

Ministry of Economic
Development



M a n a t ū Ō h a n g a

Energy Safety

**Summary of reported
gas accidents for which the
investigation was completed
between January and September
2009**

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This is the list of the 1 natural gas and the 5 LPG notifiable accidents reported to Energy Safety for which the investigation was completed between January and March 2009



The natural gas notifiable accident

Event ID:	081216-03
Event summary	Gas main struck by digger during work on road intersection.
Event date	15/12/2008
Site	Works or Distribution
Environment	Outside Underground
Equipment	Other
Event	Network Disruption
Casualty	No casualty
Injury	No injury
Property damage level	Restricted to the direct vicinity of the equipment
Outcome of investigation	Work had been going on at this intersection for some time. There were full sets of plans on-site and there had been numerous safe excavations of services. On the trench involved in this strike, a fibre-optic cable had been safely dug around but for some reason the digger driver had not been briefed on the gas line.

The LPG notifiable accidents

Event ID:	080304-01
Event summary	A gas serviceman advised that his company had been requested to attend following fire involving one of two overhead radiant LPG heaters. He considered that the heaters had been incorrectly installed with no clearance above a heat shield and advised the manufacturer specified a clearance of 500 to 600 mm.
Event date	22/02/2008
Site	Commercial
Environment	Outside (Above Ground)
Equipment	Overhead radiant heaters external use
Event	Fire, Explosion
Casualty	No casualty
Injury	No injury
Property damage level	Extended to the room and structure containing the equipment
Outcome of investigation	The probable cause of the fire was overheating from and behind the heater, largely because the convective flow of cooling air was impeded by close proximity of the heater to the ceiling and a secondary heat shield that projected from the ceiling.

Event ID:	080623-02
Event date	21/06/2008
Site	Domestic
Environment	Building
Equipment	Space heater cabinet heater
Event	Fire, Explosion
Casualty	No casualty
Injury	No injury
Property damage level	Extended to the room and structure containing the equipment
Event summary	Fire brigade called out after studio in domestic dwelling caught fire when user attempted to light LPG cabinet heater. Heater and cylinder had been purchased only weeks previously.
Outcome of investigation	Over-fill ruled out as cylinder had been re-filled and used with heater for more than half an hour previously. On testing, significant leakage was found at gas feed to centre plaque and pilot burner. This was attributed to a damaged seal ring, possibly by a sharp end of one of the pipes. Leakage may have been intermittent as manufacturer advised that procedure was to check for leaks after assembly and suggested possible human error in this case. Manufacture advised that procedures had been changed to deburr any sharp edges and that component manufacturer had also been advised of problem.

Event ID:	081017-03
Event summary	DoL advised of an accident where an employee of roofing contractor had received serious burns after an LPG line blew off the handpiece torch being operated by a co-worker.
Event date	29/09/2008
Site	Commercial
Environment	Building
Equipment	Other
Event	Fire, Explosion
Casualty	Injury
Injury	Burn
Property damage level	No property damage
Outcome of investigation	Hose had pulled off barb on gas torch, escaping gas igniting and burning victim.

Event ID:	081222-02
Event summary	Fire Service reported an explosion from a portable cooking stove.
Event date	20/12/2008
Site	Public
Environment	Outside (Above Ground)
Equipment	Camping cooker
Event	Fire, Explosion
Casualty	Injury
Injury	Burn
Property damage level	Restricted to the direct vicinity of the equipment
Outcome of investigation	The accident appears to have been caused by overheating. Whether this was the result of upside-down trivets or too large a cooking vessel has not been determined.

Event ID:	090211-02
Event summary	A man was seriously injured after an LPG cooker exploded.
Event date	9/02/2009
Site	Domestic
Environment	Building
Equipment	Domestic countertop cookers (eg. wok burner)
Event	Fire, Explosion
Casualty	Injury
Injury	Burn
Property damage level	Restricted to the room containing the equipment
Outcome of investigation	User had left gas on too long before igniting it.

