

Carbon monoxide poisoning: lest we forget

With reference to the paper by Lippman, et al. 'Compressed gas diving fatalities in Australian water 2014–2018'.¹

Of the 42 deaths reported three were due to immersion pulmonary oedema (IPO) and three to carbon monoxide poisoning (COP). It is acknowledged that both conditions often go unrecognised.²⁻⁴

A lot of attention is currently, rightly being directed at IPO with COP often forgotten so these data are a good reminder.

The deepest dive in this series was to 39 metres sea water. The risk of COP increases with depth where even very small amounts of carbon monoxide (CO) contamination can cause toxicity.

Admittedly in the current report, two of the three COP deaths relate to surface-supplied breathing apparatus (SSBA) that is recognised to have a higher risk of COP. Nonetheless, gas cylinders analysis was rather alarming. Of the 20 cases reported, the results indicated 25% did not meet accepted air purity standards. With elevated water vapour and potentially lethal levels of CO and CO₂ being other contaminants identified.¹

The Divers Alert Network (DAN) has published a safe standard for CO as less than 5 ppm for routine dives and advocated that levels should be lower for deep technical diving.⁵ Producing nitrox by either gas separation or pressure swing absorption has the potential to concentrate any CO present in the original air into the final nitrox gas mix.⁵

Additionally, it is less well known, CO can be produced within a compressor as a result of the breakdown of the lubricant oil caused by heat (chemical decomposition or pyrolysis) this may occur when the system is hot but not necessarily overheating and it may be short term and thus missed by periodic examination of the gas sample.⁶

We agree with the authors that CO alarms are important and that meticulous quality control in gas supplies is vital to avoid contamination.

Portable handheld CO detectors are especially helpful particularly for deep technical dives as many dive sites and cylinder refills are in remote locations.

References

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