

What do pilots need to know about carbon monoxide (CO)? A colorless, odorless gas, CO is produced by incomplete combustion and can seriously impair a pilot without obvious symptoms. A few simple precautions can minimize the dangers from CO: carefully maintain heaters and exhaust systems, look for exhaust leaks during preflight, precisely lean the mixture, and remain alert for hints of CO poisoning during flight.

As an extra safeguard, pilots can opt for CO detectors in their aircraft. Some even have digital displays, and alarm audibly and visually at a preset level. If CO is detected, the pilot can turn off the heater, open the fresh air vents, use oxygen if available, and land as soon as practical.

All important safety steps, but there's more to know about CO. Some examples:

- CO can get into the cockpit even if the exhaust is tight. It comes through the floorboards and past door seals. Low airspeed, high angle of attack and full rich mixture can lead to high CO levels.
- Digital CO detectors marketed to aviators read zero at levels as high as 30 parts per million (ppm), and/or don't alarm until fairly high levels (greater than 70 ppm) persist for a period of time. Designed to standards intended to prevent false alarms in homes, this makes them much less useful in the cockpit. Industrial quality monitors, with better resolution and settable alarms, are available.
- The effects of CO are cumulative over time and increase with altitude. Chronic exposure to even low CO levels can cause health problems, so pilots who often fly several hours per day are at greater risk.

Now a few questions to ponder: If you are flying without CO detection, how can you be sure there is no CO in your cockpit? Even if you reliably know the CO level, how much is acceptable? How much is too much?