

Installation Faults: Best Practice Guide for Gasfitters

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Overview

This document provides best practice guidance for gasfitters who are carrying out gasfitting work. It is intended to provide guidance to gasfitters to help them decide what to do when they believe on reasonable grounds that a gas installation or gas appliance presents immediate danger to life or property or is otherwise at risk. This document is not intended as a substitute for the Gas (Safety and Measurement) Regulations 2010 nor is this document a substitute for a full understanding of a gasfitter's obligation under the Gas (Safety and Measurement) Regulations 2010.

The Gas (Safety and Measurement) Regulations 2010 (the Regulations) in regulation 10 state:

10 *Obligation to notify Secretary of danger*

- (1) Any person carrying out gasfitting (including a person acting under an exemption) who has reasonable grounds to believe that any gas installation or gas appliance presents immediate danger to life or property must, as soon as practicable, advise both of the following of the danger:
 - (a) the owner or occupier of the property where the danger exists; and*
 - (b) the Secretary.**
- (2) A person giving advice under subclause (1)(a) must also advise the owner or occupier to inform the gas retailer or gas wholesaler of the danger.*
- (3) A person commits a grade A offence if the person has reasonable grounds to believe that any gas installation or gas appliance presents an immediate danger to life or property and the person fails to comply with subclause (1).*

In short when a gasfitter discovers a situation that is **immediately** dangerous they must first notify the owner or occupier as soon as practicable and then the Secretary, (which for these purposes is Energy Safety). The gasfitter must also tell the owner to notify the gas supplier.

The meaning of safe (and unsafe) and its implications in regard to compliance

It is important to understand that as far as the Regulations go, *safe* is **not** the mirror image of *unsafe*. Safe and unsafe are defined in the Regulations and in short, safe is where there is no significant risk of harm from the dangers of gas and unsafe is where there is a significant risk of *serious* harm from those dangers (note the *serious* qualifier). The regulations provide instances of what are considered to be unsafe. An extract from the Regulations is provided in Appendix C

The Regulations require that an installation is constructed in accordance with the installation standard. This generally means that the installation can be considered to be safe.

The Regulations make it an offence to knowingly (or recklessly) use an unsafe installation or allow another person to use an unsafe installation but there is no offence for using an installation that does not comply with the installation standard (unless it is unsafe).

Immediate Danger

“Immediate danger” is not defined in regulation but there is a distinction between the risk of future danger and **immediate, existing danger**. That is, where the actual danger to life or property, if not averted, would result in harm to people or property in the immediate future. Immediate danger has a higher threshold than unsafe.

For gas installations, immediate danger should be interpreted as where the agent of harm is already present. Examples would include a leak of unburnt gas (risk of fire or explosion) or the presence of products of combustion (risk of carbon monoxide poisoning).

In such situations, the gasfitter should immediately inform the owner or occupier and it is recommended that the gasfitter seek permission to make the scene safe. They should only then contact Energy Safety. The gasfitter should also tell the owner or occupier that they should notify the gas supplier.

It is important to note that Energy Safety is not an emergency service.

At Risk

There will be other times where a fault is discovered that, although unsafe, presents no immediate danger to life or property. There may also be faults where the installation does not meet the current installation requirements but may not be unsafe.

In such situations there is no legal obligation under the Regulations to inform either the owner or occupier or Energy Safety. In such cases it is recommended that the owner and occupier should be informed of the fault.

Energy Safety should only be contacted if the situation is unsafe and:

- the people exposed to the risk are other than the owner and his/her immediate family. For example; rental accommodation; places of work; public buildings.
- the fault is believed to be indicative of a generic fault that may affect the industry more widely.

