



ABYC A-24 July 2020

Equipment Division Standard  
Fire Fighting and Detection Systems  
Project Technical Committee

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## **ABYC A-24**

# **INSTALLATION OF CARBON MONOXIDE DETECTORS AND ALARMS**



### ***Origin and Development***

ABYC first published A-24 in 1992 as *Carbon Monoxide Detection Systems*. Subsequent revisions were published in 1997, 2002, 2007, and 2015. In 2020 the title was changed to *Installation of Carbon Monoxide Detectors and Alarms*. The 2020 update is the work of the Fire Fighting and Detection Systems Project Technical Committee.

### ***Fire Fighting and Detection Project Technical Committee***

*This list represents the membership at the time the committee was balloted.*

Thomas Marhevko, *Chair*

David Marlow, *Vice Chair*

Gregory Davis

Perry DeYoung

Ernest Ellis

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Membership on a committee shall not in and of itself constitute an endorsement of ABYC or any document developed by the committee on which the member serves.

This standard, which is the result of extended and careful consideration of available knowledge and experience on the subject, was developed under procedures accredited as meeting the criteria for American National Standards and is intended to provide minimum performance requirements. The Project Technical Committee that approved the standard was balanced to ensure that individuals from competent and concerned interests have had an opportunity to participate.

ABYC's Project Technical Committee (PTC) meetings are open to the public. All inquiries regarding standards activity, interpretations, or meeting attendance should be directed to the ABYC Technical Department at [comments@abycinc.org](mailto:comments@abycinc.org).

ABYC and its committees do not "approve" or "endorse" any item, construction, or proprietary device.

### ***Request for Interpretations***

Upon written request, the Fire Fighting and Detection Systems PTC will render an interpretation of any requirement of the standard. The request for interpretation should be clear and unambiguous. Requests should be presented to the PTC in a manner in which they may be answered in a "Yes" or "No" fashion.

The committee reserves the right to reconsider any interpretation when or if additional information that might affect it becomes available to the PTC. Persons aggrieved by an interpretation may appeal to the committee for reinterpretation.

### **Summary of Revisions**

*This list indicates revisions to the standard when compared with the previously published version. It is not intended to be used independently of the standard. It should be used for informational purposes and as a guide to the official requirements contained in this standard. It is the responsibility of the user to read and understand the complete standard.*

The main changes in this revision of A-24, *Installation of Carbon Monoxide Detectors and Alarms* as compared with the previous edition dated 7/15, are:

- Title was changed
- Scope and Purpose were combined
- Units of Measure was added
- The document was changed to be an installation only standard

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## **A-24 INSTALLATION OF CARBON MONOXIDE DETECTORS AND ALARMS**

*Based on ABYC's assessment of the existing technology, and the problems associated with achieving the goals of this standard, ABYC recommends compliance with this standard for all boats, associated equipment, and systems manufactured after July 31, 2021.*

### **24.1 SCOPE**

This standard addresses the installation of carbon monoxide detectors and alarms on boats.

### **24.2 UNITS OF MEASURE**

Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate.

### **24.3 REFERENCES**

The following references form a part of this standard. Unless otherwise noted the latest version of referenced standards shall apply.

24.3.1 ABYC - American Boat & Yacht Council, Inc, 613 Third Street, Suite 10, Annapolis, MD 21403. Phone: (410) 990-4460. Fax: (410) 990-4466. Website: [www.abycinc.org](http://www.abycinc.org)

[ABYC E-11, AC & DC Electrical Systems on Boats](#)

[ABYC T-24, Owner/Operator's Manuals](#)

[ABYC TH-22, Educational Information About Carbon Monoxide](#)

[ABYC TH-23, Design, Construction, and Testing of Boats in Consideration of Carbon Monoxide](#)

24.3.2 CFR - Code of Federal Regulations and other government publications. Obtain from the Superintendent of Documents, United States Government Information, PO Box 371954, Pittsburgh, PA 15250-7954. Phone: (202) 512-1800. Fax: (202) 512-2104. Website: [www.ecfr.gov](http://www.ecfr.gov)

29 CFR Part 1917.24 Carbon Monoxide

24.3.3 UL - Underwriters Laboratories, 333 Pfingsten Road, Northbrook, IL 60062-2096. Obtain from Global Engineering Documents, Inc, 15 Inverness Way East, Englewood, CO 80112. Phone: (800) 854-7179 (US and Canada), (303) 397-7956 (outside US and Canada). Fax: (303) 397-2740. Website: [www.ul.com](http://www.ul.com)

UL 2034, *Single and Multiple Station Carbon Monoxide Alarms*

### **24.4 DEFINITIONS**

For the purpose of this standard, the following definitions apply.

24.4.1 Carbon Monoxide (CO) - a colorless, odorless, and tasteless toxic gas that is formed as a product of the incomplete combustion of carbon or a carbon compound and is slightly less dense than air. For the purposes of this standard, the CO level is always expressed in terms of parts per million (PPM) total volume of CO in air.

