CROSS GOVERNMENT GROUP ON GAS SAFETY AND CARBON MONOXIDE (CO) AWARENESS

ANNUAL REPORT 2015/16

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Introduction

The Cross Government Group on Gas Safety and Carbon Monoxide (CO) Awareness reconvened in June 2009 to ensure a joined–up approach across departments, the devolved administrations and other governmental bodies to improve gas safety and tackle CO risks from all fuels. The Group, whose members are listed below, also aims to develop effective Government strategies and promote knowledge and understanding of gas safety and CO risks and how to manage them.

- Department for Business, Energy & Industrial Strategy (BEIS)
- Department for Communities and Local Government (DCLG)
- Department of Culture, Media and Sport (DCMS)
- Department of Health (DH)
- Health and Safety Executive (HSE)
- Health and Safety Executive for Northern Ireland (HSENI)
- Health Protection Scotland (HPS)
- Home Office
- Office of Gas and Electricity Markets (Ofgem)
- Public Health England (PHE)
- Scottish Government
- Welsh Government
- Public Health Wales (PHW)

Gas safety and more broadly CO awareness is a truly cross government issue with the majority of Government departments, the devolved administrations and other governmental bodies having an interest from their particular perspective. This report provides a summary of the work carried out by members of the Cross Government Group on Gas Safety and CO Awareness under four key headings:

- Consumer Awareness
- Supporting Professionals
- Research
- Legislation and Securing Justice

Activities in this Report cover the period Autumn 2015 to Autumn 2016.

A representative from the Cross Government Group attends the meetings of the All Fuels Forum which was created to facilitate meetings between the All Party Parliamentary Carbon Monoxide Group (APPCOG) and other stakeholders to encourage debate and action on issues relating to CO. Further information can be found at: http://www.policyconnect.org.uk/appcog/

The Cross Government Group maintains a watching brief on current initiatives that will be useful or of interest and, when possible, invites a representative involved in gas safety or CO issues to provide an update of their work.

> Earlier this year, Rebecca Close (Environmental Public Health Scientist, Environmental Epidemiology Group, Environmental Change Department, Centre for Radiation, Chemical and Environmental Hazards, Public Health England) gave a very interesting presentation entitled *Why are people dying from unintentional carbon monoxide poisoning? An overview of coroners' findings*

Carbon monoxide poisoning is a serious and preventable form of poisoning. Each year there are about 30 deaths from accidental CO poisoning in England and Wales (ONS Statistics)[1] and in excess of 200 non-fatal cases that require hospitalisation. Further statistical data from DH (covering England and Wales), HPS, HSENI and HSE is provided in the final section of this Report.

The DH, HPS, HSENI and HSE figures reflect the differences in the relevant data sources. The DH, HPS and HSENI data is based on public health information and excludes self-harm where that has been coded, but it is likely that self-harm is under-reported. HSE collects data on incidents which are reportable under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR) (http://www.hse.gov.uk/riddor/) (and previously under the 1995 Regulations). The Regulations apply to events, which arise out of or in connection with work activities covered by the Health & Safety at Work etc Act 1974. The Regulations require gas conveyors and LPG suppliers to report incidents where someone has died, lost consciousness, or been taken to hospital for treatment to an injury where gas is likely to be a cause.

[1] The figure of '30 deaths a year' used in this report is based on the average number of accidental poisonings by other gases and vapours (X47) and where the secondary cause of death was the toxic effect of carbon monoxide (T58) from 2011-2015

CONSUMER AWARENESS

DCLG: Carbon monoxide public safety broadcasts

To help raise awareness about CO poisoning, public safety broadcasts in the form of radio fillers were developed and launched in Autumn 2015. These give advice on how to avoid the risks of CO poisoning in the home and how to spot its symptoms. Broadcasters can register and download these short radio fillers free of charge. As of May 2016 these have been played over 14,000 times reaching an audience of over 100 million listeners. (Responsibility for this has now transferred to the Home Office.)

DH/PHE: Policy

Department of Health (DH) and Public Health England (PHE) attended and provided continuous input into the Cross Government Group on Gas Safety and CO awareness meetings as well as into the All Party Parliamentary CO group meetings, on CO policy-related matters.

HSE and HSENI: Gas Safe Register

The Register has been in operation since 2009, and is now firmly established in the minds of consumers, the gas industry, and with a broader network of stakeholders.

At this stage in the contract much of the work is divided between consolidation and finessing of existing messages and methodologies, while still introducing new or refreshed content or tools to ensure that the maximum possible impact is made.

A key activity, which straddles those two workstreams, has been the design, development and delivery of an entirely new website for consumers and engineers.

