooking, it shall also comply with Clause 4.7. The gas standard requires an exclusion area from a gas exhaust vent. The exclusion zone requires at least one metre clearance between any gas exhaust vent and an ignition source such as a socket outlet.</td>
<td>AS/NZS</td>
<td>4.18.1 and 4.18.2</td>
</tr>
<tr>
<td><strong>What is the minimum clearance between a gas meter and a switchboard?</strong></td>
<td>The gas standard requires an exclusion area from a gas exhaust vent. The exclusion zone requires at least one metre clearance between any gas exhaust vent and an ignition source. A switchboard is an ignition source where the regulator, not the gas meter, can vent gas. The Service and Installation Rules and Gas Distributors require a minimum distance of half a metre between the regulator and a meter enclosure.</td>
<td>AS/NZS</td>
<td>6.3.1 and Service and Installation Rules Fig 8.10-D</td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
<td>Standard</td>
<td>Clause</td>
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<tr>
<td>When installing pendant lights over a kitchen bench, is there a minimum height requirement?</td>
<td>Yes. Pendant lights that have an exposed lamp or lamp holder may not be installed within 1.8 metres from the ground, floor or platform. Pendant lights that have a suitable guard, or are enclosed in a luminaire, may be installed in accordance with clause 4.5.2.2 of AS/NZS 3000:2007. Lamps near flammable materials require a minimum distance from illuminated flammable materials of 0.6m for lamps up to 100 Watts, one metre for lamps from 101 to 300 Watts, and 1.8 metres for lamps exceeding 300 watts.</td>
<td>AS/NZS 3000:2007</td>
<td>4.5.1.1 and 4.5.2.2</td>
</tr>
<tr>
<td>When installing a pendant socket outlet, can you install a 2.5mm pvc cable from the ceiling to the pendant socket outlet by fixing it to the jack-chain?</td>
<td>No. A 2.5mm pvc conductor does not provide the flexibility required to accommodate movement or tension stresses. A multi stranded flexible cable is required.</td>
<td>AS/NZS 3000:2007</td>
<td>3.3.2.8</td>
</tr>
<tr>
<td>Clause 3.9.4.4 of AS/NZS 3000:2007 requires cables to be provided with adequate mechanical protection to prevent damage (or RCD or earthed enclosure). Would you consider asbestos cement sheeting to be adequate mechanical protection, thus allowing cables to be fixed within 50mm of the surface? It's pretty tough, and no one should be drilling through it with screw or nails, which is what the rule is trying to prevent.</td>
<td>No. Asbestos cement sheeting will not provide adequate strength for the mechanical protection.</td>
<td>AS/NZS 3000:2007</td>
<td>3.9.4.4</td>
</tr>
<tr>
<td>Is it a requirement for houses used for holiday homes i.e. B&amp;B, to have RCDs installed? Or is it not yet mandatory?</td>
<td>Additional protection by RCD’s is always recommended for buildings constructed before RCDs were required to be installed. Existing rules only require additional protection by RCDs to be installed if the electrical installation is altered.</td>
<td>AS/NZS 3000:2007</td>
<td>Clause 1.9.3</td>
</tr>
<tr>
<td>What are the segregation requirements between a switchboard and the outside part of air conditioners?</td>
<td>A switchboard shall be located so access is not obstructed by structure or contents of the building. It shall have adequate space to enable the electrical equipment to be safely and effectively operated or adjusted. If the air conditioning unit incorporated gas, the switchboard shall be at least one metre from the vent.</td>
<td>AS/NZS 3000:2007</td>
<td>2.9.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AS/NZS 5601</td>
<td>6.3.1</td>
</tr>
</tbody>
</table>
H21 Leeds City Gate Project

By Enzo Alfonsetti, Manager Type A Gas Appliance and Component Safety

The UK Government has committed to reducing 1990s levels of carbon emissions by 80%, by the year 2050.

Despite natural gas, predominantly methane, being a much cleaner fossil fuel relative to coal, natural gas still contributes to greenhouse gas emissions through the production of CO2.

