



Panel Discussion Summary: Preventing carbon monoxide poisoning in the domestic environment

25 April 2016 | Macmillan Room, Portcullis House, Westminster, chaired by Barry Sheerman MP

Panellists

- Barry Sheerman MP, All-Party Parliamentary Carbon Monoxide Group
- Jane Everton, Department of Communities and Local Government
- Stacey Rodgers, Dominic Rodgers Trust
- Chris Bielby MBE, GISG
- Prof Paul Harrison, Cranfield University
- Dr Andy Shaw, Liverpool John Moores University

Key points raised

- *The introduction of audible CO alarms is in correlation with a downward trend in CO-related fatalities.*
- *As well as acute poisoning, there needs to be awareness and research on low-level, chronic exposure.*
- *Homes in more deprived areas are at greater risk of CO poisoning incidents: private rented homes in such areas are at most risk.*

1. Introduction by Barry Sheerman MP (BS)

BS explained that he became involved in carbon monoxide (CO) safety after his constituent Stacey Rodgers' son died of carbon monoxide poisoning in 2004. A few weeks after that, two restaurateurs also died of CO poisoning. He started the group soon after that (as the All-Party Parliamentary Gas Safety Group), and the group has been dedicated to recognising how these deaths occur and looking into the long term effects, whilst pushing for evidence-based policy.

2. Panel presentations

a. *Chris Bielby MBE, Chair of the Gas Industry Safety Group (CB)*

CB began his career in the gas industry in 1972, starting as an engineer before moving into other operational and senior managerial roles. Currently he is the Director of New Energy and Stakeholder

Engagement for Scotia Gas Networks (SGN), chairman of the Gas Industry Safety Group, and Vice-chair of the Carbon Monoxide All Fuels Action Forum. Previously, he has held the position of President and Fellow at the Institution of Gas Engineers & Managers (IGEM).

With regard to the ongoing downward trend in CO fatalities in relation to gas appliances, CB covered the following topics:

i. Major events that reduced CO poisoning risk

Over 100 people were dying in 1972, the year when the UK finished converting from town gas to natural gas. The transition took place between 1968 and 1972, and 44.4million appliances were exchanged. Natural gas is a clean efficient fuel that - if used wisely, and installed and maintained correctly - will not give rise to CO. Additionally, the use of flue-gas analysers by domestic service engineers has brought down CO deaths from 1990 onwards. Additionally, engineers now use flue gas combustion equipment when installing appliances. Furthermore, Landlord Gas Safety Inspection Certificates were rolled out in 1995, which means landlords are required to have their appliances checked and serviced every year by gas safe operatives.

ii. Audible CO alarms

When British Gas started pushing out audible CO alarms in 1993, it can be correlated with a downward trend in deaths.

iii. Boiler scrappage scheme

This scheme began in 2010, and led to a CO incident reduction. The purpose was to replace old boilers with Category A condensing boilers. Former London mayor Boris Johnson carried out a similar initiative in London. GISG hopes that the Department for Energy & Climate Change (DECC) will eventually roll this out nationally.

iv. Downstream Incident Data Report 2015

According to the report, the groups apparently most at risk of CO poisoning are people over the age of 80, households with poor ventilation, and those containing old appliances which haven't been serviced for a number of years.

v. The following questions were put to CB by attendees:

A. *What's your opinion on appliances without flues, such as cookers and wood-burners, which are becoming more popular?*

CB responded by saying there was a need for increased servicing of these appliances. If appliances are installed in accordance with manufacturers' instructions then there is less likelihood of there being a problem, however it crucial to ensure that particularly woodstoves are installed by competent people.

B. *Isn't it scandalous that after the introduction of audible CO alarms 23 years ago, that 'black spot' detectors which do not have audible capabilities are still on sale?*

CB agreed with the sentiment of this question, and underlined that black spot detectors would fail to protect individuals from CO poisoning whilst they slept.

- C. *Have we not yet got full confidence that the people that come into our homes to service our boilers are uniformly up to the standard that we would expect? Are our gas fitters, wherever they come from, able to stand up?*

CB responded by stating that although the safety record in general is good in the UK, it is important to ward against complacency, as there are concerns surrounding insufficient training courses, and some installers having come from abroad and not holding the necessary qualifications.

b. Stacey Rodgers (SR), the Dominic Rodgers Trust

Stacey Rodgers lost her 10-year old son Dominic to carbon monoxide poisoning in 2004, when the deadly gas escaped from a faulty appliance in a neighbour's property. Stacey went on to establish the Dominic Rodgers Trust, to campaign for greater awareness surrounding CO safety. Recently, Stacey has been collaborating with Project Shout: she has appeared in their public information commercials, and is currently promoting their film competition for 2016.