The way consumers use websites, and their expectations when they do, has changed markedly in the last seven years and there was concern that the existing website, which had grown significantly in terms of content since launch, was at risk of becoming unwieldy. There was also a strong desire to make the online offering much more ‘mobile-friendly’ to reflect the significant increase in the number of visitors using phones or tablets to access information or services.

The Register undertook a series of focus groups with site users in advance of the design in order to ensure the user experience was as positive as possible. Additional user testing was also undertaken before and after the site launched.

The revised version of the website is significantly easier to use, much more mobile friendly, and more in line with the expectations of users. It remains a central platform for the Register’s communications.

Brand awareness also remains key, as consumers need to recognise and understand the Register name and brand before they will trust any advice given. When the Register launched in 2009 there was significant investment (in time and resources) made in creating awareness of the brand. With the initial launch targets achieved the Register was then able to shift mode to encompass other kinds of messaging and campaigning, eg the shift in focus to behaviour change.

However, it was always recognised that there would need to be further brand-focused work in due course to ensure consumer awareness was maintained.

Gas Safe Register worked closely with a leading brand agency to develop a consumer campaign which would reinforce the existing, and strong, brand identity but which would also reinforce the unique nature of the Register as the only official listing of those who are legally qualified to work on gas. The resultant campaign approach, *Trust the Triangle*, has already rolled out and the messaging it uses will form the centrepiece for ongoing Register consumer communications. Engineer and broader stakeholder buy-in and support to the campaign was also an essential component.

- Reach of over 25 million people through out-of-home and online advertising
- 329,879 visits to the Gas Safe Register website during the campaign period (15 February - 13 March). This is compared to 183,077 visits in the same time period in 2015 (up 80.19%).
- 6,919 views of our introduction to Gas Safe video vs 1,096 in the same time period last year (15 Feb – 13 March). This is up 531.29%.
- 210 tweets were sent which included #TrustTheTriangle. These were then retweeted 869 times giving 2.57 million impressions of the hashtag.

The major consumer campaign for the Register continues to be Gas Safety Week, now in its sixth year. The 2016 campaign has been the most successful yet, with record levels of participation from supporters and the largest ever reach for messages through traditional and social media.

Gas Safety Week has continued to build on the themes and tools used in recent years, with the importance of an annual gas safety check for appliances being the key call to action for consumers. This year there was a particular focus on older consumers, and their own levels of gas safety awareness.

For a number of years the Register has been encouraging industry to become more involved in the campaign and this year the levels of participation were significantly up. The number of registered supporters for the campaign increased to 6,859. Initial assessment of the coverage also suggests that many more of those supporters have undertaken campaigning of their own in the week – exactly the model the Register has been encouraging. Gas Safety Week is now well established as ‘the industry’s week’.

A full coverage report will be made available in due course and shared with all interested parties.

Key GSR statistics

Social media continues to be a key channel for us, not only to engage with our existing audience of consumers and registered engineers but increasingly to reach a new audiences.

- Facebook: 39,919 likes
- Twitter: 18,261 followers
- LinkedIn: 3,150 followers
- Instagram: 3,558 followers

Average monthly visits to the website: 230,000 (data range June – Oct ober 2016)

HSE: Domestic gas e-Bulletin

Since last year's report, subscription to HSE's gas e-Bulletin has risen from approximately 28,000 to over 32,000 http://www.hse.gov.uk/gas/ebulletin.htm.

PHE: Communications

PHE issued a national press release to raise public awareness of the dangers from CO poisoning to mark National Carbon Monoxide Awareness Week, in November 2015: https://goo.gl/RnJjdv

PHE published a blog: *Carbon Monoxide – the silent killer*, which highlighted the dangers of CO poisoning along with advice on reducing the risk: https://goo.gl/dSGmDS

PHE used Twitter to remind campers about the dangers of placing used BBQs inside tents and other enclosed spaces, which linked to a short video on the dangers of using barbecues inappropriately whilst camping: https://www.youtube.com/watch?v=UmapBWFQu3o

PHE supported Gas Safety Week, co-ordinated by Gas Safe Register, in September 2015, via social media.

PHE launched the Cold Weather Plan, which included CO messages (See latest plan: https://www.gov.uk/government/news/cold-weather-plan-launches-to-prepare-for-winter).

PHE circulated a Cold Weather communications toolkit to local authorities and the NHS, which included messages about getting appliances checked before winter.

DH /PHE advice on avoiding CO poisoning can be found on the Get Ready For Winter website (http://www.metoffice.gov.uk/learning/get-ready-for-winter/health-and-wellbeing) hosted by the Met Office.