Hydrogen gas on the other hand emits zero CO2 when combusted. As a result, the UK has committed to converting the city of Leeds to a city of hydrogen in a project referred to as the H21 Leeds City Gate project.

The aim of this project is to determine the technical and economic feasibility of converting the existing natural gas network in Leeds to 100% hydrogen.

Many of the technical challenges considered include the impact on infrastructure, including distribution pipelines.

Old steel mains at high pressure are incompatible for transporting hydrogen, as embrittlement of the steel can occur. In addition, the smaller hydrogen (H2) molecule relative to methane (CH4), the main component of natural gas, results in a greater probability of gas leaks occurring.

Since 2002, the UK has undertaken the Iron Mains Replacement Programme to upgrade its distribution pipes to polyethylene. The city of Leeds’ distribution infrastructure has been upgraded to polyethylene, and is on the fringe of making it an ideal candidate for this project.

Its impact on infrastructure downstream of household billing meters will also need to be considered. Copper and its alloys such as brass are not believed to be impacted upon. However, its impact on older downstream infrastructure made from steel requires consideration.

Hydrogen’s higher flame speed also requires gas appliances that are designed to reduce the likelihood of burner flames lighting back to the burner injector. Consequently, the impact on gas appliances will be significant with demand for appliance replacement or conversion.

Ironically, it was the conversion of the gas distribution network from towns gas to natural gas in the UK that provided a blueprint for conversion to hydrogen.

Here in Australia, the conversion from towns gas to natural gas occurred in the 1960’s, and the challenge of converting the affected gas appliances was met as it was in the UK.

The production of hydrogen will be via the steam reforming of natural gas. In this process, methane reacts with steam at high pressure in the presence of a catalyst to produce hydrogen, carbon monoxide, and a relatively small amount of carbon dioxide.

The carbon monoxide and steam are further reacted using a catalyst to produce carbon dioxide and more hydrogen. The carbon dioxide is then removed leaving pure hydrogen. The hydrogen produced during the steam reforming process will be stored in salt caves. The carbon dioxide will be captured using carbon capture and storage technologies that are currently available.

For more information on this project refer to the following video and report.

Type B appliance compliance and acceptance sessions

By Richard Millership, Technical Communicator

ESV’s recently held a successful series of information sessions on Type B Appliance Acceptance Process.

The presentations explained the regulatory regime, clarified the specific requirements of the application for acceptance process of Type B appliances, and provided an overview of ESV’s new online gas installation acceptance system, GasTrac.

The sessions also discussed the importance of compliance, and ESV’s new strategic approach to the currently unacceptable rate of non-compliance on inspection.

Given ESV’s zero tolerance for gas leaks and failed second inspections, tactics include issuing warning letters, infringement notices, referral to the Victorian Building Authority (VBA) for a disciplinary hearing and, if required, prosecution.

Held at Rowville’s Kingston Links Golf Club, the 80 attendees were given a look into ESV’s Gas Operations Division, specifically its various roles and services.

Key functions covered included how ESV works with the applications for acceptance process, exemptions, audits, public events, technical advice and rulings, technical information sheets, and investigations and complaints.

The current regulatory regime, which encompasses the Gas Safety Act, Gas Installation Regulations and the Prescribed Standards, was also covered.

Attendees were reminded that the Gas Safety (Gas Installation) Regulations are sun setting.

They were also assured of ESV’s intention to keep the industry updated over the coming months as new Regulations are drafted, and with the Regulatory Impact Statement expected by February 2018, when it will be made ready for public comment.

For more information on the launch of our new gas application system, GasTrac, and to watch our User instruction videos, head to our website www.esv.vic.gov.au or click below.

Click here for more information on GasTrac and our instruction videos.
CO spillage from gas heaters

By Jason Treseder, Senior Gas Engineer

As the cooler months of winter settle in, we turn our focus back to testing open flued gas heaters for spillage of combustion products.

Gas can provide a safe, effective and cosy form of heating throughout winter. However, open flued gas heaters require regular servicing to ensure the appliance is operating safely, and is not spilling combustion products such as carbon monoxide (CO).

ESV recommends heaters are serviced and checked for spillage every two years.

