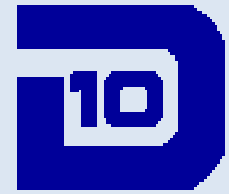




United States Power Squadrons®

Come for the Boating Education...Stay for the FriendsSM



"Fine Tune
the Course"

Impact of Sophia's Law on Recreational Vessels and Vessel Safety Checks

May, 2018



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The Carbon Monoxide Danger

One typical boat engine = ??? automobiles

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Calculations by Paul Roberts, Sonoma Technology Inc., Petaluma, CA





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Sophia's Law – CO Detectors

REQUIRED EQUIPMENT CARBON MONOXIDE DETECTOR

A new carbon monoxide (CO) law, Sophia's Law, requires that all motorboats, including sailboats with motors, with enclosed compartments be equipped with a functioning marine CO detector system and/or display three CO poisoning warning stickers by May 1, 2018.

Full details and requirements can be found at mndnr.gov/boatingsafety.

LIFE JACKETS

The following are life jacket requirements in Minnesota:

- State law requires children under 10 years old to wear a properly fitted life jacket while a boat is underway. Underway means not securely fastened to a permanent mooring or tied to a dock.
- A readily accessible and wearable life jacket is required for each person onboard a boat; this includes canoes, kayaks, stand-up paddleboards, paddleboats and waterfowl boats.
- One Type IV throwable is required on boats 16 feet or longer (except canoes and kayaks) and must be immediately available.
- Personal watercraft operators and passengers must each wear a life jacket.



FOR YOUR SAFETY, WE STRONGLY
RECOMMEND EVERYONE ON BOARD
WEARS A LIFE JACKET AT ALL TIMES.

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REQUIRED EQUIPMENT CARBON MONOXIDE DETECTOR

A new carbon monoxide (CO) law, Sophia's Law, requires that all motorboats, including sailboats with motors, with enclosed compartments be equipped with a functioning marine CO detector system and/or display three CO poisoning warning stickers by May 1, 2018.

Full details and requirements can be found at mndnr.gov/boatingsafety.

Minnesota Boating Guide 2018, Page 15





Minnesota Law – Definitions

Subd. 4a. **Enclosed accommodation compartment.**

"Enclosed accommodation compartment" means one contiguous space surrounded by boat structure that contains all of the following:

- (1) designated sleeping accommodations;
- (2) a galley area with sink; and
- (3) a head compartment.

[*NOTE: an enclosed living space*]

Minnesota Statutes 2017, 86B.005
DEFINITIONS





Minnesota Law – Definitions

Subd. 4b. **Enclosed occupancy compartment.**

"Enclosed occupancy compartment" means one contiguous enclosed space surrounded by boat structure that may be occupied by a person.

[NOTE: not applicable to non-structural enclosures]

***Minnesota Statutes 2016, 86B.005
DEFINITIONS***





Minnesota Law – Definitions

Subd. 8a. **Marine carbon monoxide detection system.** "Marine carbon monoxide detection system" means a device or system that meets the requirements of the American Boat and Yacht Council Standard A-24, July, 2015, for carbon monoxide detection systems.

Minnesota Statutes 2016, 86B.005
DEFINITIONS





Minnesota Law – Definitions

Subd. 9. **Motorboat.** "Motorboat" means a watercraft propelled in any manner by machinery, including watercraft temporarily equipped with detachable motors.

[*NOTE: regardless of fuel type*]

Minnesota Statutes 2016, 86B.005
DEFINITIONS





Sophia's Law – Requirements

Subdivision 1. **Requirements.** (a) No motorboat that has an enclosed accommodation compartment may be operated on any waters of the state unless the motorboat is equipped with a functioning marine carbon monoxide detection system installed according to the manufacturer's instructions.

Minnesota Statutes 2016, 86B.532
CARBON MONOXIDE DETECTION DEVICE REQUIREMENTS





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Sophia's Law – DNR FAQ

Motorboats,
regardless of fuel type, with an
enclosed accommodation compartment
must be equipped with a functioning marine CO
detector system installed according to the
manufacturer's instructions.



www.dnr.state.mn.us/safety/boatwater/sophias-law.html





Sophia's Law – DNR FAQ

What you need to know: Sophia's Law requirements

Per the American Boat and Yacht Council (ABYC) standard A-24 *Carbon Monoxide Detection Systems*, July 2015, detectors must be located to monitor the atmosphere in the main cabin and each sleeping area*.