Other gasfitter responsibilities

Gasfitters should also bear in mind their responsibilities under regulation 74 which states (in part):

74 Repairs, modifications, and adjustments to gas appliances and fittings

- (1) Every person who repairs, modifies, or makes adjustments to a gas appliance or fittings must take all practicable steps to ensure that—*
- (a) the appliance or fittings are safe in all reasonably foreseeable circumstances before the appliance or fittings are returned to service; and*
 - (b) the appliance complies with the technical requirements of NZS 5266.*

In other words, if the fault is in the appliance or fitting that the gasfitter is working on then it is an offence to return the appliance or fitting to service unless “all practicable steps” have been taken to ensure that it is safe in “all reasonably foreseeable circumstances”.

Procedures:

These procedures are only a recommendation. The only legal requirement is to advise the owner or occupier and Energy Safety of immediate danger to life or property.

Situations of Immediate Danger

An appliance or installation creating an Immediate Danger is one, which if operated or left connected to a gas supply, is an immediate danger to life or property. Broadly, these will be installations that fail pressure tests, appliances that fail spillage tests or appliances which have serious flueing and/or ventilation or combustion deficiencies when measured against the appliance manufacturer's instructions, AS/NZ Standards or other relevant standards or guidance documents.

Typical examples (not exhaustive)

Pipework: Outside tolerance of pressure test or within the maximum acceptable pressure drop requirements but there is a detectable smell of gas
Pipework: Pipework inappropriate (e.g. garden hose)
Appliances: Spillage of products of combustion or signs of occurrence with no evidence the problem has been corrected
Appliances: Which should be flued but are not
Appliances: Not suitable for gas supplied
Appliances: Safety controls inoperative
Flues: Spillage of products of combustion or signs of occurrence with no evidence the problem has been corrected
Flues: Terminating into internal space
Ventilation: Permanent ventilation has been closed off

Faults (such as leaks) at or upstream of the gas meter should be reported to the gas supplier.

Where possible, and with the owner or occupier's agreement, every endeavour must be made to make the appliance or installation safe at the time of the visit either by correcting the underlying fault or by other means such as isolating the whole or part of the installation affected. Gasfitters may not return to service any appliance or fitting they have worked on unless they have taken all practicable steps to ensure that the appliance or fitting is safe.

If the fault is corrected immediately, the Installation Fault Notice¹ should be completed and sent to Energy Safety.

If the fault is not corrected immediately, the following actions should then be taken:

- a) Explain to the owner or occupier that the appliance or installation is, in your opinion, immediately dangerous, and should be disconnected from the gas supply until the situation is rectified and that further use would contravene the gas regulations, and
- b) With the permission of the owner or occupier
 - i. Immediately turn off and/or disconnect and seal the gas supply to the appliance or installation with an appropriate fitting so that the faulty appliance or installation cannot be used,

¹ See Appendix A

- ii. Attach a suitably worded DO NOT USE warning label² to the appliance or installation in a prominent position, then
 - iii. Complete the Installation Fault Notice and give a copy to the owner or occupier and keep a copy for your file.
 - iv. Send a copy of the Installation Fault Notice to Energy Safety (contact details are on the form) as soon as practicable.
- c) If the owner or occupier withholds permission, the Installation Fault Notice should be sent to Energy Safety immediately and a copy provided to the owner or occupier.

Receipt of the notification will be acknowledged by Energy Safety.

Situations that may be at risk

An At Risk appliance or installation is one that is unsafe but does not present an immediate danger or where it does not comply with current installation regulations, standards and codes and may in the future constitute a danger to life or property. This includes installations that are inadequately maintained or where the current surroundings have changed

Unsafe Typical examples (not exhaustive)

Pipework: Showing signs of corrosion or damage likely to affect safety
Pipework: Significantly undersized, preventing the appliance operating at the manufacturer's intended minimum gas input rating or affecting the safe operation of any appliance
Appliances: Open-flued appliance installed in a compartment requiring purpose provided high and low-level permanent air supply; providing inadequate ventilation
Appliances: Flueless or non-room-sealed appliance in bathroom or shower room ³
Appliances: Appliances installed in a room or rooms which has later been converted into bedrooms, where the appliances do not comply with the current requirements for gas appliances in bedrooms
Appliances: Evidence of damage to adjacent combustible materials
Appliances: Furnishings located too close to appliance

Faults (such as service valve "let-by") at or upstream of the gas meter should be reported to the gas supplier.

