

# Carbon Monoxide: The Silent Killer

**All RVers need to be aware of the potential health risks posed  
by this by-product of combustion**

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“Each year, between 5,000 and 10,000 people die from carbon monoxide (CO) poisoning, and over 200,000 people suffer heart attacks caused by chronic CO poisoning. In addition, it is estimated that nearly 25 million people suffer some CO-induced illnesses that are misdiagnosed as flu, food poisoning, angina, or other illnesses...”

Thus reads a press advisory issued by the Carbon Monoxide Safety and Health Association International (COSHA) on April 21, 1989. Even if one allows for the possibility of favorable biasing of statistics, these facts are alarming.

The following statistics were included in a Department of Transportation (DOT) study made available by the New Jersey Health Department:

- The interiors of 7.2 percent of all school buses tested had average CO levels above 20 parts per million (ppm).
- In 22.6 percent of ambulances tested, the CO levels within the patient breathing zones measured 10 to 35 ppm in excess of background levels. In addition, two percent had CO levels of 35 to 50 ppm, and two percent had levels in excess of 50 ppm.

An Environmental Protection Agency (EPA) study involving a test fleet of buses, taxis, and police cars indicated that in 50 percent of 132 vehicle trips, the carbon monoxide levels in the interiors of these vehicles exceeded the National Ambient Air Quality Standard (NAAQS) of nine ppm in an eight-hour period. In addition,

the study showed that in five percent of 132 vehicle trips, the carbon monoxide levels exceeded 50 ppm within an eight-hour period, which is the Occupational Safety and Health Administration (OSHA) standard.

In citing these statistics, we hope to make FMCA members aware of the potential risks of carbon monoxide poisoning. Most of us are familiar with the health risks posed by allowing a gasoline engine to run inside a closed garage, thus filling it with deadly levels of carbon monoxide. However, many of us are not aware of

As if we needed more convincing, the last time we crossed the Mississippi near St. Louis, river folk there were mourning the loss of a well-known and well-loved riverboater and his wife, who had succumbed to carbon monoxide poisoning aboard their luxury boat. The television report that we watched noted that the boat lacked the one item that could have saved the couple – a carbon monoxide detector. Since this tragedy involved a rather well-to-do couple, the absence of the device likely had little to do with cost and everything to do with lack of un-

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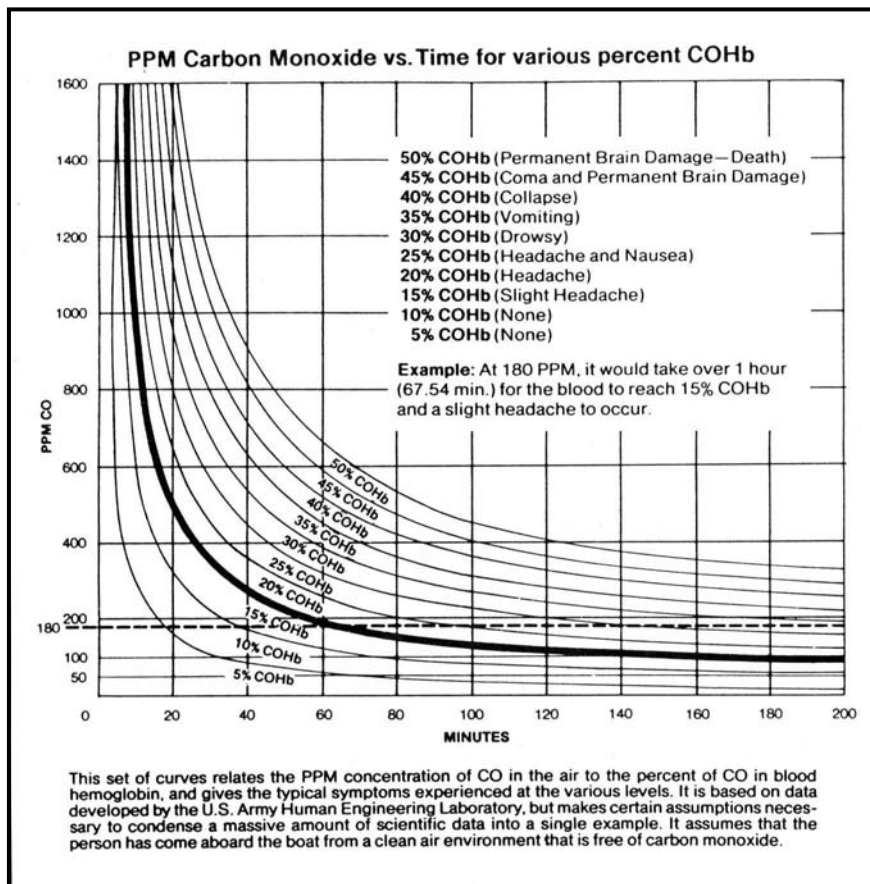
the increased risk of heart attack or the misdiagnosed flu-like sickness caused by chronic low-level exposure to carbon monoxide.

