

**Extracts from
The United Kingdom
Merchant Shipping
(Accident Reporting and
Investigation) Regulations
2012**

Regulation 5:

“The sole objective of a safety investigation into an accident under these Regulations shall be the prevention of future accidents through the ascertainment of its causes and circumstances. It shall not be the purpose of such an investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame.”

Regulation 16(1):

“The Chief Inspector may at any time make recommendations as to how future accidents may be prevented.”

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NOTE

This bulletin is not written with litigation in mind and, pursuant to Regulation 14(14) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2012, shall be inadmissible in any judicial proceedings whose purpose, or one of whose purposes is to attribute or apportion liability or blame.

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Carbon monoxide poisoning on board the Doral 250 SE motor cruiser *Love for Lydia* at Wroxham on the Norfolk Broads resulting in two fatalities between 6 and 9 June 2016



Figure 1: Boat alongside a marina following the accident (canopy as found)

MAIB SAFETY BULLETIN 2/2016

This document, containing safety lessons, has been produced for marine safety purposes only, on the basis of information available to date.

The *Merchant Shipping (Accident Reporting and Investigation) Regulations 2012* provide for the Chief Inspector of Marine Accidents to make recommendations at any time during the course of an investigation if, in his opinion, it is necessary or desirable to do so.

The Marine Accident Investigation Branch is carrying out an investigation into an accident that occurred on board a Doral 250 SE motor cruiser. Two people and their dog died when they suffered carbon monoxide poisoning.

The MAIB will publish a full report on completion of the investigation.



Steve Clinch
Chief Inspector of Marine Accidents

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BACKGROUND

A summer holiday on the Norfolk Broads on board a 15-year-old Doral 250 SE ended tragically when a couple and their dog were killed by carbon monoxide. At the time of the accident the boat was moored at a quiet river island location.

INITIAL FINDINGS

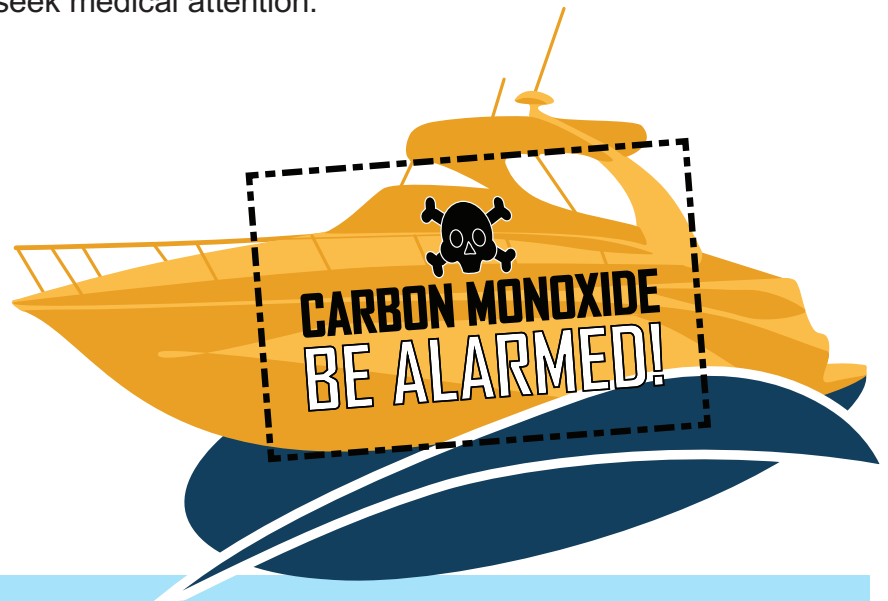
The motor cruiser's 5.7 litre petrol-driven inboard engine had been left running at 3000rpm while it was moored alongside, probably to charge the batteries. A slight wind blowing from the stern caused exhaust gas emitting from below the aft transom to enter the canopy covering the aft deck (**Figure 1**) from where it spread down into the accommodation area forward. During in-situ tests with the engine running the concentration of carbon monoxide from the wet exhaust (**Figure 2**), reached high levels in the accommodation in less than 3 minutes. The accommodation area was not ventilated and the couple and their dog were overcome. No carbon monoxide alarms were fitted.



Figure 2: Wet exhaust at boat's stern

SAFETY LESSONS

1. Carbon monoxide is a by-product of combustion appliances fuelled by oils, solid fuel or gas. It has no smell, no taste, is colourless and is extremely difficult for human senses to detect. Therefore, it is essential that carbon monoxide alarms are fitted in areas where carbon monoxide could accumulate and pose a risk to health (such as the accommodation areas of motor cruisers). When selecting a carbon monoxide alarm, preference should be given to those marked as meeting safety standard EN 50291-2:2010, which are intended for use in a marine environment. It is essential to fit alarms following the manufacturer's guidance, to test them routinely using the test button and not to ignore them.
2. The use of canopies can potentially increase the risk of poisoning, even when a boat is making way. Although external engine exhaust outlets discharge exhaust fumes into the open, the wind, aerodynamic effects and the proximity of nearby structures frequently result in the fumes entering the boat. Ensure that all spaces, including those under a canopy or an awning are always well ventilated. Never ignore the smell of exhaust fumes in any enclosed space.
3. Carbon monoxide is a silent killer. Its symptoms can be similar to colds, flu or hangovers; headaches, dizziness, nausea, vomiting, tiredness, confusion, stomach pain and shortness of breath are warning signs of its presence. If carbon monoxide poisoning is suspected, stop the source, get to the open air and seek medical attention.



Further advice on how to avoid carbon monoxide poisoning on boats, and more detail about carbon monoxide alarms, produced by the Boat Safety Scheme (BSS) and the Council of Gas Detection and Environmental Monitoring (CoGDEM), can be found at:

[http://www.boatsafetyscheme.org/stay-safe/carbon-monoxide-\(co\)](http://www.boatsafetyscheme.org/stay-safe/carbon-monoxide-(co))