The gasfitter should advise the owner or occupier of the risks and make a recommendation on the necessary remedial action to be taken.

If the situation is unsafe, and with the owner or occupier's agreement, the gasfitter should endeavour to rectify the situation(s) and make the appliance or installation safe for continued use.

If the situation is not to current standards but is not unsafe, the gasfitter should advise the owner or occupier that it is currently operating safely but they may wish to take advice on whether the installation should be brought into line with the current installation practice. If the

² See Appendix B

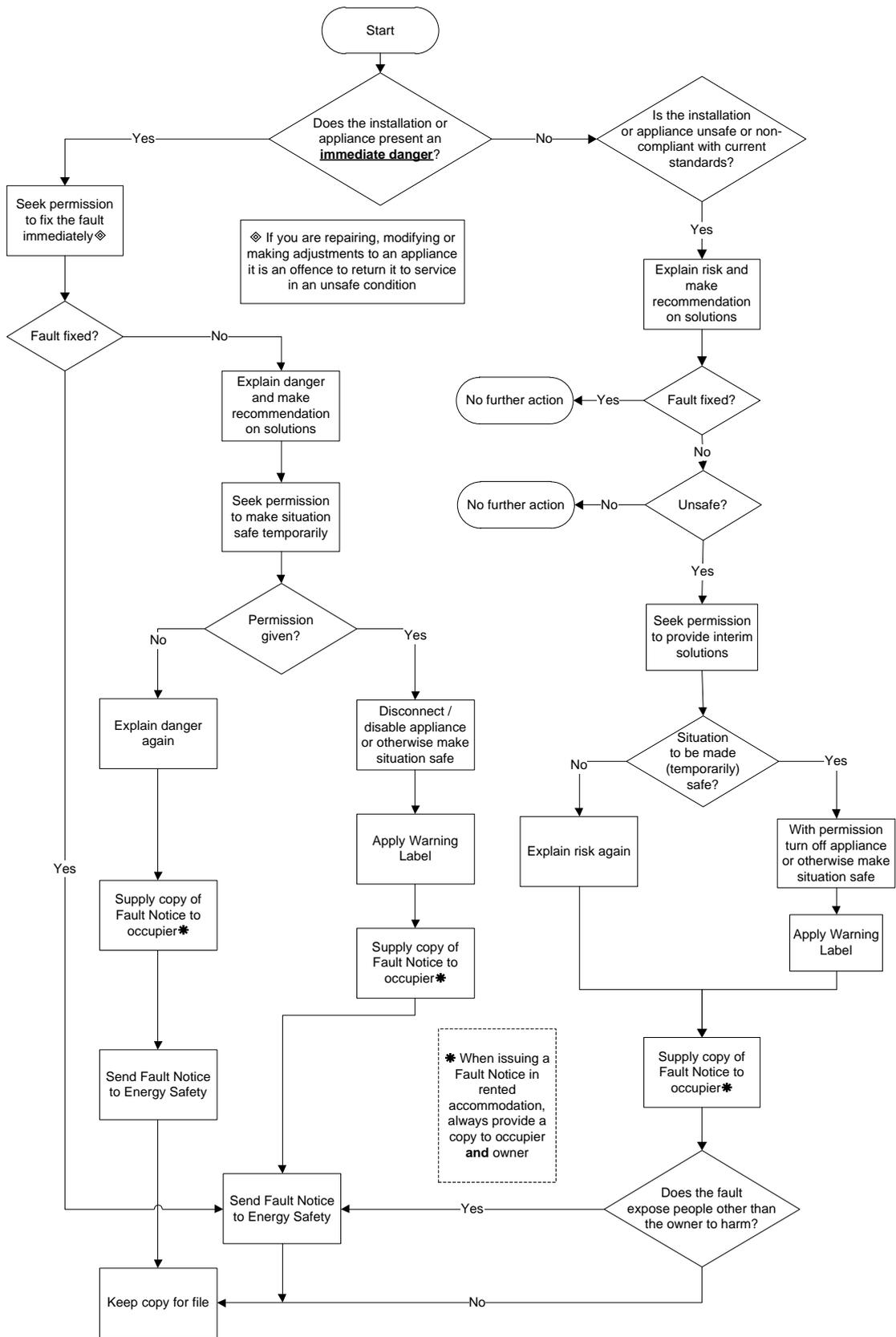
³ These cases should be reported to ES. Special care must be made to determine whether there are any **existing** combustion hazards and **when** the appliance was installed.