[**fully enclosed sleeping space*]

www.dnr.state.mn.us/safety/boatwater/sophias-law.html

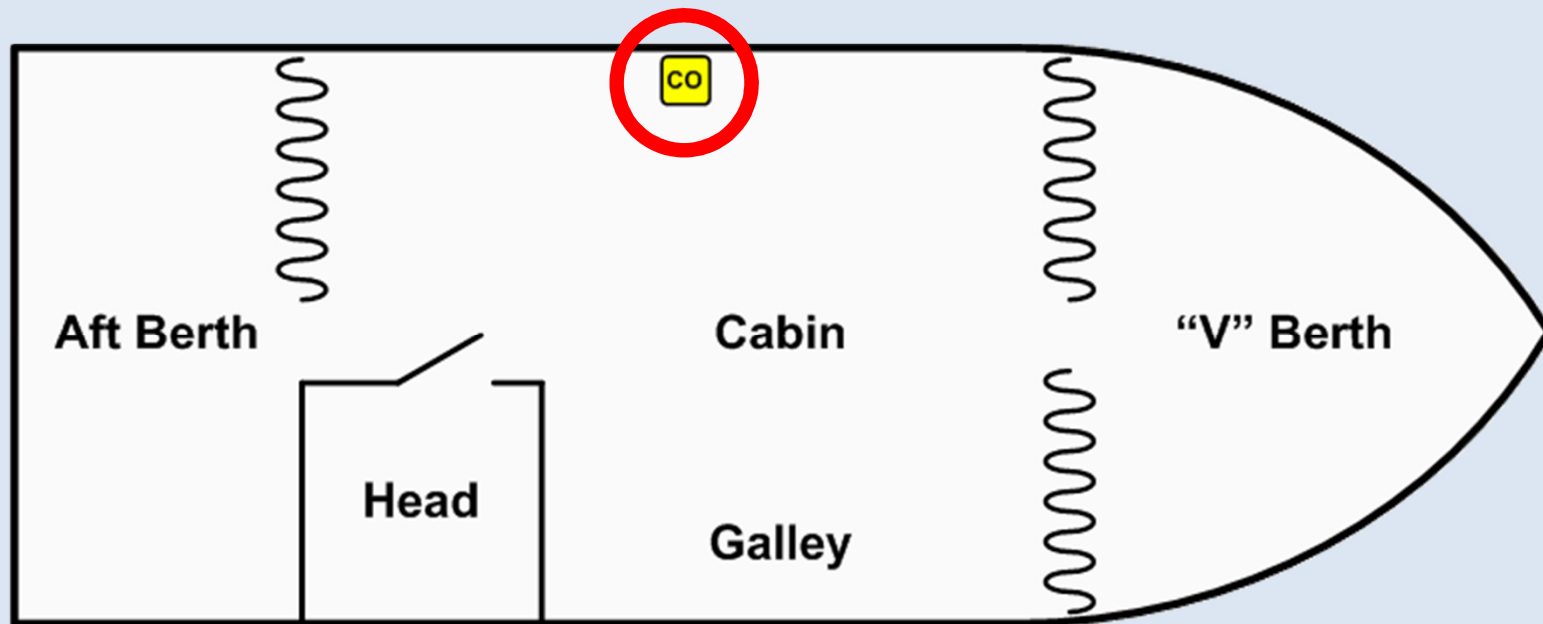




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Sophia's Law – Detector Locations

