



REGULATION 28: REPORT TO PREVENT FUTURE DEATHS

This report is made under paragraph 7, Schedule 5, of the Coroners and Justice Act 2009 and Regulations 28 and 29 of the Coroners (Investigations) Regulations 2013.

Recipients

This report is being set to:

- The Rt Hon Mr E Pickles MP, Secretary of State Communities and Local Government (CLG)
- The Rt Hon Mr E. Davey, MP, Secretary of State for Energy and Climate Change (ECC)
- The Chair and The Chief Fire Officer, Greater Manchester Fire and Rescue Service
- The Association of Chief Fire Officers
- The HSE
- The Chief Executive of OFGEM
- National Grid – Transco
- GS Halls Limited
- The All Party Parliamentary Gas Safety Group

Coroner

I am Nigel Meadows, H.M. Senior Coroner for the area of Manchester City.

Coroner's legal powers

I make this report under paragraph 7, Schedule 5, of the Coroners and Justice Act 2009 and regulations 28 and 29 of the Coroners (Investigations) Regulations 2013.

Investigation and Inquest

On 8 December 2008 I commenced an investigation into the death of ELIZABETH AURORA KERR, aged 76. The investigation concluded at the end of the inquest heard by a jury on the 25 September 2013.

The cause of death was found to be:

- 1a Carbon Monoxide Poisoning
- 1b
- 1c
- 2 Cardiac Enlargement

The conclusion of the inquest was a Narrative Conclusion comprising of the following answer to question 3 on the Record of Inquest and a number of separate questions were asked and answered by the jury.

1. During the early hours of 5th December 2008, there was a boiler malfunction at the premises of the Royal Bank of Scotland at the junction of Palatine Road and Lapwing Lane, West Didsbury. This caused a released of large amounts of carbon monoxide gas into the atmosphere. This found its way to Flat 4 within the properly by indeterminate routes. The probably source of this carbon monoxide release was the malfunction of the boiler in the basement of the building. The Fire Service attended the incident from 6.24am. Efforts were made from 6.30am to identify and rouse any occupants within the building. These efforts were unsuccessful. The residential areas of the first and second floors of the building were not entered. At 8.20am the Fire Service considered that there was no further need for their presence and left site. At around 1.30pm ██████ awoke in a confused state and found his mother, unclothed and slumped over the toilet. He was unable to rouse her. David rang his brother ██████ in Exeter, who recommended contacting the emergency services immediately. The Fire Service had already been recalled to the bank at 1.15pm, having been called out separately. An ambulance arrived at 1.45pm. After members of the Fire Service had brought Mrs Kerr to the ambulance, attempts were made to revive her. An ECG was carried out and Mrs Kerr was diagnosed as being in a state of ventricular fibrillation. Her heart was quivering. Cardio-pulmonary resuscitation was also administered and the ambulance crew attempted to warm her. They then conveyed Mrs Kerr to Manchester Royal Infirmary, where she was found to have a carboxy-haemoglobin level of 41.3% and a temperature of 25.9 celsius. These levels are consistent with a significant exposure to carbon monoxide. Mrs Kerr died from the effects of carbon monoxide poisoning, with cardiac enlargement as a contributory factor, at 3.30pm in Manchester Royal Infirmary.

Whilst the jury has had to be objective in its deliberations, we would like to extend our sympathy to Mrs Kerr's family.

2. Between approximately 07.00 hours and 07.30 hours on the 5 December 2008, did the incident commander task any fireman with attending the flats and removing any occupants found? **Yes**

3. If you answer yes to question 2: did the requirements of the task include forcing an entry, as necessary? **No**

4. If you answer no to question 2: should the incident commander have tasked any fireman with attending the flats and removing any occupants found and forcing an entry, as necessary, based upon the information available to him and his understanding of the risks at that time? **Not applicable**

5. Would the deceased have survived if she had been found and removed from her flat before approximately 07.30 hours? **Yes**