PHE: Health Protection Directorate – CRCE/Environmental Change Department

Public Health Matters Blog: Carbon monoxide – the silent killer

In December 2015, PHE (Air Pollution and Climate Change Group) published the following blog in a continuous attempt to remind that CO poisoning is a significant risk to health: https://publichealthmatters.blog.gov.uk/2015/12/15/carbon-monoxide-the-silent-killer/

PHE: Health Protection Directorate – CRCE/ Environmental Change Department

PHE (Extreme Events and Health Protection Group) and Department of Health advice on avoiding CO poisoning is included in relevant documents advising the public, for example the "Cold Weather Plan for England" (https://www.gov.uk/government/collections/cold-weather-plan-for-england) and "Flooding: Advice" (https://www.gov.uk/government/collections/flooding-health-guidance-and-advice).

PHE Keep Warm, Keep Well leaflet

This is a cross government document coordinated by PHE and is public facing. It contains information and advice on CO safety around ensuring gas appliances are properly serviced and installed by qualified gas engineers, installation of CO detectors, dangers of solid fuels and

where to find registered engineers. There are also links to webpages where the public can find more information on CO safety.

PHE Flooding: advice for the public

This is a public-facing advice leaflet that contains lines on the dangers of using diesel or petrol powered generators indoors to either pump flood water out of buildings or to dry the interior of a building after flooding.

Welsh Government/PHW: General activities

The Carbon Monoxide in Wales Working Group, which aims to coordinate action to prevent CO exposures, improve the response to CO incidents and improve information sharing and incident/impact surveillance, has continued to meet during the period covered by this report (http://www.wales.nhs.uk/sitesplus/888/news/32843).

In last year's report details were provided on the Working Group's support on the delivery of two key projects in January and February 2015:

- The local authority (LA) CO alarm distribution and awareness-raising project provided officers in ten LAs in Wales with CO monitors and alarms. Officers used personal CO monitors to check CO levels during routine home visits and offered residents CO information and an alarm. In a 4-week period in January and February 2015, 369 alarms were distributed during 442 home visits. CO readings were zero in over 90% of homes, but in 2 homes, CO levels required urgent action. This was taken and further harm was avoided to the six residents of one home and two of the second.

- At the same time, an education project was delivered with five parent and baby groups in Communities First/Flying Start areas. Seventy CO alarms were distributed during these sessions and evaluation showed that knowledge of causes, symptoms and prevention of CO increased substantially across the study period. At the follow-up, however, only one third of parents had fitted their alarms, with the remainder reporting the manufacturer's instructions were not easy to follow, or they simply had not got around to installing their alarms.

Details of this research were published in May 2016 [2].

PHW continues to develop a Wales-wide CO surveillance system to inform understanding of the burden of CO and facilitate targeted interventions. Annual analysis of the epidemiology of CO incidents in Wales will be carried out and fed into a range of multi-agency groups, including the CO in Wales Working Group. In the period 1 September 2015 to 1 September 2016 14 CO-related incidents have been recorded by the Environmental Health Protection team of PHW.

Inequalities in the burden of CO impacts in Wales may become the focus of future interventions.

PHW developed a comprehensive communications plan to promote CO Awareness Week 2015, and their activities included:

[2] Jones, S.J., Lewis, H., McCarthy, J., James, K., McFarlane, K. and Brunt, H. (2016). Carbon Monoxide Alarms – a community distribution project. Journal of Public Health Online First 26 May 2016 http://link.springer.com/article/10.1007/s10389-016-0737-4?wt_mc=Internal.Event.1.SEM.ArticleAuthorOnlineFirst

- a news story on the PHW's intranet and internet sites;
- a staff forum thread and an email including a link to the news story to be sent to PHW staff;
- a press release for local, regional and national Welsh media;
- social media updates on the PHW Twitter and Facebook channels;
- a refresh of PHW CO web pages;
- an email including a link to the news story to be sent to PHW stakeholders;
- a competition run by participating Health Boards in Wales to enable their staff the opportunity to win a CO alarm (20 CO alarms were provided to each Health Board); and
- a case study video developed by PHW's Environmental Health Protection Team which was linked to the news story, press release and social media. The case study featured an interview with "Josie", a PHW member of staff who in April 2015 won a CO alarm in an internal on-line staff survey designed to gauge staff knowledge of CO poisoning. This was to prove a significant potentially life-saving prize for Josie. The interview relayed how Josie and her partner were woken in the middle of the night by the CO alarm sounding. Her boiler had become 'unsealed' and without the alarm she would have not have been aware of the presence of CO. This could well have been fatal for her and her partner. Media were invited to interview Josie, and a staff blog was developed featuring this PHW employee;
- PHW provided their support via a detailed web article on the dangers and issues around CO poisonings, which featured Josie's story: (http://www.wales.nhs.uk/sitesplus/888/news/39345).