Enclosed Accommodation Space



No Separate Enclosed Sleeping Spaces

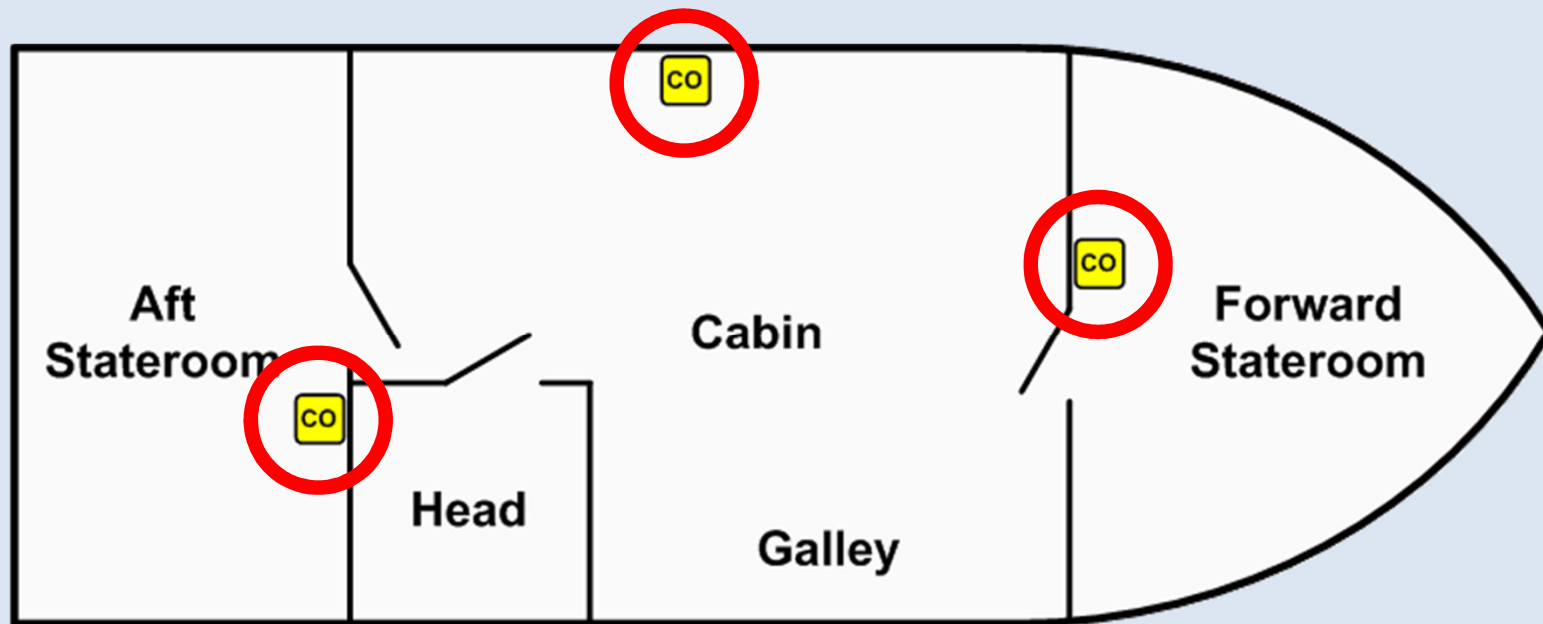




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Sophia's Law – Detector Locations

Enclosed Accommodation Space



Separate Enclosed Sleeping Spaces





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Sophia's Law – Requirements

Subd. 3. **Carbon monoxide poisoning warning labels.** (a) No gasoline-powered motorboat that has an enclosed occupancy compartment may be operated on any waters of the state unless labels warning of carbon monoxide dangers are affixed in the vicinity of the aft reboarding/stern area, the steering station, and in or at the entrance to any enclosed occupancy compartment.

[Note: an accommodation space is an occupancy space]

***Minnesota Statutes 2016, 86B.532
CARBON MONOXIDE DETECTION DEVICE REQUIREMENTS***



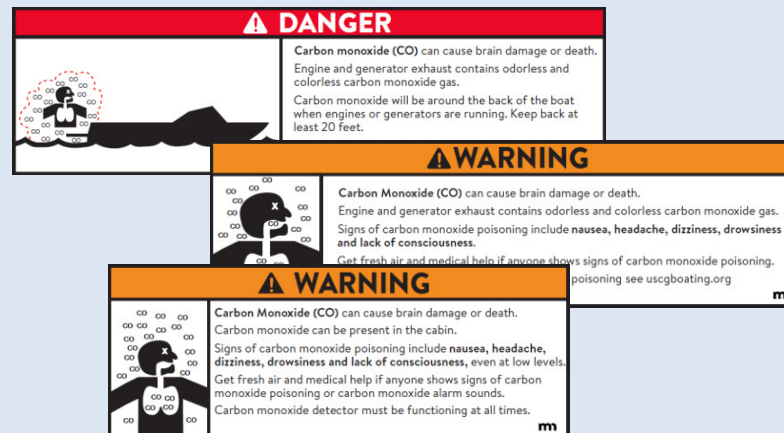


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Sophia's Law – DNR FAQ

All gasoline-powered motorboats with any **enclosed occupancy compartment** must display three CO poisoning warning stickers.