Regular servicing and testing of gas appliances is essential, as even installations that were once compliant can become noncompliant and potentially unsafe, if changes to the surrounding installation are not recognised.

Factors that can impact the safety of the appliance can include:

» damage or deterioration of the flue or chimney, or blockage of the flue cowl
» installation of additional (or more powerful) exhaust fans or kitchen rangehoods
» renovations or rework that blocks or reduces previously existing ventilation.

Thanks to improved environmental awareness and increasing costs of energy, there is a greater understanding of the impact insulation and ventilation has on heating efficiency.

Tighter requirements for new buildings and their energy efficiency are in place, such as the sealing of openings in living spaces to reduce heat transfer.

Additionally, as gas heaters become more efficient, flue products that leave the appliance become cooler with lower flue pull. Consequently, there is greater risk of open flued heaters spilling combustion products into a living area, should the installation and the appliance not be maintained.

The consequences of CO poisoning are well known. Low levels of CO can produce serious symptoms including headache and nausea. High levels can result in death.

CO is odourless and carries the same density as air, meaning a fault that produces high levels of CO is difficult to detect.

Gasfitters have an obligation to ensure a gas installation is not left in an unsafe condition and work performed is compliant with AS/NZS5601.1 2013.

This includes requirements for ensuring adequate ventilation is available and the spillage of combustion products is prevented.

In particular, Clause 6.3.1 of the standard requires gas appliances to be installed in areas where the appliance will not be negatively impacted by the operation of air handling systems, and Clause 6.4.5 specifies the minimum required permanent ventilation.

The combustion product spillage test in Appendix R is a direct assessment of air flow and demonstrates the operation of air handling systems does not negatively impact on the fluing of combustion products.

To assist gasfitters in conducting the above assessment, ESV has produced a number of guidance documents.

» ESV Gas information sheet 38—Using carbon monoxide detection equipment to check gas appliances for spillage, provides gasfitters with guidelines for testing domestic gas appliances for CO spillage using CO measuring equipment.

» Gas information sheet 37—Carbon monoxide measuring equipment, provides information on CO measuring equipment used to measure CO spillage from domestic gas appliances and explains important aspects of the equipment.

Operators should be aware of equipment limitations, in particular temperature limitations. When test equipment is exposed to temperatures exceeding the maximum rated temperature, that instrument may be damaged and can produce false readings.

For more information on any of the above please contact the ESV technical helpline on 1800 652 563.

Click here to read more on our Gas Information sheets.
# Identified non-compliance breaches

By Michael Weber, Data Analyst

Listed below are the most frequently identified non-compliance items found in recent inspections performed by ESV on gas installations (January to April 2017). When inspecting, ESV assesses the installation for compliance against the prescribed Australian Standards. It is imperative that gasfitting professionals have the right tools for their job. This includes access to the relevant Australian Standards. Reading and understanding the relevant standards, as well as following the manufacturer’s installation instructions, is important to ensure a compliant gas installation.

For clarification on a specific clause within the Australian Standard, contact the Gas Safety Technical Information Line on 1800 652 563.

For gas technical advice call the ESV Gas Technical Helpline on 1800 652 563.

