



White paper:

## **Carbon monoxide in the home**

By – Puneet Khurana, Application Engineer, Beanbag Care (Assisted Living Services) Secure

## Legal specifications for installing a CO sensor

In the UK, the law requires the installation of carbon monoxide (CO) alarms in all new and rented residential properties where solid fuel appliances are installed, such as wood burners or open fires. This requirement is outlined in the Building Regulations and is enforced by local authorities.

In October 2022, the requirements for landlords and social housing expanded to legislate the need for a carbon monoxide detector in any room with a fuel burning appliance. Failure to adhere to this can result in penalties of up to £5000.

The exact requirements for installation may vary depending on the specific property and type of fuel-burning appliance, but some general guidelines are:

- The CO alarm should be installed in the same room as the fuel-burning appliance, or in a room adjacent to it.
- The CO alarm should be positioned at a height of between one and three meters above the floor.
- The CO alarm should be fixed to the ceiling or high up on a wall, as CO is slightly lighter than air and will rise.
- The CO alarm should be installed in accordance with the manufacturer's instructions.
- The CO alarm should be tested regularly to ensure that it is working properly.

It is also recommended that all households have at least one CO alarm installed, even if they do not have solid fuel appliances, as CO can be generated by other sources such as gas boilers and cookers. The CO alarm should be certified to British or European Standards, and it is important to ensure that it is regularly maintained and replaced as necessary.

## Problems caused by carbon monoxide

Carbon monoxide is a colourless, odourless, and tasteless gas that is highly toxic to humans and animals. When inhaled, it can bind to haemoglobin in red blood cells and reduce their ability to transport oxygen throughout the body. This can lead to a variety of health problems, including:

**Headaches:** One of the most common symptoms of carbon monoxide poisoning is a headache. This is because the gas reduces the amount of oxygen that reaches the brain.

**Dizziness and nausea:** Carbon monoxide can also cause dizziness and nausea, which can lead to vomiting in severe cases.

**Shortness of breath:** Because the body is not getting enough oxygen, people who have been exposed to carbon monoxide may experience shortness of breath or difficulty breathing.

**Fatigue:** Carbon monoxide can cause people to feel tired or lethargic, even if they have had plenty of sleep.

**Chest pain:** In severe cases of carbon monoxide poisoning, people may experience chest pain or tightness.

**Brain damage:** Prolonged exposure to high levels of carbon monoxide can cause permanent brain damage, memory loss, and confusion.

**Death:** In extreme cases, carbon monoxide poisoning can be fatal.

It's important to note that carbon monoxide is a silent killer, and people may not realize they are being exposed to it until it's too late.

## CO accident cases in the UK

There have been several cases of carbon monoxide leaks in the UK in recent years. In 2020, 116 deaths were attributed solely to the toxic effects of Carbon Monoxide (ONS 2021) and up to 4000 people attended A&E services across the UK for Carbon Monoxide related symptoms.

Here are some notable examples:

- In 2019, a family of four died from carbon monoxide poisoning in a property in Sheffield. The gas was generated by a faulty boiler, and the family did not have a carbon monoxide detector installed in their home.
- In 2017, a woman died from carbon monoxide poisoning in a hotel room in Cornwall. The gas was generated by a boiler flue that was not properly installed, and the hotel did not have a carbon monoxide detector installed in the room.
- In 2016, two teenagers died from carbon monoxide poisoning in a holiday apartment in Yorkshire. The gas was generated by a faulty boiler, and the apartment did not have a carbon monoxide detector installed.

- In 2014, a family of five were hospitalised with carbon monoxide poisoning in their home in County Down, Northern Ireland. The gas was generated by a faulty boiler, and the family did not have a carbon monoxide detector installed.

These incidents highlight the importance of having carbon monoxide detectors installed in homes and other buildings, as well as ensuring that all fuel-burning appliances are properly maintained and ventilated.

### Reasons for carbon monoxide generation

Carbon monoxide (CO) can be generated in homes from a variety of sources, and it is important to be aware of them to prevent carbon monoxide poisoning. Here are some common reasons for the generation of carbon monoxide in homes:

#### Malfunctioning or improperly installed heating

**systems:** Heating systems, such as furnaces, boilers, and water heaters, can generate carbon monoxide if they are not functioning properly or if they are not installed correctly. This can occur if there is a blockage in the ventilation system, if the system is not maintained regularly, or if there is a leak in the system.

**Gas stoves or ovens:** Gas stoves or ovens can generate carbon monoxide if they are not functioning properly or if they are not properly ventilated. This can happen if the burners are not adjusted correctly, or if the ventilation hood is not working properly.

**Fireplaces:** Fireplaces can generate carbon monoxide if they are not properly ventilated or if the chimney is blocked. This can occur if the chimney is not cleaned regularly, or if there is a build-up of soot or debris in the chimney.

**Generators:** Portable generators can generate carbon monoxide if they are used indoors or in enclosed spaces. It is important to use generators outdoors and to ensure that they are not placed near open windows or doors.

**Smoking:** Smoking tobacco products indoors can generate carbon monoxide, as well as other harmful chemicals. It is important to smoke outside and to ensure that cigarettes and other tobacco products are properly extinguished.

### How Beanbag Care can help



Beanbag care offers a service called “Assisted Comfort” which address the above issues. Our experienced professional engineer installs a carbon monoxide sensor in the house. When the sensor detects a dangerous level of carbon monoxide, it beeps loudly to warn the residents of the house. Additionally, the service sends an alarm to responders and family members via a mobile app. Assuring both the tenant and family members, this remote carbon monoxide monitoring is especially helpful for tenants who struggle with hearing loss, physical limitations, or cognitive impairment. If the responder or family member misses the alarm, it is escalated to our 24/7 call centre.

The service also provides simple and easy to use one touch controls to manage the heating within the home and a mobile app to control the heating outside of the home. It also provides humidity monitoring and generates alerts if the levels are unsafe for the person.

### References

<https://www.housing.org.uk/globalassets/files/building-safety/letter-from-minister-hughes—update-on-smoke-and-carbonmonoxide-alarm-reg-changes-11-may-2022.pdf>

<https://www.gov.uk/government/publications/smoke-and-carbon-monoxide-alarms-explanatory-booklet-for-landlords/the-smoke-and-carbon-monoxide-alarm-england-regulations-2015-qa-booklet-for-the-private-rented-sector-landlords-and-tenants>

<https://www.nhs.uk/conditions/carbon-monoxide-poisoning/>