

SOPHIA'S LAW

Nations Toughest Carbon Monoxide Law:
Educating Boaters and Changing an Industry

What is carbon monoxide?

- A deadly colorless and odorless gas

A person can be rendered unconscious:

- Fall off the boat and die
- While sleeping and die
- While swimming and die

A person can be injured and survive

Carbon monoxide can accumulate:

- At the stern
- Under and around a swim platform
- Backdrafting into the vessel especially if partially or fully enclosed
- Within 20 feet of the stern
- Where there is not positive airflow
- Anywhere in or around your boat

How Carbon monoxide affects people:

- Headache, Nausea, Dizziness, Weakness
- Similar to seasickness or intoxication

Carbon Monoxide
Symptoms



Headache



Nausea

Dizziness



Weakness



Dr. Christopher Logue of Director of Hennepin Co. Medical Center Hyperbaric Chamber notes:

- CO poisoning is a leading cause of poisoning in the world
- UL2034 allows low level exposure to occur for significant amounts of time before alarming
- Precious minutes of ability to take action are lost
- At risk populations (children, elderly and people with underlying medical conditions) could go unconscious at the 10% HbCO level

How Sophia's Law was Created

Following the tragic death of 7 year old Sophia, Senator Franzen, Representative Hertaus and Sophia's parents:

- Researched California Law,
- Consulted with MNDNR, ABYC and NMMA
- Developed language and key supporters
- [Dr. Courtney Baechler's Testimony](#)

What are the Requirements?

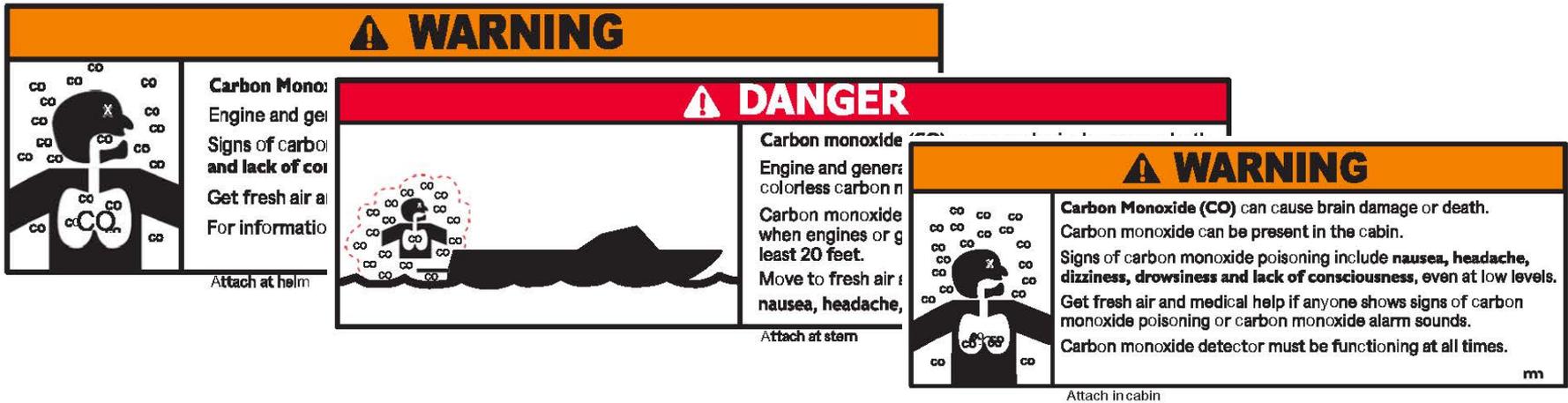
CO detectors required in motorboats with an enclosed accommodation compartment:

- Galley with a sink
- Head
- Sleeping accommodation

Required in main compartment and each sleeping accommodation

What are the Requirements?

Three warning labels required for gasoline powered motorboats with any enclosed space



Law includes border waters, out of state boats and documented boats

What are the Requirements?

- No new motorboat with an enclosed accommodation compartment may be sold without a new functioning marine CO detection system

Penalty: first violation is a warning, second violation is a petty misdemeanor

What are the Requirements?

- Information campaign: mail and make available CO info. and stickers, include info. with boater education, remind at license renewal for nine years

Carbon Monoxide Law for Boaters

New law designed to save lives

What is the law?
A new carbon monoxide (CO) law for Minnesota boaters (Sophia's Law) goes into effect May 1, 2017.*
The law requires that:

- all motorboats, regardless of fuel type, with an enclosed accommodation compartment be equipped with a functioning marine CO detection system
- all gasoline-powered motorboats with an enclosed occupancy compartment display a total of three CO warning stickers

* see www.mdnr.gov/boatingsafety for updates

What does this mean for my boat?
Carbon monoxide detector and warning sticker requirements depend on whether your boat has an enclosed accommodation compartment, an enclosed occupancy compartment, or no enclosed compartments at all.