Circumstances of death

1. The deceased and her adult Son lived at Flat 4, 35 Ballbrook Road, Didsbury, Manchester, which was on the second floor of a building. This was rented accommodation. The ground floor was occupied by a branch of RBS Bank Plc. The ownership of the building changed in 2005 to a private company. The whole building was bounded on three sides by roads. Access to the bank via the Lapwing Lane entrance. The side of the building fronted onto Palatine Road. Access to the flats was via Ballbrook Avenue. Sometime during the early hours of the morning of 5 December 2008 the gas boiler in the basement of the Bank which provided heating to the ground floor malfunctioned and produced large amounts of Carbon Monoxide (CO) and also steam and heat. The probable cause of this was a valve sticking open and that fault would not have been picked up by routine maintenance.

2. The boiler had an exhaust flue which was found to be incomplete when examined later in that the internal piping did not go all the way to the external vent. No audible Carbon Monoxide (CO) alarms had been installed in either basement boiler room, the ground floor of the bank or any of the flats above

3. At about 05.30 a courier making a delivery to the premises was able to gain access to the main customer area and noticed that it was full of steam and was very hot with a lot of condensation. In turn he alerted his control and this triggered a visit from a security guard from G4S to visit the premises. Something was clearly very wrong and the Fire Service was called.

4. At 06.21 the first Fire Engine arrived and the commander of that appliance, who was a Watch Manager, became the incident commander (IC). Very shortly after arriving the IC and the G4S security guard entered the main doorway of the bank and only went a few steps inside. It was clear that there was a lot of steam reducing visibility to a few yards plus a lot of condensation. There was also a strange smell but no smoke. There was a metallic buzzing noise and very quickly the IC began to consider that the cause may well be a malfunctioning boiler. After exiting the premises he came to the conclusion that there was no actual fire but that a GMFRS response was necessary. He instructed one of his Fire Fighters to set up and operate a positive pressure ventilation fan (PPV) in the front doorway of the bank main entrance. This was used in an attempt to cool and ventilate the premises and improve visibility. Ideally he would have wanted to have an exit point for any fumes/vapour but that was not possible. This was an adaptation of the use of PPV. The IC also instructed two other Fire Fighters to enter the premises wearing breathing apparatus to see if they could provide any further information. They went

down to the basement and into the boiler room but did not report back anything significant. This obviously occurred over some time.

5. In chronological terms at 06.24 a second Fire Engine arrived commanded by a Fire Officer of the same rank as the incident commander. I will refer to him as WMX. They were both very experienced and had worked together many times before. WMX did what he described as a 360 reconnaissance of the building and came to the view that he was dealing with purely commercial premises. He had gone up to the main entrance door to the flats on Ballbrook Avenue and had pushed four buttons on the left hand side of the door frame more than once. He did not notice that one of them actually said "Kerr Flat 4". It was dark and nor did he notice there was a cat flap in the door or that there were 3 pints of milk on the door step which the evidence established had been delivered at about 06.00 that morning. He reported back to the IC that they were dealing with purely commercial premises.

6. However, he did notice a light switched on on the second floor on the Palatine Road side of the premises but he did not mention it to the IC because he thought it would have been obvious to all present. This was actually Mrs Kerr's bedroom. One of the Fire Fighters who also went around to the rear metal fire escape which only went to a first floor level noticed steam which he described as exhaust fumes coming out of a vent which appeared to be similar to that which was coming out of the open front door to the bank. Neither the IC nor any other Fire Fighter who attended the incident noticed the light.

7. The IC knew about the main properties of CO in that it was a toxic, odourless, colourless, combustible gas which can be produced as part of incomplete products of combustion. He made a request for a GMFRS Combustible Gas Indicator (CGI) to be brought to the scene by the duty GMFRS HAZmat Officer. However, a National Grid – Transco (Transco) engineer arrived and he had his own CGI. This was calibrated to detect Methane but the IC decided to ask him to use his rather than the GMFRS version. The evidence established that this was entirely appropriate. The IC spoke briefly to the HAZmat Officer.