This is the list of the 2 natural gas and the 7 LPG notifiable accidents reported to Energy Safety for which the investigation was completed between April and June 2009



The natural gas notifiable accidents

Event ID:	081208-04
Event summary	Third party strike on an intermediate pressure gas main in New Lynn, Waitakere City, resulting in major gas leak and causing disruption to rail services.
Event date	08/12/2008
Site	Public
Environment	Outside (Above Ground)
Equipment	Other
Event	Gas Leak, Escape
Casualty	No casualty
Injury	No injury
Property damage level	Extended to the site
Outcome of investigation	A pile was driven into an intermediate pressure gas main. Incorrect identification of the actual location of the gas main appears to be the immediate cause of the incident. The construction work was being done in a constrained site and consequently clearances were tight. Nonetheless, a number of additional steps could have been taken to more positively locate either the path of the pile or the location of the gas main.

Event ID:	090129-03
Event summary	A craftsman gasfitter advised that he had measured levels of carbon monoxide between 178 and 228 ppm in a space used by workers at a take away food outlet. He ascribed the carbon monoxide to faults with the burner on a semi-flued appliance that relied on an air extraction system and to faults with the extraction system. The craftsman had been called after four employees had suffered headaches and one had reported a gas smell. One employee had reportedly been diagnosed with carbon monoxide poisoning after being rendered unconscious two years previously. The matter was referred to the Department of Labour for further investigation.
Event date	23/01/2009
Site	Commercial
Environment	Building
Equipment	Commercial ovens
Event	CO Poisoning (Incomplete Combustion)
Casualty	Injury
Injury	Asphyxiation, Toxicity
Property damage level	No property damage
Outcome of investigation	Carbon monoxide had evidently entered the working environment due to an improperly operating system for extracting products of combustion. Also, the extraction system filters were evidently blocked. The notifying craftsman gasfitter considered the system had been unsafe since it was installed in 2002. He advised that he had carried out remedial work and taken action to ensure that there was no further hazard. The Department of Labour advised that a warning letter had been sent to the operators. Energy Safety could not locate record of gas certification certificate. The installation was certified after remedial work had been carried out.

The LPG notifiable accidents

Event ID:	080620-02
Event summary	An elderly infirm person, living alone caught fire when operating an LPG cabinet heater in her home. A carpet cleaner who was nearby tried to assist but was unable to extinguish the flames in time.
Event date	18/06/2008
Site	Domestic
Environment	Building, Underground
Equipment	Space heater cabinet heater
Event	Fire, Explosion
Casualty	Fatality
Injury	Burn
Property damage level	No property damage
Outcome of investigation	A coroner found that the fatality resulted from ignition of clothing and leg bandaging by the cabinet heater about the time the heater was lit. Cabinet heater importers and manufacturers agreed to improve safety information on cabinet heaters.
Event ID:	090227-03
Event summary	A blaze at a restaurant and backpackers drew fire crews from around the district. The building was badly damaged but that there were no injuries. Fire was observed to have originated in area of gas cylinders, connected to heater.
Event date	26/02/2009
Site	Commercial
Environment	Building
Equipment	Copper
Event	Network Disruption
Casualty	No casualty
Injury	No injury
Property damage level	Extended to multiple rooms
Outcome of investigation	LPG leakage from area of cylinders suspected with ignition by unknown electrical source.
Event ID:	090427-10
Event summary	Fire Service was called out by tenant following persistent, unusual burning like smell. Tenant was subsequently taken to A&E following vomiting and other symptoms diagnosed by hospital as exposure to unspecified gas. Fire Service took measures to isolate gas and subsequently measured CO in premises. CO levels were highest in vicinity of LPG cook top. One of the burners on the cook top was found to be hot a considerable time after gas after efforts to isolate gas.
Event date	10/03/2009
Site	Domestic
Environment	Building
Equipment	Domestic freestanding cooker
Event	CO Poisoning (Incomplete Combustion)
Casualty	Injury
Injury	Asphyxiation, Toxicity
Property damage level	No property damage
Outcome of investigation	The following factors were considered indicative of CO emissions from a light back condition with right hand rear burner inadvertently left slightly on: <ul style="list-style-type: none"> - Measured levels of CO in the atmosphere were highest about the cook top (26 ppm). - The control knob to the right hand rear burner was found slightly on. - Unusual, pronounced smells were reported by the Fire Service and the tenant. - No other potential source of CO was found in or about the premises. - The right hand rear burner was found to be hot, with no visible flame. - The tenant suffered symptoms consistent with CO poisoning. - Hospital clinical notes indicated a diagnosis of exposure to gas. - Burn patterns were observed on the right hand rear burner and spark electrode.

- The burner produced significant amounts of CO when tested in a simulated light back condition.

