



# Tulsa Fire Department

Protecting Community Life, Health, Property and the Environment  
By Delivering Quality Life and Fire Safety Services.

## Community Relations ~ Public Education Branch

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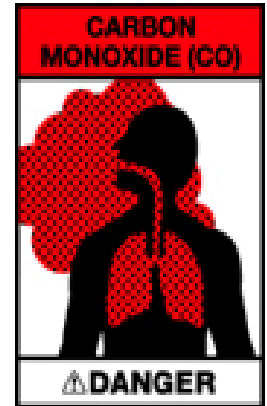
## Boating and Carbon Monoxide

Each year in America, unintentional carbon monoxide (CO) poisoning claims more than 500 lives and sends another 15,200 people to hospital emergency rooms for treatment.

### Carbon monoxide (CO) can harm and even kill you inside or outside your boat!

Did you also know:

- \* CO symptoms are similar to seasickness or alcohol intoxication?
- \* CO can affect you whether you're underway, moored, or anchored?
- \* You cannot see, smell, or taste CO?
- \* CO can make you sick in seconds. In high enough concentrations, even a few breaths can be fatal?



### Most important of all, did you know carbon monoxide poisonings are preventable?

Every boater should be aware of the risks associated with carbon monoxide - what it is; where it may accumulate; and the symptoms of CO poisoning. To protect yourself, your passengers, and those around you, learn all you can about CO.

### Dangers of Carbon Monoxide

The must-know facts about carbon monoxide. If you don't recognize the symptoms of CO poisoning, you may not receive the medical attention you need.

**Carbon monoxide is an odorless, colorless and toxic gas.** Because it is impossible to see, taste or smell the toxic fumes, CO can kill you before you are aware it is in your home. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure.

**Who is at risk?** Everyone is at risk for CO poisoning. Medical experts believe that unborn babies, infants, children, senior citizens and people with heart or lung problems are at even greater risk for Carbon Monoxide poisoning.

### How to Protect Others & Yourself.

CO poisoning is preventable. Here are specific steps you can take to help prevent carbon monoxide from harming you, your passengers, or fellow boaters.

**Buy and Install Carbon Monoxide Detectors!** What if it goes off? If no one is feeling ill: 1. Silence the alarm. 2. Turn off the boat motor, and all appliances and sources of combustion (i.e. generators, propane cookers, charcoal grills, furnace and fireplace). 3. Ventilate the boat or house with fresh air by opening doors and windows. 4. Call a qualified professional to investigate the source of the possible CO buildup.

### Understand Where Carbon Monoxide May Accumulate.

You're not just at risk inside a boat. Knowing all the possible places where CO may accumulate could save your life.

**See the backside of this of this sheet for a Boat Check List, and to see where Carbon Monoxide can build up in and around your boat.**

# Where Carbon Monoxide May Accumulate

Carbon monoxide can accumulate **anywhere in or around your boat.**

## How can it accumulate?



Inadequately ventilated canvas enclosures.



Exhaust gas trapped in enclosed places.



Blocked exhaust outlets.



Another vessel's exhaust.  
CO from the boat docked next to you can be just as deadly.



"Station wagon effect" or back drafting.



At slow speeds, while idling, or stopped. Be aware that CO can remain in or around your boat at dangerous levels even if your engine or the other boat's engine is no longer running!

## A checklist for every trip, plus a monthly and annual checklist.

### Each Time You Go On a Boat Trip

- \* Make sure you know where CO exhaust outlets are located on your vessel.
- \* Educate all passengers about the symptoms of CO poisoning and where CO may accumulate.
- \* When docked, or rafted with another boat, be aware of exhaust emissions from the other boat.
- \* Confirm that water flows from the exhaust outlet when the engines and generator are started.
- \* Listen for any change in exhaust sound, which could indicate an exhaust component failure.
- \* Test the operation of each CO alarm by pressing the test button.

Print and use these checklists, and do not operate your boat without doing the following:

### Once a Month

- \* Make sure all exhaust clamps are in place and secure.
- \* Look for exhaust leaking from exhaust system components. Signs include rust and/or black streaking, water leaks, or corroded or cracked fittings.
- \* Inspect rubber exhaust hoses for burned, cracked, or deteriorated sections. All rubber hoses should be pliable and free of kinks.

### Once a Year

Have a qualified marine technician:

- \* Replace exhaust hoses if cracking, charring, or deterioration is found.
- \* Ensure that your engines and generators are properly tuned, and well maintained.
- \* Inspect each water pump impeller and the water pump housing. Replace if worn. Make sure cooling systems are in working condition.
- \* Inspect all metallic exhaust components for cracking, rusting, leaking, or loosening. Make sure they check the cylinder head, exhaust manifold, water injection elbow, and the threaded adapter nipple between the manifold and the elbow.
- \* Clean, inspect, and confirm proper operation of the generator cooling water anti-siphon valve (if equipped).