PHW: Local authority information

Local authorities in Wales can access a range of CO information through the Public Health Wales website. (http://www.wales.nhs.uk/sitesplus/888/page/50368)

Welsh Government: CO website pages

The Welsh Government publishes a postcard-sized safety advice detailing 3 simple steps which householders can take to reduce the risk of CO poisoning in the home. Welsh Government regularly contacts key interested bodies to make them aware of the availability of free hard copies of the advice. These include Wales' Fire and Rescue Service, LAs, higher education establishments (specifically student unions and student accommodation officers) and charities.

The postcard advice also provides a link to the CO web pages on the Welsh Government website at http://gov.wales/topics/health/protection/environmental/carbon/?lang=en.
They include advice on:

- the symptoms of CO poisoning;
- potential sources of CO;
- maintaining household appliances; and
- chimneys, flues and air vents.

SUPPORTING PROFESSIONALS

PHE - National Poisons Information Service

The National Poisons Information Service (a service commissioned by PHE on behalf of UK health services) Annual Report 2015/16 includes information on CO poisoning. Carbon monoxide poisoning is one of the major public health poisoning problems dealt with by the NPIS. During the year 2015/16, in partnership with the Gas Safety Trust (GST), the NPIS collected information on 516 enquiries about CO, involving at least 752 individuals. http://www.npis.org/annualreports.html

PHE - Health Protection Directorate – CRCE/Environmental Change Department

Tools to aid diagnosis

PHE (Air Pollution and Climate Change Group) has updated the links and the contact details for information and emergency numbers on the following algorithms: CO in the antenatal checks algorithm, algorithm to diagnose poisoning, algorithm for smoking cessation clinics and residential inspection aid, which have been developed in collaboration with Chartered Institute of Environmental Health. The updated algorithms together with other PHE tools for professionals managing patients and investigating incidents are available on the CO collection, at Gov.UK website: (https://www.gov.uk/government/collections/carbon-monoxide-co).

Cold weather related materials

The cold weather plan for England, which is a cross governmental framework coordinated by PHE (Extreme Events and Health Protection Group), contains information and advice around CO safety, specifically at Level 0 – year round planning. For example, the following are topics contained within actions for individuals:

- Servicing of all gas, solid fuel and burning oil appliances by registered engineers;
- Checking chimney and flues for blockages;
- Fitting audible CO alarms.

Flooding materials

PHE (Extreme Events and Health Protection Group) contribution to the flooding and health chapter of the National Flood Emergency Framework for England contains lines on the dangers of using diesel or petrol powered generators indoors to either pump flood water out of buildings or to dry the interior. This danger is also highlighted in Annex E – Communications guide, within this document.

This aspect is repeated in the on-call duty doctor's pack (internal PHE resource) and the web-learning module on flooding, further supporting professionals.

PHE- Health Protection Directorate – CRCE/ Toxicology Department

PHE Compendium of Chemical Hazards: Carbon Monoxide Update

The General Toxicology Group has updated the compendium of chemical hazards documents for CO, as previously published by the HPA. These have been updated in line with the most recent evaluations and policies. The existing material can be found at the Compendium of Chemical Hazards and the revised ones will be publically accessible on Gov.UK website at https://www.gov.uk/government/publications/carbon-monoxide-properties-incident-management-and-toxicology. The general information entry posts answers to questions the

general public may have on the chemical, the incident management entry acts primarily as a resource for emergency responders/planners, while the toxicological overview provides an up-to-date technical review of the available toxicological data.

PHE Health and Wellbeing Directorate, Alcohol, Drugs & Tobacco Division

Implementation of NICE guidance on smoking in pregnancy

There is strong collaboration between PHE and NHS England, to support the implementation of NICE (National Institute of Heath and Care Excellence) guidance on smoking in pregnancy (PH26). Recommendation 1 in this guidance is for midwives to identify pregnant women who smoke and refer them for specialist support. ALL pregnant women (smokers or not) should be screened for CO, with those having elevated levels referred or further discussions taking place regarding potential exposure to CO if not from smoking. A new on-line training module has recently been launched, designed to enhance communication skills and support midwifery teams to effectively carry out activity. PHE and NHS England are currently conducting a survey, which establishes current rates of routine CO screening in maternity services.