A dead spider was found in right hand rear burner well. It was concluded that the most likely explanation for the light back was that the spider's body or a spider web (possibly destroyed by lighting back) may have obstructed the flow of gas.

The burner was found hot a significant time after efforts to isolate gas at the supply cylinder, indicating that the efforts did not stop the light back condition.

Event ID:	090414-01
Event summary	Police reported that a large explosion at a fish and chip shop that appeared to have resulted from the leakage from an LPG installation. A person who had been in the shop was taken to the local hospital with serious injuries. The person was subsequently transferred to the Hutt Hospital's specialist burns unit in a critical condition. The explosion was initially investigated by the Police and then the Department of Labour, with Energy Safety providing assistance.
Event date	09/04/2009
Site	Commercial
Environment	Building
Equipment	Hose assembles
Event	Fire, Explosion
Casualty	Injury
Injury	Burn
Property damage level	Extended to the site
Outcome of investigation	The Police who concluded that gas had leaked from a damaged bayonet fitted LPG hose. Further investigations were carried out by the Department of Labour. The DoL investigator advised that: <ul style="list-style-type: none"> - Leaking gas may have been ignited by a spark from cycling of a freezer; - The hose appeared to have been stressed during shifting of the appliance it was connected to during cleaning; and - There was no restraint chain or mechanism in place to prevent stressing of the hose.

Event ID:	090520-01
Event summary	Owner connected newly re-filled cylinder to older LPG cabinet heater. On ignition heater caught fire around regulator connection to cylinder. The Fire Service was then called to resultant fire which destroyed heater and cylinder.
Event date	15/05/2009
Site	Domestic
Environment	Building
Equipment	Space heater cabinet heater
Event	Fire, Explosion
Casualty	No casualty
Injury	No injury
Property damage level	Restricted to the direct vicinity of the equipment
Outcome of investigation	The heater regulator was connected to the cylinder by way of a POL to Clip on adapter. Based on the following factors, it was concluded that the fire resulted after gas leaked at high pressure from the cylinder after the O-ring seal on a POL fitting went missing: <ul style="list-style-type: none"> - Heat damage was most notable about the cylinder connection point. - On examination the O-ring was missing on the POL fitting. The adapters are supposed to be permanently sealed into the cylinder, but they can be removed from the cylinder by applying excessive force. It is believed that O-ring went missing after the adapter was forced. This is because the POL fitting was found to be loose and flats on the nut of the fitting showed signs of forcing. Damage was noted on one of the heater plaques, but this was not believed to have been a factor in the cause of the fire.

Event ID:	090519-01
Event summary	An LPG heater with a newly filled LPG cylinder (that was not new) caught fire on first use after being purchased new. The owner ignited the heater on the first setting, and was turning the heater to the second setting when a fire erupted under and around the heater. He took his granddaughter downstairs, instructed her to go to the neighbours, and returned with the aim of turning the heater off, but this was not possible as there were now several fingers of flame. He walked away and called the fire service. He then returned with a neighbour to find the paint of the heater blistering, so retreated. As the fire brigade arrived he could hear a definite hissing, followed by a whomp sound. The ensuing fire resulted in estimated \$140k damages to the house and contents.
Event date	17/05/2009
Site	Domestic
Environment	Building
Equipment	Space heater cabinet heater
Event	Fire, Explosion
Casualty	No casualty
Injury	No injury
Property damage level	Extended to multiple rooms
Outcome of investigation	Most likely gas leaking at high pressure was ignited by the heater. The leakage could have occurred at the point where the cylinder connected to regulator or from ullage screw (the cylinder filler evidently loosened the ullage screw during filling). The owner was evidently an experienced welder and aware of the need to ensure cylinders are correctly fitted to regulators.

Event ID:	090525-03
Event summary	A table top patio heater was purchased with the hose already connected. On the first time of use there was a smell of gas so the owner checked the connection point to cylinder and found it was sound. On second time of use, after running for an hour, there was a slight smell of gas. The owner turned the heater off (from the fully on position). Straight after doing so a small fire occurred at the heater. The owner then attempted to turn the heater off at the cylinder valve but inadvertently turned it the wrong way. The heater was became engulfed in flames so the owner called the fire service who attended and turned the cylinder off.
Event date	21/05/2009
Site	Domestic
Environment	Outside (Above Ground)
Equipment	Patio heater
Event	Fire, Explosion
Casualty	No casualty
Injury	No injury
Property damage level	Restricted to the direct vicinity of the equipment
Outcome of investigation	Leak at the base of the heater, evidently as a result of either a faulty crimped connection on the heater supply hose or a failure by supplier to adequately tighten nut on supply hose to heater. Gas had been smelt on the first time of use, but this was not ascribed to the leak. Supplier checked fittings on a number of other heaters, but found no leaks, and undertook to advise staff to take care when installing hoses on gas appliances to ensure they did not leak at the point of connection.