24.4.2 Carbon Monoxide Detector - an electronic device or system designed to analyze a gaseous mixture of carbon monoxide at the sensing element, and alarm after carbon monoxide reaches an established level.

24.4.3 Enclosed Accommodation Compartment - one contiguous space, surrounded by a permanent structure that contains all the following:

24.4.3.1 designated sleeping accommodations,

24.4.3.2 a galley area with sink, and

24.4.3.3 a head compartment.

*NOTE: Cuddies intended for gear storage and open passenger cockpits, with or without canvas enclosures, are not considered to be enclosed accommodation compartments.*

24.4.4 Independent Laboratory - a laboratory that:

24.4.4.1 is engaged, as a regular part of its business, in performing periodic inspections and tests that are the same as, or similar to, the inspections and qualification tests required for the equipment or material being evaluated;

24.4.4.2 has, or has access to, the apparatus, facilities, personnel, and calibrated instruments that are necessary to inspect and test the equipment or material being evaluated; and

24.4.4.3 is not owned or controlled by the manufacturer, vendor, or supplier of the materials to be tested.

#### 24.5 **GENERAL REQUIREMENTS**

24.5.1 Carbon monoxide detectors shall be tested by an independent laboratory to comply with the requirements of UL 2034, *Single and Multiple Station Carbon Monoxide Alarms*, including the applicable sections pertaining to use on recreational boats.

#### 24.6 **INSTALLATION**

24.6.1 Carbon monoxide detectors shall be installed on all boats with an enclosed accommodation compartment(s).

**NOTES:**

1. *This requirement is not intended to limit the installation of marine carbon monoxide detectors on boats, provided the detector manufacturer's requirements are followed.*
2. *Persons occupying a commercial vessel may need to comply with additional requirements of 29 CFR Part 1917.24.*

24.6.2 A carbon monoxide detector shall be located to monitor the atmosphere in a contiguous cabin space and additionally in each sleeping space separated by solid bulkheads/structure and permanent doors/partitions.

*NOTE: Sleeping spaces separated only by curtains do not need additional carbon monoxide detector(s).*

24.6.3 The carbon monoxide detector shall be mounted and located to avoid areas subject to:

24.6.3.1 physical damage, including harm from rain, water, or sunlight; and

24.6.3.2 dilution of sampled air (e.g., near hatches, ports, or forced ventilation openings); and

24.6.3.3 inadequate natural air circulation (e.g., in corners).

24.6.4 The carbon monoxide detector shall be installed in accordance with [ABYC E-11, AC and DC Electrical Systems on Boats](#).

*EXCEPTION: Carbon monoxide detectors powered by a self-contained battery.*

24.6.5 If a circuit breaker is installed, it shall include a block or other multistep means to prevent it from being inadvertently turned off.

*NOTE: The power source for the carbon monoxide detector is permitted to be the energized side of the battery switch (see [ABYC E-11, AC and DC Electrical Systems on Boats](#)).*

#### 24.7 **INSTRUCTIONS**

24.7.1 Instructions covering the installation and operation shall be provided with each carbon monoxide detector.

24.7.2 The following information shall be included in the instructions:

24.7.2.1 mounting location requirements consistent with the requirements in [A-24.6](#);

24.7.2.2 actions to be taken when the alarm system sounds, wherein the order of action is to evacuate, ventilate, investigate, and take corrective action;

24.7.2.3 the manufacturer's service policy;

24.7.2.4 the manufacturer's recommendation for overcurrent protection, which shall specify the current rating and type of overload protection device in the branch circuit;

24.7.2.4.1 if a fuse is to be used, its current rating shall be permanently marked where it will be visible if the fuse is replaced;

24.7.2.5 the manufacturer's recommendation for operational testing and frequency for such a test;

24.7.2.6 informational material about carbon monoxide as found in [ABYC TH-22, Educational Information About Carbon Monoxide](#); and

24.7.2.7 information on the carbon monoxide detector's ability to sense only the air in the vicinity of the detector's sensing element.

#### 24.8 **MARKINGS**

24.8.1 The following information shall be clearly visible on the carbon monoxide detector as installed:

24.8.1.1 name of independent laboratory,

24.8.1.2 "Marine Carbon Monoxide Alarm" or equivalent, and

24.8.1.3 replace by date or equivalent.

##### **NOTES:**

1. *This information can be provided by the use of "replace by MM/YYYY" or "replace by XX months after the retail sale" as determined by the detector manufacturer.*
2. *These markings are in addition to markings required under UL 2034, Single and Multiple Station Carbon Monoxide Alarms, including the applicable sections pertaining to use on recreational boats.*

#### 24.9 **OWNER'S MANUAL AND COLLATERAL LITERATURE**

24.9.1 Sections of this document require inclusion in an Owner/Operator's Manual (see [A-24.7](#)).

24.9.2 The boat manufacturer shall provide instructions in the operator's manual as to what action should be taken in the event the CO alarm sounds (see [ABYC TH-23, Design, Construction, and Testing of Boats in Consideration of Carbon Monoxide](#) and [ABYC T-24, Owner/Operator's Manuals](#)).

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