8. At about 07.00 the IC and the Transco engineer entered the bank main foyer but were not wearing breathing apparatus. The latter used his CGI to monitor the atmosphere and assess what is known as the lower explosive level (LEL) of any gases present. The evidence showed that there was a significant misunderstanding and breakdown in communication between them. At the top of the stairs leading to the basement the IC was adamant that he was told that the LEL had been recorded as 20% and that was the level at which Transco would recommend evacuating the premises. Prior to this it had been lower than 5%. However, the Transco engineer was equally adamant he had said no such thing and only commented that if it reached 20% they would have to consider leaving but that the levels were less than 5%. He did say that he wanted to leave immediately because the smell and atmosphere were intolerable for him. Neither experienced any CO poisoning symptoms. On leaving the bank the IC also learned for the first time from an RBS key holder member of staff that there were flats above and one of them may be occupied. The IC decided on the basis of what he understood to be a LEL of 20% and possible residential occupation that he would task WMX to go to the flats and if anyone was in them, to get them out. At that stage he considered that there was a

risk of explosion. He said that is what he told WMX to do. The PPV was re-activated and this had certainly helped to cool the premises and improve visibility. By this time the Transco engineer had also decided to cut off the gas supply to the bank and the gas boiler service engineer who had recently worked on the boiler had also arrived. A cordon was set up around the bank.

9. Regrettably, another significant breakdown in communication occurred and WMX was adamant that he was not told to do this. On the other hand the IC was equally adamant that he had given such an instruction. In the event WMX did return to the flat entrance area together with another Fire Fighter and went up a rear fire escape to the first floor level and knocked and banged on doors. No one responded but he was doing this not in compliance with any instruction or awareness of any risk of explosion but simply to advise any occupants that the Fire Service were there by way of reassurance.

10. By about 07.30 the gas supply had been disconnected and in the IC's mind the emergency situation had passed. He recollected that WMX had returned saying in effect that he could not get find anyone. The IC also allowed the gas boiler engineer into the premises to isolate and make safe the boiler. The whole incident was winding down and by about 08.20 the IC decided that the Fire Engines could leave. The HAZmat officer had attended out of curiosity because he had never known of a LEL of 20% before. Approaching 09.00 RBS staff were arriving and during the morning several of the staff became concerned for the welfare of Mrs Kerr because they saw the milk on the door step and this was unusual because she always took it in. Their attempts to ring Mrs Kerr's doorbell were also unsuccessful. By about 13.00 they were so concerned that they phoned 999. At about the same time coincidentally Mrs Kerr's adult son who also lived in the premises awoke and felt very unwell. He had vomited and was very disorientated. He found his Mother unconscious and naked in the bathroom. In his confused state he phoned his brother who told him to phone 999 and he did so. He was asked to make his way down and open up the front door. On doing so he was met by attending Police officers and paramedics and immediately treated. Fire Fighters wearing breathing apparatus went to the second floor flat and rescued Mrs Kerr. A Police Officer and a Fire Fighter who were not wearing breathing apparatus entered the flats through the front door and had gone up a few steps felt the effects before feeling unwell and had to leave. The evidence suggested the atmosphere in the stairwell inside was toxic. No Fire Fighter who attended the premises at any time on the 5 December 2008 had any personal protective equipment CO alarm.

11. The medical evidence established that she had had a cardiac arrest minutes before she was found at about 13.45 and the jury concluded from all the evidence heard that had she been found by about 07.30 she probably would have survived. She and her son must have been rendered unconscious by about 06.30.

12. Mrs Kerr and her son were taken to the Manchester Royal Infirmary and advanced life support treatment and CPR was given to her. Very shortly after she arrived she had a Carboxyhaemoglobin test, which showed she had a level of 41.3%. This meant that she must have been breathing contaminated air for a consistent period until she was found. She was also profoundly hypothermic. A couple of hours later her son had a test which showed his level to be 10% which

meant that it must have been much higher whilst he was in the flat. Despite all appropriate treatment Mrs Kerr could not be resuscitated and she was pronounced dead at 15.30. Her son survived.