A marine CO detector is not required but is recommended!



www.dnr.state.mn.us/safety/boatwater/sophias-law.html
— MN Statutes 2016 86B.532 —





Sophia's Law – DNR FAQ

Does my motorboat require the three warning stickers?

If you have a gasoline-powered motorboat with any enclosed space surrounded by boat structure intended for a person to enter, you are required to have the three CO warning stickers displayed. The appropriate sticker is to be placed:

1. At the helm (steering station)
2. In or at the entrance to any enclosed occupancy space
3. At the aft boarding/stern area.

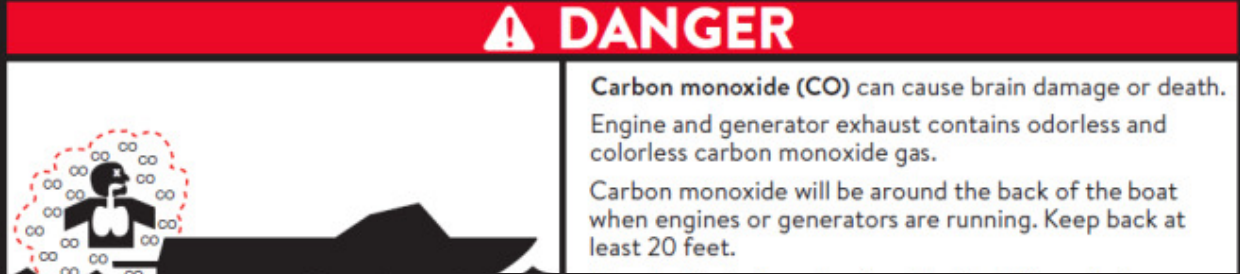
www.dnr.state.mn.us/safety/boatwater/sophias-law.html





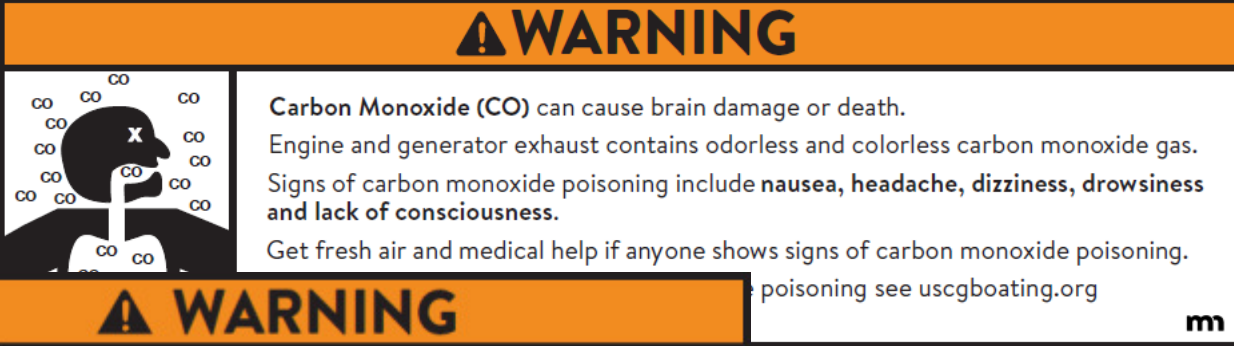
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Sophia's Law – Warning "Stickers"