https://www.nice.org.uk/guidance/ph26

http://elearning.ncsct.co.uk/vba_pregnancy-launch

Smoking in Pregnancy Challenge Group -"Test your breath" postcard and other resources

The Smoking in Pregnancy Challenge Group has produced resources and publications to inform women of the risks of smoking in pregnancy, including CO exposure. The most widely used is the "test your breath" postcard that informs pregnant women about the risks of CO and the CO test, and a briefing for midwifery staff to encourages them to conduct the CO screening test. Working with PHE, the Group have been able to make enough of these available so that every pregnant woman can be given a postcard and each member of the midwifery team receive a briefing for the past two years. Maternity services can order these directly and, in some areas, the postcards are being included in booking packs.

http://www.smokefreeaction.org.uk/SIP/index.html

PHE: Meetings

PHE staff attended the **All-Party Parliamentary Carbon Monoxide Group (APPCOG)** panel discussion on domestic carbon monoxide safety, which was organised on 25 April 2016. The panel was chaired by APPCOG Co-Chair Barry Sheerman MP.

A Policy Workshop was organised by the UK Indoor Environments Group (UKIEG) on 14 July 2016, at DH Skipton House. CO was discussed as one of the issues related to indoor environments. The CO Cross Government Group members were invited and many of them attended the meeting.

Welsh Government/Public Health Wales

The Carbon Monoxide in Wales Working Group established by PHW in 2014 continues to co-ordinate and lead on CO work in Wales, drawing on its membership from various organisations, including the emergency services, health boards, LAs, industry and the voluntary sector. The group continues to foster an effective, supportive environment where CO work in Wales is shaped. The group's response subgroup continues to provide the clarity and reinforces professional responsibilities in relation to the response of each organisation to CO incidents that occur in Wales.

PHW is actively engaged in responding to CO-related incidents alongside partner organisations such as local authorities, fire and rescue services and the Welsh Ambulance Service. PHW reviews the response to all CO-related incidents of which it is notified with the objective of improving response where needed.

The Welsh Government continues to provide comprehensive CO advice on its website (http://gov.wales/topics/health/protection/environmental/carbon/?lang=en) which includes advice for health professionals, incorporating information on diagnosis, investigations and management of suspected poisonings from CO (http://gov.wales/docs/phhs/publications/151113copoisoningen.pdf).

In November 2015, in support of Carbon Monoxide Awareness Week, the Welsh Government issued a Welsh Health Circular (WHC (2014) 009) on behalf of the Chief Medical Officer for Wales and Chief Nursing Officer for Wales to all health professionals in Wales encouraging their vigilance to the signs and symptoms of CO poisoning in their patients (http://gov.wales/docs/dhss/publications/151116whc056en.pdf). The letter also alerted them to the availability of a new diagnostic algorithm (see below). In addition, PHW provided their support via a detailed web article on the dangers and issues around carbon monoxide poisonings: (http://www.wales.nhs.uk/sitesplus/888/news/34934)

PHW: Algorithm for health professionals

To coincide with Carbon Monoxide Awareness Week November 2015 the Carbon Monoxide in Wales Working Group produced and distributed an algorithm to support medical/health professionals in identifying and managing suspected CO poisoning in their patients. This algorithm is available on Public Health Wales' website: http://www.wales.nhs.uk/sitesplus/888/document/251948

PHW: Midwives

The Carbon Monoxide in Wales Working Group has carried out a pilot project to capitalise on the work already being done by midwives to monitor the smoking status of pregnant women. Now, when women are found to have high breath CO levels and no reasonable explanation for this, the midwife will contact PHW for further investigation to be carried out.

PHW/NHS Wales: Smoking Cessation in Pregnancy

Health boards have acknowledged that smoking in pregnancy should be a very high priority for public health action for the NHS in Wales. Pilot projects, known as **Models for Access to Maternal Smoking cessation Support (MAMSS**), took place in four health board areas in 2013 and 2014 to test alternative models of smoking cessation delivery for pregnant women.

These pilot projects tested the proposal that the uptake of services and quit rates would increase if the evidence based NICE guidance and pathways were strictly implemented and adhered to, using more flexible models of service delivery during pregnancy and following childbirth. This included ensuring that CO monitoring was used for all pregnant women, and smokers were automatically referred to cessation support (NICE, 2010).

