

CO-Gas Safety Unintentional Carbon Monoxide Poisoning Case Study

JOHN COURTNEY, Survived in 2010



Age: 54

Fuel: Mains gas

Appliance & Location: Commercial hot water boiler in an office basement

Notes by CO-Gas Safety: John was an experienced Gas Emergency Service engineer (First Call Operative) working for Wales & West Utilities when he survived what could easily have been a fatal encounter with CO. The boiler he was called to look at had been wrongly adjusted the previous day by gas engineers who, although Gas Safe registered, were not certified for that appliance type. It is not widely realised that each Gas Safe Register identity card details the type of appliances that each engineer is qualified to work on.

An ordinary working day

Date of Incident: 22nd October 2010, 09.00hrs. Mount Stuart Square, Cardiff.

A typical autumnal day and with my apprentice on block release at college, I was looking forward to a break from the usual teenage issues!

First call of the day: Commercial property at Mount Stuart, "Gas escape in cellar, staff evacuated to outside in street". Although commercial categories are slightly more complex than domestic, there was not anything particular alarming at this stage. Sometimes there are added notes like 'fire service' and/or 'police' on site which would cause added concern. On arrival, there were about 25 office staff standing on the pavement by the main entrance. The Office Supervisor advised me of the circumstances involved and that several members of staff had complained of a smell of gas in the main entrance area. She also added that they thought it could be coming from the cellar.

Carefully entering the unknown

Equipped with a company issue Gas Detector and associated tools, I proceeded to enter the building. Almost immediately upon entering the cellar, my Gas Detector was recording low levels of gas (LEL), but not anywhere near explosive limits. The cellar was pitched in darkness, and with just my torch, it was difficult to locate the gas meter. From what I remember, the steps to the cellar were open plan. Consequently I took each step downwards slowly and deliberately to minimise losing my footing. Against a background of darkness, I was aware of a somewhat 'breathy' or 'whistling' noise from the right-hand corner of the cellar. On further investigation I found a commercial floor-mounted boiler. Its 'poor picture flame' indicated that it was not gassed correctly. When I stood up to resume looking for the gas meter, I felt slightly confused, disorientated and there was a sense of visual disturbance in my thought processes.

Realisation that there was a danger of death

I remember thinking, "Don't panic, don't sit down, just get up those stairs into the fresh air". At this point my knowledge about CO kicked in. I want to make clear that this came from my own studying and not from my training. My movement to and climbing up the stairs seemed to be in slow motion, and I knew I had to just focus and keep going. For those of you with a technical background, my haemoglobin levels were not carrying sufficient oxygen into my blood. Continued exposure at this level would have certainly resulted in death or at least neurological damage.

Fast forward; I managed to get outside and contacted Despatch for assistance. Almost immediately, the Fire Service and my Line Manager with other FCO's arrived. My memory still cloudy and thought processes still disrupted were further distressed by a man hovering over me claiming he was a

consultant who just happened to have a practice across the road. When the ambulance arrived to take me to the Heath Hospital, I could hear his “You haven’t got CO poisoning” ringing in my ears!

On arrival at the Heath, I underwent standard oxygen therapy due to the high exposure of high levels of CO. This is applied through a tight-fitting mask (normal air contains 21% oxygen). Not wishing to bore you with all the technical spiel, but basically, breathing in concentrated oxygen replaces carboxyhaemoglobin quickly. After approximately 6 hours undergoing this treatment, I was discharged. As I was exiting the hospital, a number of visibly red-faced firemen were entering. I recognised them as the same firemen who had earlier attended the incident at Mount Stuart Square. Apparently, they entered the cellar without breathing apparatus. Additionally, the CO levels in the cellar were exacerbated by blocked air vents at street level.

Reflecting on what could have been

As the incident was on a Friday, I took the opportunity to recover and contemplate over the weekend. My overriding thoughts during that period were:-

- 1 How fortunate I am to be physically fit. I think most people would have probably just sat down for a few minutes if they had felt drowsy or disorientated (this would have been fatal).
- 2 Gratitude that the emergency services and hospital staff responded so quickly.
- 3 My apprentice was not with me on that day. He is 6ft 3” and 17 stone. How would I have got him up those stairs on my own if he had been with me?

With the passage of time and experience, we are now equipped with CO Detectors to minimise future incidents. Continued focus on CO awareness by campaign groups is critical if we are to eliminate the estimated 40 deaths and 300 injuries per year.

John Courtney

CO-Gas Safety comment

This case highlights the value of the work we do by talking to survivors and the families of deceased victims. These interactions teach us so much about ways that gas safety can be easily improved. This incident made it clear that First Call Operatives (FCOs) were at high risk from CO and that they should all be equipped with Personal Alarm Monitors (PAMs) for CO. They also needed to be trained in the particular risks, symptoms and emergency steps to take when CO may be present.

Scotia Gas Network’s FCOs had been equipped with PAMs for CO since 2007, although Stephanie Trotter was not aware of this. On the 4th April 2014 Stephanie was allowed to make a presentation to the Gas Industry Safety Group and mentioned John Courtney’s incident. Soon after the presentation, the other three Gas Distribution Networks (GDNs) followed by either providing FCOs with PAMs for CO or other similar equipment. We were pleased with this improvement.

However, another problem persists - If you suspect a carbon monoxide leak you are told to ‘Open doors and windows, turn off gas appliances and leave the house.’ <https://tinyurl.com/yb6anfzk> This means that by the time a FCO arrives at the premises it is very unlikely there will be any carbon monoxide poisoning present for the PAM for CO to detect. The FCO is most likely to turn off the gas to the whole property. The appliance emitting CO is therefore not identified and remains a danger.

Also, the ordinary Gas Safe registered installer is rarely equipped with a PAM for CO, nor is a meter changer or installer of a smart meter. We have pointed out the risk to smart meter installers to DECC and then BEIS since 2011 and continue to do so. CO-Gas Safety’s most recent meeting to make this point was on 24.01.18, attended by John Courtney, Paul Overton and Stephanie Trotter.