



January 17, 2019

Senator Bill Ingebrigtsen, Chair  
Senator David Tomassoni, Ranking Minority Member  
*Environment and Natural Resources Finance Committee*

Senator Carrie Ruud, Chair  
Senator Chris Eaton, Ranking Minority Member  
*Environment and Natural Resources Policy and Legacy Finance Committee*

Representative John Persell, Chair  
Representative Dale Lueck, Republican Lead  
*Environment and Natural Resources Policy Committee*

Representative Rick Hansen, Chair  
Representative Dan Fabian, Republican Lead  
*Environment and Natural Resources Finance Division*

Dear Senators and Representatives:

Please find attached the 2019 Legislative Report from the Minnesota Department of Natural Resources (DNR) on carbon monoxide exposure in fish houses and ice shelters, which fulfills the requirements of Minnesota Session Law 2018, Chapter 183, Section 3.

If you or your staff have questions regarding this report, please contact Col. Rodmen Smith, DNR Enforcement Division director, at (651) 259-5042 or [rodmen.smith@state.mn.us](mailto:rodmen.smith@state.mn.us).

Sincerely,

A handwritten signature in blue ink that reads 'Sara Strommen'.

Sara Strommen  
Commissioner

CC: Committee administrators  
Legislative Reference Library

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## 2019 Legislative Report

Carbon Monoxide Exposure in Fish Houses and Ice Shelters  
As required by Minnesota Law Chapter 183, Sec. 3  
01/15/2019

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## Report to the Minnesota Legislature

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As requested by Minnesota Law, Chapter 183, Section 3, it cost approximately \$2,083.40 to produce this report. This includes staff time for attending meetings, drafting, and reviewing the report and compiling comments and recommendations.

*Upon request, this material will be made available in an alternative format such as large print, Braille or audio recording. Printed on recycled paper.*

### **Chapter 183, sec. 3 Carbon Monoxide Exposure; Fish Houses and Ice Shelters; Report**

The commissioner of natural resources must work with fish house and ice shelter manufacturers and other interested parties to identify best practices to reduce fish house and ice shelter user exposure to carbon monoxide. The commissioner must increase outreach efforts relating to the dangers of carbon monoxide exposure in fish houses and report recommendations to the chairs of the house of representatives and senate committees and divisions with jurisdiction over environment and natural resources policy by January 15, 2019.

## Carbon Monoxide Exposure in Fish Houses and Ice Shelters Report

This report fulfills the requirements of Minnesota Law, Chapter 183, sec. 3 Carbon Monoxide Exposure; Fish Houses and Ice Shelters

*The commissioner of natural resources must work with fish house and ice shelter manufacturers and other interested parties to identify best practices to reduce fish house and ice shelter user exposure to carbon monoxide. The commissioner must increase outreach efforts relating to the dangers of carbon monoxide exposure in fish houses and report recommendations to the chairs of the house of representatives and senate committees and divisions with jurisdiction over environment and natural resources policy by January 15, 2019.*

### Background

Each year in Minnesota, ice recreationalists are exposed to potentially life-threatening carbon monoxide (CO) poisoning while in ice shelters. Ice anglers may not be aware of the symptoms of CO poisoning, may not know what equipment emits CO, or what to do if they suspect exposure to CO.

The Department of Health (MDH) collects and analyzes the statistics of carbon monoxide fatalities in Minnesota. There have been four ice shelter fatalities since 2015 that list carbon monoxide exposure as the cause of death.

### Summary

Our objective is to collaborate with ice shelter manufacturers and other interested parties to identify best practices in the industry to reduce exposure to CO poisoning. During our research, we found the ice shelter industry might elect to follow safety standards set by the Recreational Vehicle Industry Association (RVIA). Currently, there are no requirements as to the installation of CO detectors or warning stickers in ice shelters. Manufacturers of ice shelters list safety as a top priority and would work towards additional safety messaging and materials to their customers.