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<table>
<thead>
<tr>
<th>Rating</th>
<th>Cause</th>
<th>Clause description</th>
<th>Breaches</th>
</tr>
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<td>1</td>
<td>AS/NZS 5601.1:2013 and AS/NZS 5601.1:2013 [Amendment 2] clause 5.3.8</td>
<td>LOCATION OF CONSUMER PIPING—Piping in a concealed location other than underground or embedded in concrete</td>
<td>23 Non-compliances</td>
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<tr>
<td></td>
<td>AS/NZS 5601.1:2013 and AS/NZS 5601.1:2013 [Amendment 2] clause 6.10.2.3.</td>
<td>ADDITIONAL REQUIREMENTS FOR INSTALLATION OF SPECIFIC GAS APPLIANCES—Commercial catering equipment—Clearances around commercial catering equipment</td>
<td>20 Non-compliances</td>
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<tr>
<td>2</td>
<td>AS/NZS 5601.1:2013 and AS/NZS 5601.1:2013 [Amendment 2] clause 5.3.7</td>
<td>LOCATION OF CONSUMER PIPING—Above-ground piping not to touch the ground</td>
<td>19 Non-compliances</td>
</tr>
<tr>
<td>3</td>
<td>AS/NZS 5601.1:2013 [Amendment 2] clause 6.2.14</td>
<td>GENERAL INSTALLATION REQUIREMENTS—Gas appliance restraint where a hose assembly is used</td>
<td>19 Non-compliances</td>
</tr>
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<td>4</td>
<td>AS/NZS 5601.1:2013 [Amendment 2] clause 5.9.5</td>
<td>USE OF HOSE ASSEMBLIES—Hose assembly—Operating conditions</td>
<td>18 Non-compliances</td>
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<td>5</td>
<td>AS/NZS 5601.1:2013 [Amendment 2] clause 6.2.2</td>
<td>GENERAL INSTALLATION REQUIREMENTS—Manufacturer’s installation instructions</td>
<td>18 Non-compliances</td>
</tr>
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<td>6</td>
<td>AS/NZS 5601.1:2013 [Amendment 2] clause 6.10.2.2</td>
<td>ADDITIONAL REQUIREMENTS FOR INSTALLATION OF SPECIFIC GAS APPLIANCES—Commercial catering equipment—Clearances to a grease filter</td>
<td>18 Non-compliances</td>
</tr>
<tr>
<td>7</td>
<td>AS/NZS 5601.1:2013 [Amendment 2] clause 3.5.1</td>
<td>TESTING OF PIPING—Testing a new gas installation</td>
<td>17 Non-compliances</td>
</tr>
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<td>8</td>
<td>GAS APPLIANCE CONNECTION—Means of isolation</td>
<td></td>
<td>14 Non-compliances</td>
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</table>
Go digital with GasTrac

By Mirna Bukic, Digital Communications Adviser

Have you registered for GasTrac? If you’re yet to, head to our website, click through to GasTract via ESVConnect, and register today.

GasTrac is ESV’s online gas installation acceptance system that makes managing gas applications quicker and easier.

Managing gas applications online, will ensure faster turnaround times for Gas Supply Approvals and Gas Installation Acceptances.

Key features of the online system include:
- submit information on complex gas installation and Type B appliance
- submit exemption applications
- check the status of active applications
- faster turn around on acceptance and issuing of gas supply approvals.

Streamlining the process: gas practitioners can now use GasTrac to submit and manage gas applications online.

Click here to sign up and watch our GasTrac user instructional videos!

TECHRITE GAS CHECK SYSTEM

Key features:
- Pressure proving in accordance with AS/NZS 5601
- Automatic shut down of gas supply is achieved via the building fire panel, sprinkler, or by a manual emergency stop station
- Fully automatic reset after a shutdown
- System used in conjunction with a safety shut off valve and high/low pressure switches
- Digital display indicating system status
- Fully assembled and function tested

Options:
- For Natural Gas or LPG installations
- Available in 240 VAC/50 Hz or 24 V DC
- Communication port to be used with BMS or optional lockout message to mobile phone
- Emergency push stop buttons and safety labels

Applications:
- Schools, universities
- Sports facilities
- Commercial buildings
- Laboratories
- Shopping centres
- Hospitals and retirement villages

TECHRITE Controls Australia

Email: techrite@techrite.com.au
www.techrite.com.au

Techrite Controls Australia

Phone: +61 3 9549 4444
Your gas questions answered!

Note: The technical regulator may require notification before work commences and confirmation that completed work is in accordance with this Standard (AS 5601: 2013) and any other relevant requirements.