This is the list of the 1 natural gas and the 9 LPG notifiable accidents reported to Energy Safety for which the investigation was completed between July and September 2009



The natural gas notifiable accident

Event ID:	090706-01
Event summary	Fire Service reported a gas fired commercial drier in a hospital laundry overheated and clothes caught fire.
Event date	6/07/2009
Site	Commercial
Environment	Building
Equipment	Laundry dryers
Event	Fire, Explosion
Casualty	No casualty
Injury	No injury
Property damage level	Restricted to the direct vicinity of the equipment
Outcome of investigation	Dryer failed to turn off. Cause not determined. Documentation requested from supplier.

The LPG notifiable accidents

Event ID:	080620-01
Event summary	An elderly gentleman was found deceased in a room with the window closed and an LPG cabinet heater operating. The heater was initially tested by a gas fitting company who found nothing wrong with it. The heater was subsequently retrieved for further examination.
Event date	29/07/2007
Site	Domestic
Environment	Building
Equipment	Space heater cabinet heater
Event	CO Poisoning (Incomplete Combustion)
Casualty	Fatality
Injury	Asphyxiation, Toxicity
Property damage level	No property damage
Outcome of investigation	It was concluded that carbon asphyxiation from products of incomplete combustion, given off by the cabinet heater, had occurred. After intensive examination and testing of the heater by experts, in New Zealand and England, it was concluded that a light back condition had developed. Factors giving rise to the light back, however, could not be determined. Consequently, it was decided to carry out further work to see if any factors that increased the propensity for light back with the make and models of heater could be identified.

Event ID:	090624-03
Event summary	An elderly, infirm female died at her home after her nightdress or dressing gown caught alight when an LPG cabinet heater was operating.
Event date	24/06/2009
Site	Domestic
Environment	Building
Equipment	Space heater cabinet heater
Event	Fire, Explosion
Casualty	Fatality
Injury	Burn
Property damage level	No property damage
Outcome of investigation	The cause of death is subject to a coroner's inquest. There was no apparent fault with the heater which had evidently been operating in the full on position.

Event ID:	090723-04
Event summary	Owner of 2008 cabinet heater advised: - He had twice taken his heater to a service agent after observing flame abnormalities about the plaque but that no problem had been diagnosed. - He took the heater back a third time after the flame had disappeared from the plaque and the heater was then dismantled. - The service agent advised him that ceramic cement had become dislodged, causing a light back condition, and that the heater should no longer be used. - On examination it was evident that heat damage had occurred behind the burner.
Event date	14/07/2009
Site	Domestic
Environment	Building
Equipment	Space heater cabinet heater
Event	Other, Unknown (Gas)
Casualty	No casualty
Injury	No injury
Property damage level	Restricted to the direct vicinity of the equipment
Outcome of investigation	Light back identified. According to a service agent this was caused by holes in grout about plaques. An appliance testing laboratory had previously identified factors that it considered increased the propensity for light back to occur with this particular make and model of heater. Consequently, an audit of these heaters was initiated.

Event ID:	090806-01
Event summary	The owner had her LPG cylinder refilled. She transported it in her vehicle and connected it to a cabinet heater in her art shop. She reported a funny noise from the heater followed by the appearance of flames, initially from the front of the heater. She went to turn the heater off but the flames were too intense. About a minute after lighting the heater there was a loud bang from the heater. She quickly left the shop and called the Fire Service. A section of street was closed during the fire suppression.
Event date	3/08/2009
Site	Commercial
Environment	Building
Equipment	Space heater cabinet heater
Event	Network Disruption
Casualty	No casualty
Injury	No injury
Property damage level	Restricted to the room containing the equipment
Outcome of investigation	Gas leakage from heater or connection point suspected, with ignition occurring during, or soon after, attempts to ignite heater. The heater was considered too badly fire damaged to assess the source of the leakage.