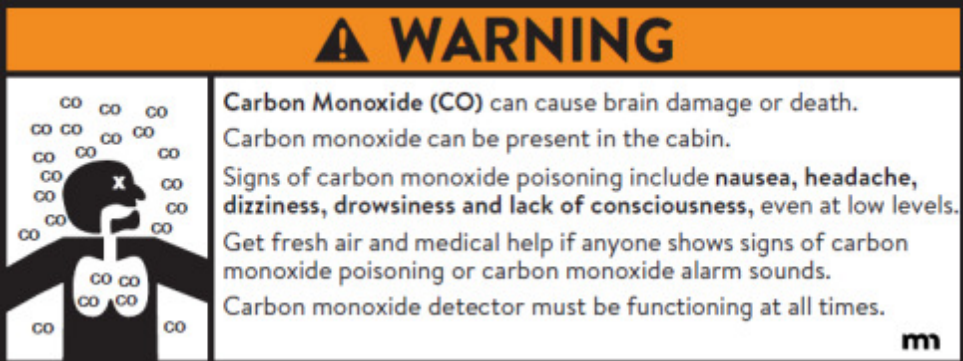


← Stern

Helm →



← Cabin







Sophia's Law – DNR FAQ

Although not required, motorboats with diesel engines are urged to display the stickers warning boaters of the dangers of CO poisoning especially if they also have generators or other fuel burning appliances.

www.dnr.state.mn.us/safety/boatwater/sophias-law.html





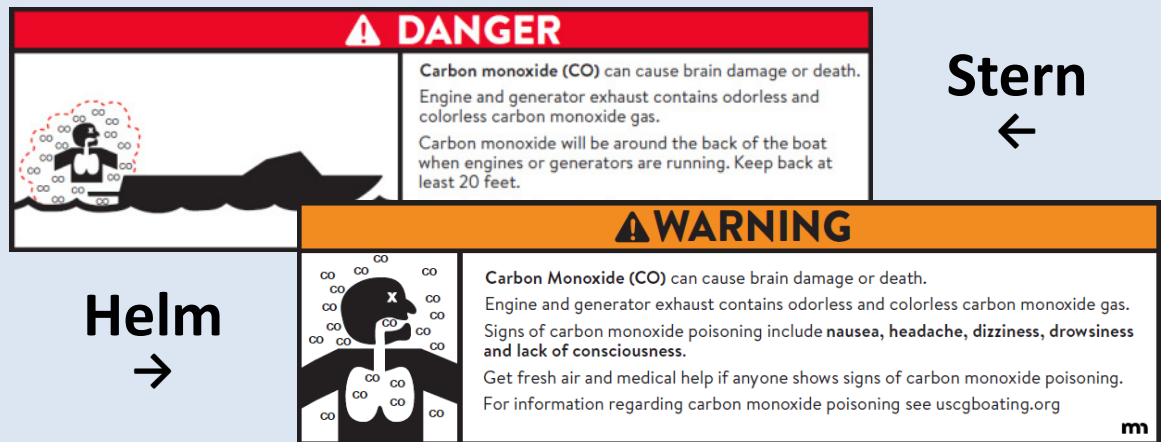
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Sophia's Law – DNR FAQ

My motorboat does not have a fully enclosed space.

What safety steps can I take?

All boaters are encouraged to display CO warning stickers at the steering station [helm] and on the stern even if not required by law.



www.dnr.state.mn.us/safety/boatwater/sophias-law.html





Sophia's Law – DNR FAQ

If your motorboat has a three-sided enclosure or you operate with a canvas enclosure, please install a CO detector and warning stickers for the safety of your passengers and yourself.

*This is a suggestion,
not a requirement.*



www.dnr.state.mn.us/safety/boatwater/sophias-law.html





Sophia's Law – DNR FAQ

If your motorboat has a three-sided enclosure or you operate with a canvas enclosure, please install a CO detector and warning stickers for the safety of your passengers and yourself.



www.dnr.state.mn.us/safety/boatwater/sophias-law.html





Sophia's Law – DNR FAQ

What if I have an out-of-state or documented boat?

The law applies to any motorboat, with the spaces defined herein, operating on Minnesota waters. This includes the Minnesota side of border waters and federal waters within the state.

A motorboat includes sailboats with motors and documented boats.



www.dnr.state.mn.us/safety/boatwater/sophias-law.html





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Sophia's Law – Requirements

- This section, as added by Laws 2016, chapter 189, article 3, section 26, is effective May 1, 2018.
- Updates* must be complete by May 1, 2018 for lawful operation.

** Includes required marine CO detectors and required warning stickers in place.*

**Minnesota Statutes 2016, 86B.532, Note
CARBON MONOXIDE DETECTION DEVICE REQUIREMENTS**





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REVIEW





Sophia's Law – Requirements

Sophia's Law applies to any motorboat,
with the spaces defined herein,
operating on Minnesota waters.