SR covered the following topics:

i. Dominic's story

Dominic Rodgers was a popular boy, whose life revolved around football. The 11th February 2004 seemed like an average school night for him and Stacey. Dominic had spent the evening playing on PlayStation, and when Stacey tucked Dominic up in bed, she told him that she loved him and that she would see him in the morning, believing him to be in the safest place in the world.

However, the next morning Dominic didn't get out of bed. Stacey knew from gut instinct that something was wrong. She went into his room to try and wake him up, but when she touched him he was stone-cold.

She called an ambulance, but Dominic was pronounced dead on the scene. Police soon arrived, and began asking Stacey questions, but she didn't know what had happened. When later that day the coroner called to say that Dominic had been killed by carbon monoxide poisoning, Stacey did not know what CO was; her brother had to explain that it was in fact a poisonous gas.

i. Stacey's campaigning journey

After this, Stacey resolved to campaign to make others aware of the dangers of CO. Firstly, Stacey got in touch with a local computer club, to ask if they would be happy to help create a leaflet to handout to the local community. Stacey also reached out to her local MP Barry Sheerman, all whilst working forty hours a week at the local factory.

Early on in her time campaigning, Stacey met Stephanie from CO Gas Safety, who had organised a sponsored walk with British Gas across the Isle of Wight. Stacey attended this, and for the first time met Molly Maher, who had also lost her child to carbon monoxide poisoning, and had gone on to establish Consumer Safety International to raise awareness.

Momentum continued to build, including involvement from the gas industry, which led to the founding of the Kirklees CO Awareness Group. One of the first campaigns carried out by the group was a bus campaign, which featured advertisements on buses all over South Yorkshire. Stacey additionally made a speech to the 70-strong council and mayor of Huddersfield. Following on from this, Stacey received a letter pledging that all 100,000 homes in Kirklees would receive a free CO alarm.

Stacey went on to work on various campaigns around Kirklees, and collaborated with ministers from across the UK. After three years, Dominic's case came to court. Investigation reports showed that a fitter had carried out work on a heating appliance in a neighbouring property a few weeks prior to Dominic's death. The boiler and the flue had been fitted incorrectly, which had resulted in 25,000ppm of CO leaking into Dominic's room on the night that he died.

Stacey ended her presentation by thanking the companies and businesses who have supported and worked alongside the Dominic Rodgers Trust over the years, and called for CO alarms to be installed in every home across the country.

c. Jane Everton (JE), Deputy Director for the Better Rented and Leasehold Sector Division, Department for Communities & Local Government (DCLG)

Jane Everton is the Deputy Director for the Better Rented and Leasehold Sector in the Housing & Planning Team at the Department for Communities & Local Government (DCLG). DCLG plays a vital role in encouraging carbon monoxide safety, through its commitment to creating great places to live, and its role in implementing the Smoke and Carbon Monoxide Alarm (England) regulations for the private rented sector, which were introduced in October 2015.

JE stated that in terms of what action the government can take, it is necessary for any proposed initiatives to be assessed in terms of the potential impact they could have on fatality numbers; and that although there is a continued decline in the number of deaths caused by gas appliances, there is no room for complacency. As well as sensible and proportionate legislation, awareness-raising is also important, and an area where charities play a key role.

i. Current initiatives

JE explained that national building regulations currently require the safe installation of gas, oil and solid fuel burners and fires. These regulations apply whether the buildings are owner-occupied, private rented or social housing. Regulations also require CO alarms to be fitted when new or replacement solid fuel burning appliances are installed, due to their higher risk. Six months ago DCLG took this further with new regulation for England, requiring CO alarms to be fitted in private rented properties that contain solid fuel burning appliances. Alongside those regulations, DCLG published two booklets: one for landlords to help them with compliance, and one for local authorities to help them with enforcement of the regulations. DCLG also supported landlords in preparing for the regulations by providing £3.2m funding was provided to locals Fire & Rescue Services (FRS), to help them distribute free smoke and CO alarms, and run a social media campaign, linked to the Fire Kills site. FRSs across the country have also raised more awareness of the new regulations through their own local campaigns, press releases, social media, and in their direct contact with landlords and letting agencies. DCLG estimate that the new regulations will save 26 lives and prevent nearly 700 injuries per year. The regulations will be reviewed in October 2017.

ii. Awareness raising activities

JE also mentioned the following awareness-raising initiatives in which DCLG is involved:

- Gas Safety Week, which this year will run from the 19-25 September.
- Radio ads: DCLG introduced radio ads for use on commercial radio stations.