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<thead>
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<th>Question</th>
<th>Answer</th>
<th>Clause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there any specific requirements when it comes to hose assemblies?</td>
<td>Yes. A hose assembly shall be: &lt;ul&gt;&lt;li&gt;of continuous length, as short as practicable, and subject to the specific appliance requirements do not exceed three metres&lt;/li&gt;&lt;li&gt;of adequate diameter for the maximum gas consumption of the appliance&lt;/li&gt;&lt;li&gt;certified to AS/NZS 1869&lt;/li&gt;&lt;li&gt;suitable for the application.&lt;/li&gt;&lt;/ul&gt;Another important note is that hose assemblies are only to be used as complete assemblies and cannot be joined together.</td>
<td>AS 5601.1:2013 4.8.3 Hose assemblies 5.9.1 Hose assembly requirements</td>
</tr>
<tr>
<td>Are there any particular operating conditions that can restrict the use of hose assemblies?</td>
<td>Yes. Under normal operating conditions, a hose assembly shall not be installed where it will be: &lt;ul&gt;&lt;li&gt;exposed to a temperature exceeding the maximum temperature specified in the hose manufacturer’s instructions&lt;/li&gt;&lt;li&gt;subject to strain, abrasion, kinking or permanent deformation&lt;/li&gt;&lt;li&gt;subject to damage by vermin.&lt;/li&gt;&lt;/ul&gt;Also, a freestanding cooking appliance with an under cooker connection point cannot be connected to that point using a hose assembly. A common fault involves installing hose assemblies behind flue ways, where transferred heat can exceed maximum specified temperatures.</td>
<td>AS 5601.1:2013 5.9.5 Hose assembly operating conditions 6.10.1.10 Under cooker connection</td>
</tr>
<tr>
<td>Can hose assemblies be located anywhere?</td>
<td>No. Hose assembly connection points cannot be located in bedrooms, bathrooms, saunas, toilets, hallways, or residential garages.</td>
<td>AS 5601.1:2013 5.9.2 Prohibited location of hose assembly connection point</td>
</tr>
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### Question Answer Clause

<table>
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<tr>
<th>Question</th>
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</table>
| Where can a hose assembly be located?                                   | A connection point for a hose assembly shall be located to avoid traffic across the hose and at least one metre from a doorway in a building. Where flueless space heaters are permitted, there may be a requirement that fixed ventilation openings be provided. Consideration should be given to providing such openings when installing the connection point. | AS 5601.1:2013  
5.9.3 Location of connection point for hose assembly |
| Are there any prohibitions when it comes to installation?               | Yes. A hose assembly shall not pass:  
» from one room to another via a doorway with a closable door  
» through a wall, portable partition, ceiling or floor  
» through a fixed partition, unless the opening in the partition is large enough to accommodate the hose and its attachments without causing damage  
» through the panel or casing of the appliance unless the appliance is specifically manufactured to avoid damage to the hose assembly. | AS 5601.1:2013  
5.9.4 Hose assembly-Prohibited installation methods |
| How should a hose assembly be connected to a portable or mobile appliance? | Where a hose assembly is to be connected to a portable or mobile appliance, the hose assembly shall be connected permanently to the appliance with either a:  
» manual shut-off valve and union fitted at the inlet end of the hose assembly, or  
» quick-connect device located at the inlet end of the hose assembly that automatically shuts off the gas supply when disconnected, or  
» manual shut off valve at the inlet end of the hose assembly where a quick-connect device, which automatically shuts off the gas supply when disconnected, is located at the appliance end of the hose assembly. | AS 5601.1:2013  
5.9.7 Hose assembly connecting a portable or mobile appliance |
| Are there any requirements when installing a hose assembly-connected appliance on wheels or castors? | Yes. Where a gas appliance (other than a portable space heater), with a mass greater than 20 kg, fitted with castors, rollers or wheels, or designed to be slid out for servicing, is connected by a hose assembly, the extent of movement of the gas appliance shall be restrained by means other than the hose assembly (which shall be connected in accordance with Clause 5.9.7).  
The restraint should be no more than 80% of the length of the hose assembly.  
The restraining means should be strong enough to restrain the appliance according to the means used to move it. | AS 5601.1:2013  
6.2.14 Gas appliance restraint where a hose assembly is used |
NOT SUCH A BRIGHT SPARKIE.

Never work live on switchboards and electrical installations.

No matter how under the pump you are, there's no excuse to cut corners. Don't risk electrocution or serious injury, you may not get a second chance.

For further information visit Energy Safe Victoria www.esv.vic.gov.au or call 03 9203 9700.

STAY ALIVE. NEVER WORK LIVE!