### Best Practices

There are several ways people can protect themselves from CO poisoning: ventilate ice shelters well and check the ventilation system regularly to ensure it is working properly when occupied; install a functioning CO detector that can function in the extreme conditions appropriate to ice shelters; and know manufacturer safety warnings for portable heaters and other CO-producing devices.

Ice shelter industry leaders, who opt into complying with RVIA standards, are installing Atwood RV carbon monoxide and propane gas detectors *\*photo 1*. This is a 12-volt hardwired detector. These specific models comply with UL Standard 2034 and 1484, with a 7-year lifespan (per the manufacturer). A note from the manufacturer indicates that the user should place the detector no more than 18 inches from the floor being that propane gas is heavier than air *\*photo 2*.

The UL 2034 alarm is intended for use in recreation vehicles, mobile homes and recreational motorboats with enclosed accommodation spaces and is tested to the temperature and

vibrational environmental extremes typical of these types of vehicles.

Warning stickers are placed in new, manufactured ice shelters warning owners of the dangers of CO poisoning \*photo 3. There is also a warning sticker directly above the detector with directions on what to do should the alarm sound \*photo 4.

The National Fire Protection Association (NFPA) 1192 Standard on Recreational Vehicles 2018 edition, chapter 6.3.2 reads, “Carbon Monoxide Alarms: All recreational vehicles shall be equipped with a CO alarm listed and marked on the device as being suitable for use in recreational vehicles under the requirements of ANSI/UL 2034 or CSA 6.19 and installed according to the terms of its listing”.

### Challenges

Many of the new manufactured shelters follow recreational vehicle standards and are equipped with CO detectors, proper ventilation and other safety recommendations. Currently, ice shelters are not required to have a CO detector installed. Some of the challenges are as follows:

- 1) Some manufactured houses are designed for year-round use. CO exposure is not only a concern for ice recreationalists but also for those who use them year-round in all temperatures and conditions.
- 2) Detectors require regular maintenance. Minnesotans endure harsh outdoor elements and temperature extremes that can drain the battery life of a detector. Detectors also have a sensor “end of life” date determined by the manufacturer.
- 3) It is difficult to regulate homemade ice shelters and portable shelters. Portable shelters are most often times collapsible. They are not equipped with any type of CO detector and it would be difficult to mount any type of CO detector. Recreationalists that design and build their shelters may not be educated about the dangers of CO poisoning or know how to design a shelter with proper safety features.
- 4) Most portable propane heaters used to heat portable shelters are approved for outdoor use only and have no safety systems to prevent carbon monoxide poisoning. Outreach efforts will need to focus on the proper use of propane heaters.

### Outreach Efforts

The DNR has been in contact with other interested state agencies (Department of Public Safety, MDH) to coordinate outreach efforts across various public platforms. There have been discussions with interested legislators to collaborate in a Public Service Announcement with affected families. Future plans also include the production of educational materials to be used by the industry (resorts, rentals, manufacturers, general public), as well as the creation of a standard requirement for CO safety in ice shelters.

### DNR Recommendations

Work with manufacturers, stakeholder groups and other interested parties to develop safety standards to identify types of shelters and identify best safety practices for each kind of shelter.

Photo 1

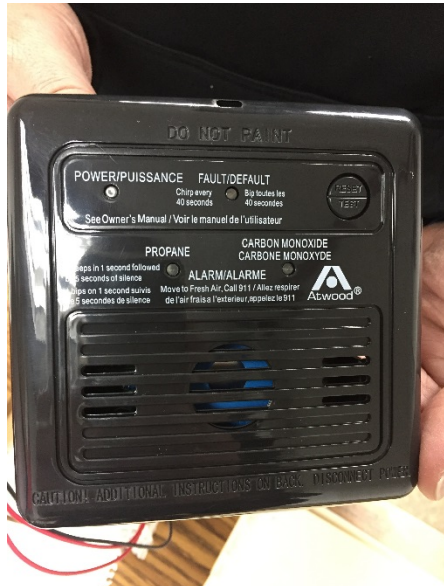


Photo 2



Photo 3



Photo 4





Portable Ice Shelter



Manufactured Ice Shelter



Homemade Ice Shelter