JE concluded by stating that by encouraging safety with regard to carbon monoxide as well as other hazards in the home, forms part of DCLG's commitment to creating a safer and stronger private rented sector, and encourage the growth of housing.

d. Professor Paul Harrison (PH), Director at IEH Consulting Ltd and former Director of the Institute of Environment and Health at Cranfield University

Professor Harrison is a Fellow of the Royal Society of Biology and the British Toxicology Society, and was Visiting Professor in Environment and Health at Cranfield University. Professor Harrison contributed to the Royal College of Physicians and Royal College of Paediatrics and Child Health report 'Every Breath We Take', which explored in detail the impact of exposure to air pollution, including carbon monoxide in the indoor environment.

PH began by saying he wanted to give the audience an overview of where CO fits in the context of indoor air pollution, before covering the following topics.

i. Every breath we take report

PH introduced the Royal College of Physicians' *Every breath we take* report, which he was involved in writing, which includes chapters covering indoor air quality. The report covers CO as an indoor air pollutant ([more info](#)).

ii. Health impacts of CO in indoor air

Further to being lethal, CO also exhibits a range of other effects on health. CO binds to haemoglobin, and by doing that, it reduces the transport of oxygen. It has a 200 times more potent binding potential with haemoglobin than oxygen does, so once you're exposed to a certain level, it takes over and swaps the oxygen for carbon monoxide. It therefore prevents oxygen from getting to the tissues. It also binds to muscles, and to enzymes which are involved in energy transfer within the cell. Acute effects include headaches, shortness of breaths, dizziness, poor vision, confusion and fainting. These can lead to unconsciousness, respiratory failure, and very tragically death.

Beyond this, there are certain delayed effects and complications: if somebody recovers from an episode of CO poisoning, they may still suffer a number of effects, which could be cardiovascular, neurological or neuropsychiatric in nature. There can be damage to the white matter of the brain. Long term effects of low-level exposure can include chronic changes to the blood and blood cells, which could lead to various cardiovascular problems.

As well as acute poisoning, there needs to be awareness on low-level, chronic exposure which is not causing acute effects but can still have a serious impact on the population as a whole. There are 22-23m homes in the UK that contain gas appliances: if 1% of these were malfunctioning, there would be some 200,000 homes where CO exposure was at a significant level. Indeed, studies are showing that there are probably 2000 missed cases of CO poisoning per year in the UK.

iii. Ventilation of homes

It's important for combustion gases to be removed from dwellings; if appliances have open flues there's a chance that combustion materials will not exit. If it's an appliance with a fixed flue, and that gets blocked, then the combustion gases cannot escape and more CO will be produced. Therefore, it is crucial to ensure that appliances have adequate ventilation. Because of various initiatives to make homes more airtight and energy efficient, there's increasing propensity for people to block existing flues and trickle vents. For CO this is could be especially disastrous.

iv. Conclusion

PH concluded by saying that in terms of improving CO safety, awareness is the big issue: not only awareness amongst those who have power and influence, but also amongst those who have neither of those things. Individuals need to be aware that is not just appliances in their own homes which could cause problems, but those in neighbouring properties also. Engineers and other professionals

visiting people's homes should be vigilant and look out for any signs or symptoms of CO poisoning. Amongst individuals, awareness of the health symptoms is important.

v. The following question was put to PH by members of the audience:

- A. *There seems to be a disparity in discussions about whether the alarm should activate at 30ppm – is there such a thing as a safe level of CO in your home?*

PH responded by stating that levels are important in terms of exposure time, so a lower limit needs to be set in terms of continuous exposure, whereas a higher limit is more appropriate for short-term exposure.

e. Dr Andy Shaw (AS), School for the Built Environment, Liverpool John Moores University

AS is based in the School of the Built Environment at the Faculty of Engineering and Technology at Liverpool John Moores University (LJMU). He is currently leading the carbon monoxide research project there, which is an on-going study into the levels of CO found in the domestic environment, covering over 25,000 homes in the Coventry and Liverpool areas. The findings of this research contributed greatly to the Carbon Monoxide: From Awareness to Action report (more info).

AS explained that LJMU has embarked on a project with Merseyside Fire & Rescue Services (FRS), looking at low-level CO exposure. The study is identifying trends amongst specific demographics that might be most at risk of CO. It collates data collected by PPE monitors worn by professionals - such as FRS staff, paramedics and engineers - entering people's home. In the past year, the study has managed to reach 22,000 properties in inner-city Liverpool.

i. Findings

- Whereas 78% of homes had smoke alarms, only 9% had CO alarms, with the best areas in Merseyside there being 12% of homes containing CO alarms.
- When indicators of multiple deprivation are taken into account, the study has found that homes in more deprived areas are at greater risk of CO poisoning incidents.
- The more occupants there are in a home, the greater the chance of a CO alarm being present.
- Owner-occupied homes are more likely to have alarms.
- Properties in the private rented sector are less likely to have an alarm: PRS properties in areas of multiple deprivation are at the highest risk.
- Highest readings were often found in kitchens, where there is often a constant background level of 20ppm.