installation has been carried out recently, they should contact the original installer for advice. If the installation is not recent, the situation may have been brought about by changes to the installation standard

If the fault is unsafe and the rectification is not immediately possible, the following actions should then be taken:

- a) Explain to the owner or occupier that the appliance or installation is, in your opinion, At Risk, and that it should not be used without taking some form of alleviating action. Continued use would be at the owner or occupiers own risk and may contravene the Regulations
- b) If there is no way of alleviating the risk, then with the permission of the owner or occupier,
 - i. Immediately turn off the appliance or installation.
 - ii. Attach a suitably worded DO NOT USE warning label to the appliance or installation in a prominent position.
- c) If permission to turn off is refused, the owner or occupier's attention should again be drawn to the fact that it may be an offence to continue to use a gas appliance or installation once informed that it has a potential to be dangerous.
- d) Complete the Installation Fault Notice and give a copy to the owner or occupier and keep a copy for your file.
- e) Only send a copy of the Installation Fault Notice to Energy Safety if it meets any of the criteria above. Further and supporting information should be provided.

Receipt of the notification will be acknowledged by Energy Safety.



Appendix A: Installation Fault Notice



Gas /Electricity Installation Fault Notice

Date fault identified:

To the Occupier...		Owner Details (if different, e.g. landlord)	
Name:		Name:	
Address:		Address:	
Phone:	Mobile:	Phone:	Mobile:
Email:		Email:	

Description of gas/electrical installation... Date of installation (if not know then estimate); Installation compliant on original installation? (if not, why not); Details of any testing done; Suggested remedies

Appliance type	Make	Model	Gas Rating (gas appln)	Gas type (gas appln)

This gas/electrical installation ... (tick one)

- is immediately dangerous to life or property** (Go to Table 1)
- presents a risk to life or property (unsafe or not to current standards)** (Go to Table 2)

Table 1: Immediately dangerous to life or property

The gas and electricity regulations state that any person who is carrying out gasfitting or prescribed electrical work (or inspecting prescribed electrical work) and who believes on **reasonable grounds** that a gas/electrical installation, fitting or appliance presents **immediate danger to life or property** shall, as soon as practicable, advise the owner or occupier of the property where the danger exists of that danger, and then the Secretary (ES).

I must advise you that this appliance or installation is considered to be '**Immediately Dangerous**' and if it is used it will create a danger to life or property. It should be turned off and disconnected in the interests of safety. In the case of a gas fault I further advise you that you should contact your gas supplier and advise them of the fault.

It is immediately dangerous because:

It should not be used until work has been carried out to correct the deficiencies identified. It is an offence to use an unsafe installation.

NOTE: Any person who owns or operates a gas/electrical appliance or installation commits a Grade A offence if they knowingly (or recklessly) use or allow any other person to use an unsafe gas/electrical installation. A Grade A offence may be subject to an infringement fee (\$1,000 for an individual or \$3,000 for a body corporate) or be subject to a prosecution which upon summary conviction may result in a fine of up to \$10,000 for an individual or \$50,000 for a body corporate.