13. Post incident investigations ruled out any of her domestic appliances being responsible for the CO and that its probable source was from the boiler in the basement. It had managed to find its way from the basement to the second floor. The precise route or routes of fume migration could not be established. It was noted that the boiler flue piping to an outside vent was incomplete and hypothetically this could have allowed fumes to penetrate the brickwork and fabric of the building. It was also established in a subsequent test that water vapour could pass from the ground floor to the first floor through the ceiling and floor boards. Even though the water vapour could not pass into the second floor rooms in this test this could be explained by the fact that it would necessarily cool as it travelled and it was heavier than air so had quite different properties to CO. It was also possible that the fumes could have made their way outside the building and penetrated a vent in Mrs Kerr's bathroom.

14. It was understood that within the current financial year GMFRS will be acquiring CGI meters for all their Fire Engines.

Coroner's concerns

During the course of the inquest the evidence revealed matters giving rise to concern. In my opinion there is a risk that future deaths will occur unless action is taken. In the circumstances it is my statutory duty to report to you.

The matters of concern are as follows:

1. All Party Parliamentary Gas Safety Group (APPGSG):

All the recommendations of the All Party Parliamentary Gas Safety Group (APPGSG) Reducing death by Carbon Monoxide Report of 2011 (copy attached) have not been adopted or enacted. The APPGSG should consider undertaking a review of progress made in the 2 years since the report.

2. Guidance on the potential movement of CO within a building:

There appears to be a lack of understanding and detailed guidance on the potential movement of CO within a building from its original source and how it can penetrate and move within it. The HSE could provide more information on its web site and provide specific guidance or warnings. There is no HSE guidance to landlords and letting agents as to what independent validation has taken place of the gas and other fuel safety equipment provided in rented property may be appropriate. Such information could also be disseminated to and within all Fire and Rescue Services.

3. The Role of Fire and Rescue Services in Carbon Monoxide Safety.

The Fire and Rescue Services currently have no statutory role in Carbon Monoxide safety, regulation and enforcement. This could be reviewed and considered by the Department for Communities and Local Government. It is appreciated that this is far from straight forward and wider issues would need to be taken into account. For

example Fire and Rescue Services have no statutory role in other gases or substances which cause death. This may require a more detailed analysis and assessment of issues and complications which may then come to light. In the absence of a statutory role, and possibly through the Chief Fire Officers Association "Blue Watch" initiative, Fire and Rescue Services could be encouraged to voluntarily engage in local and national Carbon Monoxide campaigns. Such campaigns may benefit from closer working at a local level with relevant CO charities and at a national level between the Gas Safety Trust, the Gas Safe Charity and the Chief Fire Officers Association.

3. Ofgem:

They have a public safety role in relation to piped gas safety in that "The regulator shall, subject to primary duties, carry out functions : in a manner best calculated ... To protect the public from dangers". Mrs Kerr died in 2008 and there are about 50 deaths a year from Carbon Monoxide and many more non-fatal incidents. It is understood that this year alone there have been some 30 deaths, albeit the majority of them were not a result of leaks from the piped gas system.. However, in view of the continuing fatalities and incidents, which is a matter of concern , Ofgem and/or the appropriate government departments may be a need to revisit and recalculate the regulatory response required by all fuel suppliers and regulators so as to reduce the avoidable deaths and non-fatal incidents.

4. Piped Gas Suppliers:

It is understood that there are specific conditions of a licence to supply gas as summarised below. It is not clear how gas suppliers define and determine who is a "vulnerable and priority" customer and how is it established that they have been offered a free annual gas safety check, and have taken advantage (or not) of such an offer ? Nor who actually checks what steps a gas supplier takes in practice to raise the awareness of danger and who judges the reasonability of the steps or who actually checks what steps other fuel suppliers take in practice to raise the awareness of danger and who judges the reasonability of the steps?

5. Enforcement and Information:

There is no requirement that in the case of a carbon monoxide death, a clear audit trail is available of the steps taken by the relevant fuel supplier to ensure the specific customer in question was aware of the dangers of carbon monoxide poisoning and the benefits of fitting an audible alarm. At the moment there is no specific information that fuel suppliers are required to give.