Event ID:	090807-02
Event summary	There was a flash fire from a cabinet heater during ignition that self-extinguished. The user ran out onto the street with her cat and a passer-by called the fire service. On arrival, attending officers from the Fire Service found LPG was leaking about the regulator connection area to cylinder valve so they took the leaking equipment outside.
Event date	7/08/2009
Site	Domestic
Environment	Building
Equipment	Space heater cabinet heater
Event	Fire, Explosion
Casualty	No casualty
Injury	No injury
Property damage level	Restricted to the direct vicinity of the equipment

Outcome of investigation

Leakage in area of cylinder connection suspected, possibly due to missing O-ring seal. Attending Fire Service officer noted there was no O-ring on the regulator bull nose and that there was a groove in QCC bull nose that have may have been machined for o-ring.

Event ID:	090814-01
Event summary	After smoke alarm activated, Fire Service attended fire that occurred in kitchen and roof area of golf club restaurant.
Event date	8/08/2009
Site	Commercial
Environment	Building
Equipment	Other
Event	Overheating
Casualty	No casualty
Injury	No injury
Property damage level	Extended to the room and structure containing the equipment
Outcome of investigation	Two gas ovens and a gas fire deep fryer appeared to be too close to combustible materials. Fire Service investigator raises questions of suitability of stainless steel cladding in direct contact with gypsum wall material. He suggested checks of similar installations elsewhere regarding proximity to combustibles and stainless steel cladding directly over gypsum.

Event ID:	090813-04
Event summary	An LPG heater ignited as the elderly, infirm owner was attempting to turn it off at the cylinder. The fire blew itself out but the heater was damaged beyond repair. The owner's hair was singed in the fire. The owner called the Fire Service who noted that gas was leaking where the regulator connected to the cylinder and that the cylinder had not been completely turned off.
Event date	13/08/2009
Site	Domestic
Environment	Building
Equipment	Space heater cabinet heater
Event	Fire, Explosion
Casualty	No casualty
Injury	No injury
Property damage level	Restricted to the direct vicinity of the equipment
Outcome of investigation	An investigating fire safety officer concluded that the clip-on regulator was not securely fitted to the adaptor and had been moved sufficiently to leak during attempts to turn the cylinder off (attending fire crew found the cylinder still partially on). Leakage may have been caused by unmodified, pre-1989 Schultz Rakow regulator (This type had been recalled for refitting as it is capable of leaking when clipped on with insufficient force).

Event ID:	090829-01
Event summary	Owner was using gas ring on a 4 to 5 year old BBQ when the gas ran out. He changed the cylinder and turned on the gas. Flames then appeared in the area where the hose connected to the cylinder. The Fire Service were called and they cooled the cylinder before turning off the cylinder.
Event date	29/08/2009
Site	Domestic
Environment	Outside (Above Ground)
Equipment	Barbecue
Event	Fire, Explosion
Casualty	No casualty
Injury	No injury
Property damage level	Restricted to the direct vicinity of the equipment
Outcome of investigation	The fire service advised that the cause has been determined as a perished hose. The owner agreed that the hose did appear perished although it had been kept under cover. It is significant, however, that the fire was observed to originate in the area where the regulator connected to the cylinder and that the owner had not leak tested after making the connection. This case exemplifies the need for continued publicity on the need for regular maintenance of gas appliances and to carry out soapy water leak tests when connecting regulators to cylinders.

Event ID:	090803-02
Event summary	Police confirmed media reports that: <ul style="list-style-type: none"> - A man and woman had been found dead in the bedroom of their home in the morning by their children; - The cause of death was suspected to be carbon monoxide poisoning; - The bedroom contained an outdoor table top patio heater; and - The deaths were believed to have been accidental and had been referred to the Coroner.
Event date	30/08/2009
Site	Domestic
Environment	Building
Equipment	Other
Event	CO Poisoning (Incomplete Combustion)
Casualty	Fatality
Injury	Asphyxiation, Toxicity
Property damage level	No property damage
Outcome of investigation	Cause of death under investigation by Police and coroner. During tests excessive levels of Carbon monoxide were emitted in the products of combustion of a Meteor P1093 table top patio heater retrieved by the Police. Due to safety concerns the supplier initiated a public recall for Meteor P1093 and P1092 patio heaters. Four audits were initiated regarding safety and compliance with Meteor P1093 heaters. Educational and safety warning initiatives were taken regarding information on the safe use of patio heaters.