On boats with all three of these spaces, a CO detector is required in each of the sleeping quarters and in the main cabin area per the American Boat and Yacht Council A-24 Standard.

A CO detector is not required, but is strongly recommended on boats with an enclosed occupancy compartment. Enclosed occupancy compartment is defined as:

- one contiguous space within the boat that may be occupied by a person.

All gasoline-powered motorboats with an enclosed occupancy compartment must display three CO warning stickers (provided by the DNR).

The CO warning stickers must be placed:

- at the helm (steering station)
- at the aft boarding/stern area
- in or at the entrance to any enclosed compartment

Carbon Monoxide Symptoms

- Headache
- Nausea
- Dizziness
- Weakness

Audience Reached

- Mailing
 - 144,000+ Registered Boats in MN received information brochure & warning stickers
- Deputy Registrars
- Media – [WCCO News](#)
- Department of Public Safety – Joint messaging for CO awareness while in ice fishing houses

Outreach

- Marina Organizations
 - Minnesota
 - Wisconsin
 - Canada
- Boat Show
- Radio Show / Podcast



The screenshot shows a news article from KARE 11. At the top, there is a navigation bar with a 'MENU' icon, the 'KARE 11' logo, and a weather icon showing a sun and clouds with '75°'. Below the navigation bar are social media icons for Twitter and Facebook. The main image is a man in a checkered shirt standing on a boat deck, with a boat in the background. A caption below the image reads: 'THE GENERATOR AT NIGHT. LASTLY, HE SAYS IT IS'. Below the image, the word 'NEWS' is written in a small font. The main headline is 'HOW TO AVOID CO POISONING IN BOATS'. The text below the headline reads: 'After another boating death from carbon monoxide poisoning, a boat salesman explains how carbon monoxide poisoning can happen in a boat, and how to avoid it.'

What Did We Learn?

- Marine CO detectors not Home CO Detectors
- Marine CO detectors alarm at 70ppm after 60-240 minutes, 400ppm at 4-15 minutes
- Above EPA and World Health standards
- People sensitive to lower levels of CO not well protected – elderly, children and sick
- Need to supplement with low level detectors

What Did We Learn?

- Early CO detectors with no end of life warning are still in boats
- Hard-wired detectors may be improperly wired or switched – 2017 fatality
- Retrofitting with hard wired detectors is expensive
- MN law led manufacturers to develop battery powered marine CO detectors

Benefits of Battery Powered Marine CO Detectors?

- Lifetime lithium battery
- Battery can't be removed
- Unit can't be turned off
- Seven year sensor/detector life

Awareness

Public needs to know carbon monoxide poisoning is possible in many ways

- Station wagon effect on all motorboat types
- Build up in partially or fully enclosed cabin
- CO at and around the stern and swim platform
- Tow tubes at least 20 feet away
- CO from an adjacent moored motorboat

Awareness

Public needs to know how to avoid carbon monoxide poisoning

- Regularly inspect and professionally maintain engine and exhaust
- Maintain positive airflow
- Keep off rear deck of boat
- Listen for changes in exhaust sound
- Tow tubes at least 20 feet away
- Replace Marine CO detectors over five years old
- Supplement with Low Level CO monitors

Partnerships

- ABYC
- NMMA
- Marinas
- Hennepin County Medical Center
- Detector Manufacturers
- Dealers/Rental Companies
- U.S. Coast Guard Auxiliary
- U.S. Power Squadron

Obstacles / Concerns

- Short timeframe vs. battery powered detectors not yet available
- Boat and Water Safety outreach staff vacancy
- Why not make home and low level detectors acceptable alternates?
- Marine CO detector cost
- Multiple detectors required on many boats
- Law references ABYC standard A-24 which is not readily available to the public

Obstacles / Concerns

- Government Overreach – to many rules
- Privacy Concerns – inspect inside boats?
- What penalty? Penalty vs. availability
- Sticker design, size, colors & quantity
- Do not want stickers on boat - especially on antique wooden boats

Gaps

- Low level CO detection
- Diesel boats with generators or stoves
- Motorboats with one or two occupancy spaces
- Some marinas did not want to assume liability of installing hard wired detectors

Q&A

Thanks for your attention, discussion and any recommended improvements.

We look forward to assisting other states or national interests who are interested in implementing similar regulations.

We received an inquiry at the national level