"The licensee must take **all reasonable steps to provide, free of charge, the information required by paragraph 30.6 to each Domestic Customer at least once each year** and must provide it when requested to do so by a Domestic Customer.

30.6 The information referred to in paragraph 30.5 is information sufficient to inform each of the licensee's Domestic Customers about:

- a) the safe use of gas appliances and other gas fittings;
- b) **the dangers of carbon monoxide poisoning;**
- c) **the benefits of fitting an audible carbon monoxide alarm that complies with a relevant British or European safety standard;**
- d) the benefits of gas safety checks; and
- e) where to seek advice if gas appliances are condemned as a result of a gas safety check.

6. The installation , use , maintenance and correct positioning of fixed hard wired or battery operated CO alarms.

From October 1st 2010 Building Regulations Approved Document J "**Combustion appliances and fuel storage systems**" sets out a number of legal requirements in England and Wales. For the first time carbon monoxide (CO) alarms were mandatory "**where a new or replacement fixed solid fuel appliance is installed in a dwelling, a CO alarm should be provided in the room where the appliance is located.**" However Building Regulations only cover the processes used during the 'building' or 'installation' phases, of a solid fuel appliance and do not have any power to talk about on-going maintenance processes or the inspection of existing appliances. CLG could consider whether a safety performance certificate that included gas safety, along the lines of an energy performance certificate would promote an improved on-going attitude towards carbon monoxide safety amongst landlords and lettings agents, and thereby lead to a reduction in carbon monoxide incidents in rented property. There is at least one national, voluntary, independent system already available and such a certificate would be a clear demonstration of compliance with carbon monoxide safety measures.

7. The use and availability of CGI meters by Fire and Rescue Services and having suitable training in their operation as well as the use of personal protective equipment CO alarms.

GMFRS did some research in the use of such equipment by all Fire and Rescue Services. Please see the attached. It is suggested that if all Fire and Rescue Services carried such equipment on front line appliances and used them on both emergency responses and preventative work that would reduce the risk of death to Fire Fighters and the public.

8. The Chief Fire Officers Association "Blue Watch Initiative"

This is a voluntary initiative to be encouraged and supported. It offers an independent safety validation service for landlords and letting agents. <http://www.bluewatch.co.uk/>. The investigation established that incomplete flue piping had not been identified on routine inspection visits despite the regulatory

regime created by the The Gas Safety (Installation and Use) Regulations 1988. At present there is no duty imposed on the owner of a boiler or a gas supplier (who makes a profit from the supply) that in the case of a multi occupancy building to allow the other occupants , through recognised engineers , to inspect the boiler and be warned to install CO alarms .

Action should be taken

In my opinion action should be taken to prevent future deaths and I believe you and/or your organisation have the power to take such action.

Your response

You are under a duty to respond to this report within 56 days of the date of this report, namely by 13 December 2013. I, the coroner, may extend the period.

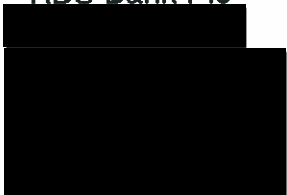
Your response must contain details of action taken or proposed to be taken, setting out the timetable for action. Otherwise you must explain why no action is proposed.

Copies and publication

I have sent a copy of my report to the Chief Coroner and to the following Interested Persons:

The Family of the deceased

GVA Grimley
RBS Bank Plc



ACE Gas Services
Greater Manchester Police

I have also sent it to:

CO Awareness
CO Gas Safety

I am also under a duty to send the Chief Coroner a copy of your response.

The Chief Coroner may publish either or both in a complete or redacted or summary form. He may send a copy of this report to any person who he believes may find it useful or of interest. You may make representations to me, the Coroner, at the time of your response, about the release or the publication of your response by the Chief Coroner.

A handwritten signature in black ink that reads "Nigel Meadows". The signature is written in a cursive style with a long horizontal stroke at the end.

N S Meadows
H.M. Senior Coroner – Manchester City area

Date 18th October 2013