<p>With your permission I have: (tick as appropriate)</p> <p>a) <input type="checkbox"/> I have fixed the fault and made the installation compliant, OR,</p> <p>b) <input type="checkbox"/> I have made the situation temporarily safe, by</p> <p style="padding-left: 40px;"><input type="checkbox"/> turning off the appliance, <input type="checkbox"/> disconnecting the appliance, <input type="checkbox"/> otherwise isolating the fault</p> <p><input type="checkbox"/> I have applied a warning tag</p> <p><input type="checkbox"/> You have refused permission for me to make the situation safe</p>

Table 2: Presents a risk to life or property

<p>I am advising you that this gas/electrical appliance or installation is:</p> <p style="text-align: center;"><input type="checkbox"/> unsafe, and if used may create a risk to life or property.</p> <p>It is unsafe because:</p> <p>It is recommended that it should not be used until work has been carried out to correct the deficiencies identified. Any person who owns or operates a gas/electrical appliance or installation commits a Grade A offence if they knowingly (or recklessly) use or allow any other person to use an unsafe gas/electrical installation.</p> <p style="text-align: center;">NOTE: Any person who owns or operates a gas/electrical appliance or installation commits a Grade A offence if they knowingly (or recklessly) use or allow any other person to use an unsafe gas/electrical installation. A Grade A offence may be subject to an infringement fee (\$1,000 for an individual or \$3,000 for a body corporate) or be subject to a prosecution which upon summary conviction may result in a fine of up to \$10,000 for an individual or \$50,000 for a body corporate</p>
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<p>With your permission I have: (tick as appropriate)</p> <p>a) <input type="checkbox"/> I have fixed the fault and made the installation compliant, OR,</p> <p>b) <input type="checkbox"/> I have made the situation temporarily safe, by</p> <p style="padding-left: 40px;"><input type="checkbox"/> turning off the appliance, <input type="checkbox"/> disconnecting the appliance, <input type="checkbox"/> otherwise isolating the fault</p> <p><input type="checkbox"/> I have applied a warning tag</p> <p><input type="checkbox"/> You have refused permission for me to make the situation safe</p>

<p><input type="checkbox"/> does not comply with current regulations, standards and codes and may in the future constitute a danger to life or property.</p> <p>It is not to current standards because:</p> <p>It is currently operating safely but you may wish to take advice on whether the installation should be brought into line with the current installation practice. If the installation has been carried out recently, you should contact the original installer for advice. If the installation is not recent, the situation may have been brought about by changes to the installation standard.</p>

Notifying gasfitter/electrical worker
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Name:	Rego No:
Company	
Address:	
Phone:	Mobile:
Email:	

<p>Copies sent to/delivered to: Energy Safety <input type="checkbox"/> Occupier <input type="checkbox"/> Owner (if different) <input type="checkbox"/></p>	
Date Sent:	

Energy Safety
 Postal Address: PO Box 1473, Wellington, New Zealand
 Fax 0508 723 336; Email: info@energysafety.govt.nz

Appendix B Examples of warning labels

Examples of generic warning tags available from safety equipment suppliers



Figure 1 Safety Series tag (www.safetyseries.co.nz)



Figure 2 Segno Industries Ltd tag (www.segno.co.nz)



Figure 3 NZ Safety Ltd tag (www.nz-safety.co.nz)

Appendix C - Deemed unsafe

The following is an extract from the Gas (Safety and Measurement) Regulations 2010 as amended to 10 November 2011. Care should be taken to ensure that this text is still up to date;

Note: The definitions of safe and unsafe in the regulations are not mirror images. Safe is defined as no significant risk of harm or damage and unsafe as a significant risk of **serious** harm or **significant** damage

4 Meanings of safe and unsafe

In these regulations, unless the context otherwise requires,—

safe, in respect of any distribution system, gas installation, fittings, gas appliance, or associated equipment, means that there is no significant risk that a person or property will be injured or damaged by dangers arising from the use of, or passage of gas through, the distribution system, gas installation, fittings, gas appliance, or associated equipment

unsafe, in respect of any distribution system, gas installation, fittings, gas appliance, or associated equipment, means that there is a significant risk that a person may suffer serious harm, or that property may suffer significant damage, as a result of dangers arising from the use of, or passage of gas through, the distribution system, gas installation, fittings, gas appliance, or associated equipment.