- Minnesota waters includes the Minnesota side of border waters, and federal waters within the state.





Sophia's Law – CO Detectors

Marine carbon monoxide detectors ...

- are required in the main cabin and all enclosed sleeping compartments
- must meet ABYC Standard A-24, July 2015
- must be labeled **UL**, **ETL**, or other nationally recognized testing laboratory
- must be approved for marine use





Sophia's Law – CO Detectors ...

Marine carbon monoxide detectors ...

- must be labeled with a date of manufacture or an expiration date
- must be replaced if older than 5 years
 - Sensors typically have a 5-7 year life span
- may be hard-wired or battery powered as long as listed, labeled, and approved for marine use





Sophia's Law – DNR FAQ

Can I install any CO detector?

No! CO detectors must meet ABYC Standard A-24, July 2015, which means that they will be approved for marine use. Household CO detectors do not meet the requirements of ABYC Standard A-24.

www.dnr.state.mn.us/safety/boatwater/sophias-law.html





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Sophia's Law – CO Detectors

Hardwired marine CO detectors must be wired into the boat's primary power system (the boat's battery system) ahead of any ignition switches or other disconnecting (switching) means.

Wiring to the marine CO detector(s) should be installed and protected in accordance with the requirements of ABYC Standard E-11 "AC and DC Electrical Systems on Boats, July 2015".





Sophia's Law – CO Warning Stickers

CO poisoning warning stickers are required on gasoline-powered boats:

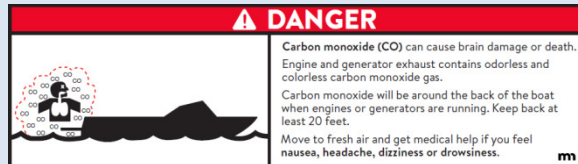
1. At the aft boarding/stern area
(transom on some boats)
2. At the helm (steering station)
3. In or at the entrance to any enclosed occupancy [or accommodation] space



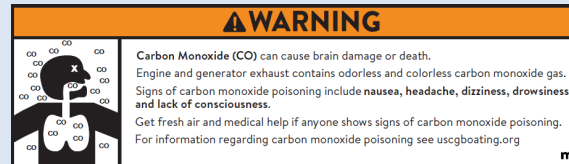


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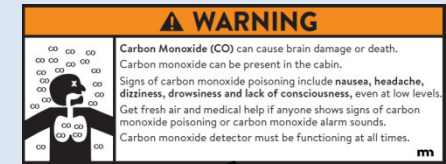
Sophia's Law – CO Warning Stickers



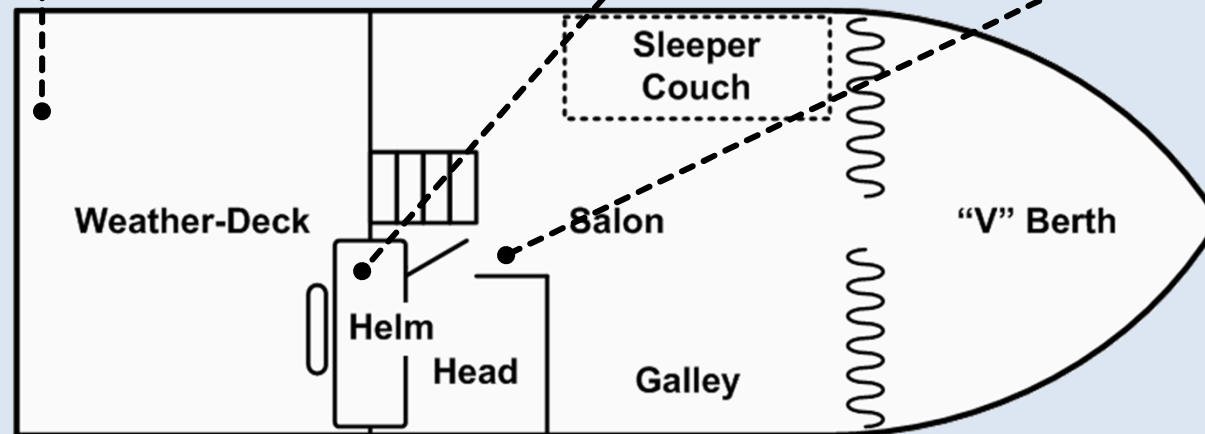
Stern



Helm



Cabin



ABYC TH-22 (7/12) EDUCATIONAL INFORMATION ABOUT CARBON MONOXIDE





Sophia's Law – Violations/Penalties

- The first violation will be a safety warning.
- Additional violations are a petty misdemeanor may be cited.
- DNR will be in "education" mode for 2018 season (as stated by a DNR representative). It is assumed that other law enforcement will be acting similarly.





