

CO-Gas Safety Unintentional Carbon Monoxide Poisoning Case Study

GARY DENLEY, Survived in 2016



Age: 59

Fuel: Wood

Appliance & Location: Self-installed woodburning stove at home

Notes by CO-Gas Safety: This case study was published in our 2018 press pack. The stove was installed to all the correct standards and caused no problems for the first season of use. It was only after a later modification to the chimney top that a CO alarm thankfully alerted this household to a potentially lethal problem.

I am a draughtsman that works within the construction industry. In 2015 I decided to install a woodburning stove and purchased all the items and installed this myself, with a submission to Building Control to cover the latest regulations in terms of design and construction. The system consisted of a Woodwarm Stove and a Selkirk Chimney system.

After a season of use we experienced issues with young starlings repeatedly entering the chimney via the rain cap openings. I spent several sessions researching if a bird-proof rain cap was available for the chimney installed but to no avail. So I took matters into my own hands and purchased some stainless steel mesh to surround the cowl openings, but the only mesh available had small openings (10mm). This stopped the birds but it also created soot deposits around the mesh.

This small size may well have not become a problem had I not begun to load the stove up last thing at night and close the air supply right down to “keep the stove in” for longer. I didn’t realise that this is very polluting and can deposit large amounts of solid “tar” in the chimney or guard on top.

An alarm thankfully saved tragedy

After a few weeks this tar blocked the chimney mesh. My wife woke me about 6.00 a.m. one morning, having visited the loo, and told me the carbon monoxide (CO) alarm was going off. I investigated, read the information on the back of the alarm, opened the windows and closed the door between that room and the rest of the house and went back to bed. I did not see any physical smoke or notice any smell when I first went in to the room.

After a visit from my regular chimney sweep and discussing the event we later learned that the Guild of Master Sweeps always advise no smaller than 25mm / 1 inch square. I found out during the sweep’s visit that in closing the stove air right down, I had effectively driven off all the volatile fuel gasses, leaving just the “fixed carbon” or charcoal. Apparently wood is made up of two very different fuels which burn in different ways and have different requirements for proper combustion. The charcoal that was left was burning (glowing really) at whatever rate the available oxygen allowed it to. Charcoal gives off no smoke or smell when burning (it’s the unburned volatile gasses that give wood smoke it’s very distinctive smell).-Charcoal does, however, give off loads of CO.

Had there been no alarm it could all have been very different. This story is significant because apart from the mesh, the system was perfect.

Gary Denley

CO-Gas Safety comment

CO-Gas Safety have written to the stove manufacturers to alert them to this incident and asked them to specify mesh or, even better, provide it with the stove. It would also be helpful for all manufacturers to explain in their instructions why specifications like this are important.