The final report was drafted in September 2015. Findings from the study have shown that pregnant smokers who received the MAMSS intervention were significantly more likely to be referred and engage with stop smoking services and go on to be treated compared with the usual care service. Additionally, as a consequence of the pilot studies one pregnant mum who

did not smoke scored a very high CO reading at home when tested with the CO monitor by her midwife. As no other members of her household smoked the midwife suggested there may possibly be a problem with a household appliance – following immediate investigations the cause of the CO poisoning was found to be a faulty boiler which was subsequently condemned.

RESEARCH

PHE: Health Protection Directorate – CRCE/ Environmental Change Department

PHE (Environmental Epidemiology Group) has started three projects in 2016:

Development of protocol for enhanced CO assessment by coroners at post-mortem. This is a collaboration of PHE with Cranfield University, funded by GST. A researcher has been recruited and has started work in October 2016.

A PhD project for study of CO exposure measurement error by a combination of analytical chemistry and epidemiology methods. This is a collaboration of PHE with Brunel University and Toxicology Department at Lausanne Hospital, Switzerland, funded by GST. A doctoral student has been recruited and is expected to start work in December 2016.

A PhD project for study of CO exposure in residential settings, focusing on repeated exposure and chronic health effects, in particular neurological. A collaboration with Bartlett School of Architecture at UCL (Ben Croxford), funded by the Government of Taiwan. Ke-Ting Pan, a public health researcher from Taipei, was recruited and started work on 28 September 2016.

PHE: Health and Wellbeing Directorate - West Midlands Centre

The Health and Wellbeing team received funding from the PHE Research Pump Priming Fund (PPF) Grant, (2015-16) to carry out a pilot project. Its aim is to facilitate the development of a strong proposal in collaboration with the Child Accident Prevention Trust that will set out clear methodology for a study into the effectiveness of educational/behavioural initiatives to help reduce low CO poisoning in families with children aged 0-4, including those from socially disadvantaged groups.

PHE: Scientific conferences

PHE: Health Protection Directorate – CRCE/Environmental Change Department

PHE participation in the Summit on Environmental Hazards and Health Effects, Atlanta, USA, 26-29 January 2016

PHE participated on the first-ever Summit on Environmental Hazards and Health Effects, hosted in Atlanta, by the Centers for Disease Control and Prevention (CDC) National Center for Environmental Health, Division of Environmental Hazards and Health Effects (EHHE).

PHE staff made two presentations on: i) Why are people dying from unintentional CO poisoning? An overview of coroners' findings; ii) Hospital admissions due to CO poisoning in England (2001-2010).

PHE staff also gave the above first presentation at the 2016 UK Indoor Environment Group (UKIEG) Conference "Health and wellbeing throughout the life course: the role of residential and learning environments" on 16 June 2106 at Coventry University.

PHE participated in the International Society for Environmental Epidemiology (ISEE) conference in Rome, 1-4 September 2016, and presented on the development of an Environmental Public Health Surveillance System for England, which included CO as a case study.

PHW

The local authority alarm project and the education project were written up in a paper that was peer reviewed and published in May 2016. Abstracts describing these projects have also been

submitted to the Welsh Public Health Conference 2015. An abstract on the work on CO in Wales was also submitted to the world injury prevention conference, Safety 2016.

LEGISLATION AND SECURING JUSTICE

HSE/HSENI: Enforcement activities

HSE continues to work to secure justice and provide consumer protection where gas safety incidents are highlighted. This may be through the issue of an enforcement notice or prosecution in the event of a breach of the law. 10.9% of HSE's prosecution informations[3] in 2015/16 were brought under the Gas Safety (Installation and Use) Regulations 1998.

Significant cases have included:

- a custodial sentence for an unregistered gas fitter who carried out dangerous work and breached the terms of a prohibition notice;
- a total of just over £20,000 in fines and a community service order for an illegal gas fitter and the company who hired him; and
- a suspended prison sentence for a former businessman who used a number of aliases while carrying out illegal gas work. He was also disqualified from being a company director.

There have been numerous prosecutions of landlords for a variety of offences including: failure to provide landlord's gas safety records; using unregistered gas fitters to carry out work; carrying out illegal work themselves; and failure to ensure safety of appliances.

Further information can be found on the HSE website: HSE Public Record of Convictions is at http://www.hse.gov.uk/Prosecutions/ and the Media Centre http://press.hse.gov.uk/ includes press releases relating to prosecutions.

HSE and Gas Safe Register: Enforcement

Gas Safe Register supports enforcement activity through incident investigation and operational support; they undertake visits with HSE, HSENI and local authorities. The field operations teams also complete inspections to identify unsafe gas work and assess engineers' competence.