Sophia's Law – A Final Note

A low level CO detector, in addition to the marine detector(s) required by law, is recommended if occupants include:

- Infants
- Small children
- The elderly
- Pets
- Expectant mothers
- Persons with chronic health issues



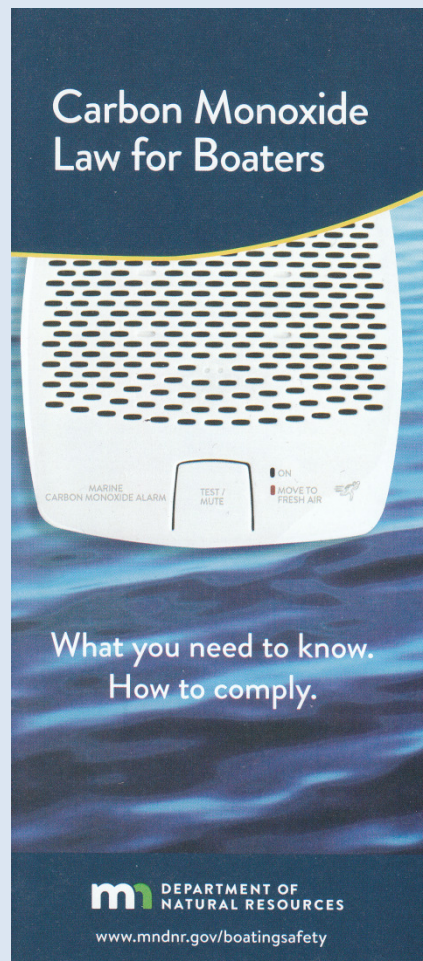
**CO Experts Model 2017R-ULTRA
Low Level C O "Heath" Monitors**





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Sophia's Law – Handouts



Sophia's Law Compliance Checklist

This checklist is intended to assist boat owners in complying with the carbon monoxide warning and detection requirements of Sophia's Law (MN Statutes 2016 - 80B.005 and 80B.835).

STICKERS

- CO warning stickers are securely attached to the vessel at all required locations, including at the
 - Helm
 - Transom
 - Entrance to or within the enclosed occupancy compartment or enclosed accommodation compartment

CO DETECTOR(S)

- CO Detectors must be installed in all enclosed accommodation compartments as required by law
 - In the main cabin
 - In each enclosed sleeping area
- All required CO detectors are listed and marine rated by an approved testing laboratory (UL, ETL, etc.)
- All required CO detectors are less than 5 years old (verify by date of manufacture or by expiration date – *detectors that are more than 5 years old must be replaced*)
- Where line-powered, the CO detector(s) must be wired to function including when all engine ignition switches in the OFF position
- All required CO detectors should be tested after installation is completed, at the beginning of each cruise.

CO DETECTOR INSTALLATION

- Carbon Monoxide detectors should NOT be mounted:
 - within 12 inches of operable portholes, windows, or hatches
 - within 12 inches of corners, doors or dead air spaces
 - within 12 inches of heating or cooling vents, or in drafty spaces
 - within 5 feet of cooking appliances
 - in the vicinity of – or behind – curtains, pillows, etc.
 - in locations where temperature, moisture, and/or ultraviolet light can adversely affect operation
 - Line-powered (hard-wired) CO detectors should be connected directly to the house battery or battery buss and appropriately fused at that point of connection (per ABYC Standard E-11 "AC and DC Electrical Systems on Boats").
 - Always read and follow the manufacturer's installation and operating instruction!
- Note: CO detectors are typically mounted on a wall at or near eye level.

See the DNR web site "Boat & Water Safety, Sophia's Law" for additional information at:
www.dnr.state.mn.us/safety/boatwater/sophias-law.html

By Ed Lethert, Minnetonka Power Squadron

May 7, 2017





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Questions