ii. Stages II & III of the project

Stage 2 of the project was made possible thanks to funding provided by the Gas Safety Trust and CoGDEM, and expanded from looking at properties in city centres to taking homes in more rural areas into account also, and homes containing solid fuel appliances. This involved collaboration with FRSs in Bedfordshire, Oxfordshire, and Cornwall. Moving forward, Stage 3 will incorporate work with West Yorkshire and Suffolk FRSs, as well as working alongside National Energy Action, and the work they are conducting using an in-depth questionnaire of homes.

iii. Conclusion

To conclude, AS stated that in order for CO safety to be improved upon, the following actions need to be taken:

- Research into more cost-effective CO detection devices needs to be funded.
- BS EN standards should be changed to require alarms should sound at lower levels of ppm.
- Research must be continued into the health effects of chronic low-level Co exposure.

3. Questions & Answers

The following questions and comments were put to the panel, in a Q&A session chaired by BS:

- A question was raised regarding CO levels in cars, particularly as the exhaust box in a car ages. There is a need for air quality in cars to be measured, as they represent a potentially toxic environment, particularly for pregnant mother and young babies.*
- The need for greater data collection across the life course was also raised.*

AS and PH both agreed with these points, whilst AS underlined that there needs to be greater government coordination on indoor air quality policy.

- Do gas safety record-keeping procedures need to be improved upon?*
- What are government departments doing to ensure that local authorities don't cut corners with respect to maintaining their own utilities, in order to protect the health of local authority employees?*

JE said that these issues would be taken into account when regulations for gas safety are reviewed, and underlined the role played by the Cross Government Group on Gas Safety and Carbon Monoxide Poisoning, to bring government departments together to collaborate on gas safety.

- Local authorities are very reluctant to be guided by central government in terms of any funding that comes through from any particular area. What could this group do to support local authorities to spend funds in this particular area?*

JE stated that DCLG works closely with local governments in this area, and this is something that could be considered.

- A comment from a social housing provider underlined that often although such initiatives as discount boiler servicing are offered, the offer is often not taken up by tenants.*

JE stated that in this context awareness-raising for tenants was key. Additionally, local authorities do already have the power to act if the home is unsafe, the House and Health Safety Rating System could (HHSRS) also be useful.

- A comment was made by a member of the audience that there is a lack of consistency amongst local councils when it comes to initiatives to reduce CO risks, and this needs to be addressed in order for householders across the country to be protected.*

4. Conclusion from Barry Sheerman MP

BS concluded by thanking the panellists and attendees for their contributions, and requested that people contact him to raise awareness about CO issues in Parliament. He finished by encouraging everyone to keep working towards eradicating the threat of CO poisoning.

5. Attendees

Alex Ballinger, Policy Connect
Jessica Bolton, Cranfield University
Frank Brehany, Holiday Travel Watch
Juliette Burroughs, National Energy Action
Dr Simon Clarke, Frimley Park Hospital
Scott Darroch, Gas Safe Register
Paul Decort, Department for Communities
and Local Government
Sani Dimitroulopoulou, Public Health England
Paul Durose, Gas Tag
Belinda Goldsmid, CO Gas Safety
Simon Gordon, Residential Landlords
Association
Stephen Hadley, Consumer Safety
International
Richard Haines, Katie Haines Memorial Trust
James Higgins, SGN
Cliff Hoy, British Gas
Mark Jones, Liverpool Mutual Homes
Barry Jones, Liverpool Mutual Homes
Gerarda Kendrick, Energy networks
Association
Gordon Lishman, Gas Safe Charity

Molly Maher, Consumer Safety International
Ashley Martin, RoSPA
Steve Miller, CO All Fuels Action Forum
Billy Mitchell, SMART Compliance
Claire Heyes, CORGI Technical Services
Sharon Wood, Safer Tourism Foundation
Jason Perrins, Fireblitz
Leigh Greenham, CoGDEN
Richard Price, National Landlords Association
Stephanie Trotter OBE, CO Gas Safety
Roland Wessling, Cranfield University
Sue Westwood-Ruttledge, CO Gas Safety
Adrian McConnell, Gas Safety Trust
Belinda Parker, Gas Safety Trust
Caitriona Deakin, CORGI Technical Services
Isabella Myers, CO Medical & Healthcare
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Andrew Gaved, H&V News
Ian McCluskey, IGEM
Beverley Stones, Gas Safe Europe
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6. Contact

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