HSE: Proposed legislation change

HSE have been considering various changes to the Gas Safety (Installation and Use) Regulations 1998 (GSIUR). A particularly significant proposed change for this group is an amendment to regulation 36(3) which would introduce flexibility in the timing of landlords' gas safety checks. A consultation on the proposed changes began on 7 November 2016 and will finish on 27 January 2017. Details about the consultation can be found on the HSE website at http://www.hse.gov.uk/consult/condocs/cd280.htm.

PHW

PHW, through its coordination of the Carbon Monoxide in Wales Working Group, is acting as a central conduit for queries relating to CO from local government and others. The working group

[3] In health and safety cases, criminal proceedings are commenced by the laying of an Information in the magistrates' court. The Information is normally accompanied by a summons, which is intended to secure the accused's attendance at court, in order to answer the allegation(s) made against him/her contained in the Information.

with its network of contacts makes it an excellent resource in terms of knowledge of legislation and codes of practice.

PHW led an Incident Management Team in achieving a multi-disciplinary, coordinated response to a large-scale CO-related incident in Wales. A solid fuel appliance installer had potentially incorrectly fitted hundreds of appliances in the Pembrokeshire area. The local authority and HETAS had examined a number of the appliances and a high proportion were found to be incorrectly installed. Working together and coordinated by PHW, the Incident Management Team were able to raise public awareness of the issue and offer a free CO alarm to those affected. A news item about this work can be seen on this link: http://www.wales.nhs.uk/sitesplus/888/news/40007/

STATISTICS

This section includes statistical data from DH, HPS, HSENI and HSE on CO fatalities. The various parties use specific, but different criteria in what they record. The figures reflect the differences in the relevant data sources.

The DH, HPS, HSENI data is based on public health information and excludes self-harm where that has been coded, but it is likely that self-harm is under-reported. HSE collects data on incidents which are reportable under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR) (and previously under the 1995 Regulations). The Regulations apply to events which arise out of or in connection with work activities covered by the Health & Safety at Work etc Act 1974. The Regulations require gas conveyors and LPG suppliers to report incidents where someone has died, lost consciousness, or been taken to hospital for treatment to an injury where gas is likely to be a cause.

CO mortality data

On request from DH, ONS provided the data on mortality from CO poisoning (deaths registered in 2015 in England and Wales). The data is now available online (https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/adhocs/006135numberofdeathsfromaccidentalcarbonmonoxidepoisoning). (The reference number is 006135.)

For information on Northern Ireland CO data please contact Health.Protection@dhsspsni.gov.uk

For information on Scottish CO mortality data, please see http://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/vital-events-reference-tables or contact statisticscustomerservices@nrscotland.gov.uk.

For information on England and Wales CO data, please contact COfeedback@phe.gov.uk

DH: Departmental analysis

Carbon monoxide poisoning is a serious and preventable form of poisoning. Each year there are around 30 deaths from accidental CO poisoning in England and Wales (ONS Statistics)[4].

DH analysts have compiled mortality statistics from the Office of National Statistics for accidental CO poisoning 2005-2015.

[4] The figure of '30 deaths a year' used in this report is based on the average number of accidental poisonings by other gases and vapours (X47) and where the secondary cause of death was the toxic effect of carbon monoxide (T58) from 2011-2015

Number of deaths from accidental poisoning by carbon monoxide, England and Wales, 2006-15[1,2,3]											
Code	**Cause**	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
V01-X59	**All accidental carbon monoxide poisonings**	87	79	85	90	65	79	65	60	55	53
X47	**Accidental poisoning by other gases and vapours**	41	47	39	39	32	34	25	24	26	25
	Occurrence at home	34	35	26	29	23	29	18	16	18	24
	Occurrence in residential institution	0	0	0	0	0	0	0	0	0	0
	Occurrence at school other institution/pub admin area	0	0	0	0	0	0	0	0	0	0
	Occurrence at sports/athletics area	0	0	2	0	0	0	0	0	0	0
	Occurrence on street/highway	2	1	4	1	1	1	1	0	0	0
	Occurrence at trade/service area	0	0	0	1	0	1	0	0	1	0
	Occurrence at industrial/construction area	3	4	2	1	1	0	0	1	0	0
	Occurrence on farm	0	0	0	0	0	0	0	0	0	0
	Occurrence at other specified place	2	7	3	5	6	3	5	6	5	1
	Occurrence at unspecified place	0	0	2	2	1	0	1	1	2	0
V01-V99	**Transport accident**	1	1	0	1	0	0	0	0	0	1
X00-X09	**Accidental exposure to smoke, fire and flames**	45	31	46	50	33	45	40	36	29	27
[1] Cause of death was defined using the International Classification of Diseases, Tenth Revision (ICD 10). Deaths were selected where the underlying cause of death was accidental (ICD 10 codes V01-X59), and where the secondary cause of death was the toxic effect of carbon monoxide (ICD 10 code T58).											
[2] Figures for England and Wales include deaths of non-residents.											
[3] Deaths registered in each calendar year.											
Source: Office for National Statistics											