Our carbon monoxide monitor once indicated low levels of the gas within the coach after we had run the generator for only 15 minutes. After we changed the coach's position relative to the wind direction, the carbon monoxide level dropped to normal. This situation convinced us that a quality carbon monoxide detector should be required equipment in motorhomes. In fact, such a detector is just as important as a smoke detector.

der standing regarding the importance of such monitors.

Carbon monoxide is a colorless, tasteless, odorless gas that is produced as a result of the incomplete combustion of hydrocarbons. Among the common sources of carbon monoxide are gasoline engines and, to a lesser degree, diesel engines and propane appliances. Carbon monoxide is present any time combustion occurs. Basically, carbon monoxide has an affinity for the oxygen-carrying red blood cell and thus displaces oxygen in the blood.

The symptoms of carbon monoxide



poisoning include headache, weakness, drowsiness, decreased tolerance to exercise, visual disturbances heart palpitations, nausea, and vomiting. If repeated exposure to low levels of carbon monoxide is not recognized, these symptoms —often misdiagnosed as influenza — may be chronic or recurrent. It should be noted that individuals with known heart disease, lung disease, or geriatric syndromes should be especially aware of the dangers posed by carbon monoxide, as they are less tolerant of decreased oxygen states. Acute exposure to high levels of carbon monoxide can cause a rapid progression to severe poisoning, in which case the symptoms are not apparent to the victim. The signs of acute toxicity are rapid heart and respiratory rates, irregular heart rhythms, vomiting, disorientation, low blood pressure, convulsions, respiratory failure, and coma.

A few items to consider when purchasing a carbon monoxide detector. Purchase a detector that specifically monitors the presence of carbon monoxide, rather than a universal detector

that measures carbon monoxide, smoke, and propane.

Mount the detector at bed level or five feet from the floor.

Strongly consider the purchase of a unit that detects low-level chronic exposure.

Do not purchase the unit solely on the basis of price.

If you currently have a carbon monoxide detector in your coach that goes off frequently when you are cooking, baking, or using hair spray, do not turn it off simply to avoid the aggravation. Instead, you may wish to consider upgrading to a meter that will not be triggered by such false alarms

Tips to avoid carbon monoxide poisoning.

1. Consider the use of a latching relay that will automatically turn off generators and propane-burning appliances and/or turn on ventilation fans in the coach should the carbon monoxide within the coach exceed acceptable levels. This could easily be accomplished by wiring controls into the propane system. Such a setup is especially important if unsupervised pets

or elderly individuals are to be left in the coach with the generator running and the air-conditioning units in operation. Roof air conditioners continuously cycle the air inside the coach over an evaporator. While this is a very effective method for cooling air, it does not allow fresh air to enter the coach; thus, contaminants that might otherwise be exhausted, such as carbon monoxide, remain in the air.

2. Do not sleep with the generator operating.

3. Inspect the coach and generator exhaust systems on a periodic basis for cracks, leaks, or distortions. Immediately correct any abnormal conditions. Make sure that all exhaust systems exit beyond the coach and not directly underneath it. Add extensions if needed.

4. Consider the construction of a 90-degree adapter and extensions to exit generator exhaust above the roofline of the coach.

5. Inspect coach heating system(s) to insure that the exhaust system is sealed off from the coach interior. Periodically remove the intake/exhaust cover(s) on the side of the coach and inspect the exhaust system to insure that it is sending the exhaust outside the coach.

6. Yellow flames in propane-burning appliances such as coach heaters, stoves, ovens, and water heaters usually indicate a lack of oxygen. Determine what is causing this condition and correct it immediately.

7. Inspect window and door seals and weather strips to insure that they are sealing properly.

8. Leave a roof vent open at night, even during the winter.

9. Keep in mind that shifting winds can cause exhaust to blow away from the coach one moment and under the coach the next.

10. When stopping for long periods of time, be aware of other vehicles around you, such as tractor trailers at rest stops that have their engines or refrigerators running.

11. Above all, if you are inside your coach and find that you aren't feeling well, step outside for some fresh air immediately.

*Note: For additional tips with regard to preventing carbon monoxide poisoning, see the accompanying article by Robert Burdick. –*