When things deemed unsafe

11 General rules for when things deemed to be unsafe

(1) A distribution system, a gas installation, fittings, or a gas appliance are deemed to be unsafe if measures are not in place that—

- (a) ensure a release of gas is detectable or ignition of release is prevented unless such a release is required to establish or sustain combustion; and
- (b) ensure gas is not released in an uncontrolled manner; and
- (c) ensure that any oxygen and gas is prevented from mixing in a pipe unless the mixture is outside the flammability limits; and
- (d) ensure persons are not exposed to carbon monoxide and other harmful products of combustion of gas; and
- (e) ensure persons and property are not exposed to excessive forces; and
- (f) ensure that the failure of any control or safety device does not expose the downstream equipment to excessive pressure above the rated pressure of any distribution system and equipment downstream of that control or safety device; and
- (g) enable the effective isolation and shut-off of the gas supply, including during an emergency.

(2) A distribution system, a gas installation, fittings, or a gas appliance are also deemed to be unsafe if—

- (a) the safety-related characteristics of any fittings are impaired so that the safety function is not served; or
- (b) a joint between pipes, or between pipes and fittings, is inadequate, incompatible, or unreliable; or
- (ba) the fittings in any distribution system, gas installation, or gas appliance—
 - (i) have a gas leakage (other than a minute leakage that is permissible under relevant testing procedures); or
 - (ii) are capable of being operated in a manner that is hazardous when the fittings are exposed to any reasonably foreseeable torques, pressures, or chemical or physical conditions;

- (c) the fittings of any gas installation, distribution system, or gas measurement system are exposed to a pressure exceeding their maximum rated pressure, including as a result of the failure of any control or safety device; or
 - (d) a pipe (whether above or below ground) is inadequately protected against the risk of damage or corrosion; or
 - (e) a pipe is subject to forces beyond its design criteria; or
 - (f) there is insufficient space, access, lighting, ventilation, or facilities to operate, maintain, test, and inspect any fittings required to be operated, maintained, tested, or inspected; or
 - (g) any fittings that cause or are subject to high temperatures are placed in a position, or are unprotected, so as to create a risk of ignition of flammable materials or a risk of injury to persons or damage to property.
- (3) Subclauses (1) and (2) do not limit the rest of these regulations.

12 Additional rules for when gas installations deemed to be unsafe

An installation is deemed to be unsafe if—

- (a) leakage of gas within the installation is outside the tolerance of a soundness test or has the potential to result in a concentration of gas in air that is in excess of one-fifth of the lower explosive limit; or
- (b) a pipe containing gas or intended to contain gas is not capped or securely closed to prevent leakage or flow of gas (except where ending in a burner or relief valve); or
- (c) the safety controls are inoperative or the safety controls fail; or
- (d) the flue associated with any gas appliance is incorrectly installed; or
- (e) installed permanent ventilation required for safe operation has been closed off or is absent.

13 Additional rules for when gas appliances deemed to be unsafe

(1) A gas appliance is deemed to be unsafe if—

- (a) the ignition is delayed beyond the design specification; or
- (b) the supply of gas to the appliance results in a flashback or an extinguishment of flame or some other flame abnormality; or
- (c) the appliance or flue is spilling products of combustion abnormally or outside the design specification, directly or indirectly into an enclosed space; or
- (d) the supply of gas to the appliance results in leakage or failure of a downstream fitting.

(2) In this regulation, **flame abnormality** means a flame condition that results in appreciable yellow tipping and carbon deposition (not including that which occurs in appliances designed for luminous effect), lifting, floating, lighting back, objectionable odour, incomplete combustion, or noise.

14 Additional rules for when gas supply deemed to be unsafe

A supply of gas is deemed to be unsafe if it is at a pressure or has a characteristic that, in a properly functioning gas installation, results in a gas appliance becoming unsafe.