The figure of ‘30 deaths a year’ used in this report is based on the average number of accidental poisonings by other gases and vapours (X47) and where the secondary cause of death was the toxic effect of carbon monoxide (T58) from 2011-2015

Scotland: Mortality figures 2006-2015

Carbon monoxide deaths (ICD 10 code: X47) data from the General Register Office for Scotland. Data range 2006–2015

Mortality statistics for accidental CO poisoning in Scotland

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Deaths by CO (X47)*	1	0	2	1	2	2	1	0	1	4

National Records of Scotland, Vital Events Reference Table 6.4
*X47 Other gases and Vapours (Carbon Monoxide)

Northern Ireland: Mortality figures 2010–2015

Deaths from carbon monoxide poisoning[1] 2010–2015[P]

Type of carbon monoxide death	**ICD10 Code**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015 [P]**	**2010-2015 Average**
Uncontrolled fire in a building or structure	X00	4	3	2	3	3	3	3
Controlled fire in a building or structure	X02	-	2	-	-	-	-	0
Exposure to ignition of highly flammable material	X04	-	1	-	-	-	-	0
Exposure to other specified smoke, fire and flames	X08	-	-	-	-	-	-	0
Accidental poisoning	X47	2	-	1	-	6	3	2
Intentional self-harm	X67, X76	3	1	5	9	1	1	3
Assault by smoke, fire and flames (includes arson, cigarettes and incendiary devices)	X97	-	-	-	-	-	-	0
Poisoning by and exposure to other gases and vapours, undetermined intent	Y17	1	-	-	-	-	-	0
Total		**10**	**7**	**8**	**12**	**10**	**7**	**9**

[1] Deaths from carbon monoxide poisoning have been defined using ICD10 code T58 and where carbon monoxide was mentioned on the death certificate

[P] Data for 2015 remains provisional until the publication of the 2015 Annual Report of the Registrar General due to be released in November 2016

Health and Safety Executive published statistics

http://www.hse.gov.uk/statistics/tables/ridgas.xlsx

Table RIDGAS1

Incidents in Great Britain relating to the supply and use of flammable gas (a) 2011/12 - 2015/16p
An incident can cause more than one fatality or injury. The total number of injuries is presented in the table.

Type of incident (b)		Year				
		2011/12	2012/13	2013/14	2014/15r	2015/16p
Total number of incidents		**173**	**224**	**211**	**161**	**145**
	Carbon monoxide poisoning	142	193	188	138	125
	Other exposure, eg to unburnt gas	7	6	3	3	4
	Explosion/fire	**24**	**25**	**20**	**20**	**16**
Total number of fatalities		4	10	6	6	9
	Carbon monoxide poisoning	3	9	3	6	8
	Other exposure, eg to unburnt gas	-	-	-	-	-
	Explosion/fire	1	1	3	-	1
Total number of non-fatalities		**266**	**353**	**356**	**240**	**219**
	Carbon monoxide poisoning	226	313	329	214	195
	Other exposure, eg to unburnt gas	8	6	5	3	5
	Explosion/fire	32	34	22	23	19

Notes

Statistics presented in these tables are for gas-related incidents in Great Britain reportable under the Reporting of Injuries, Diseases and Dangerous Occurrence Regulations (RIDDOR). For more information see www.hse.gov.uk/statistics/sources.htm

r =revised
p=provisional

Flammable gas incidents resulting in injury: Table 1 presents annual reported gas-related incidents that are notifiable under Regulation 11(1) of RIDDOR; this places a duty on certain conveyors of gas (including LPG), to notify HSE of an incident involving a fatal or major injury that has occurred as a result of the distribution or supply of flammable gas (mainly piped gas but also includes bottled LPG). The statistics published are 'as reported' to HSE. When such reports are made, it is at the early stages of the incident, thus the detailed circumstances of the incident will not have been confirmed.

General information on domestic gas safety is available at:
http://www.hse.gov.uk/gas/domestic/index.htm

Statistics on HSE prosecutions by legislation (including gas safety) are available at
www.hse.gov.uk/statistics/tables/ef5.xlsx

HSE also provides details of members of the public who have died in reportable domestic gas incidents on their website. For 2014/15 http://www.hse.gov.uk/foi/fatalities/2015-16.htm