

SAFETY DIRECTOR BULLETIN

November 2021

WINTER ICE ACTIVITY BEST PRACTICES

Many public parks have lakes and other bodies of water that may be used for cold-weather activities such as ice-skating, ice-fishing, and snowmobiling. While prolonged periods of low temperatures can be a good indication the ice may be safe, the truth is many factors affect ice thickness. Different combinations of environmental and load factors do not allow an absolute standard to be developed.

Supervision for an activity such as ice-skating is labor-intensive and presents significant liability exposure to the municipality. The following are options available to municipalities regarding ice activities.

- 1. Post "No Trespassing" Signs:** Significantly reduces your liability exposures so long as the signs are maintained and properly worded. Most governing bodies, however, would find this unacceptable since this is public land and should be open for public use. *Consult your agency's attorney for wording that is appropriate to your situation.*
- 2. Post Warning Signs:** Sample verbiage can include: "This Lake is not monitored or patrolled. Swimming, Boating, Fishing, and Ice Skating are at your own risk." This sign does not prohibit the activity but does considerably reduce your responsibility to patrol and monitor the activity. Skaters should not go near partially submerged obstacles such as stumps and rocks where ice is weaker, and these dangerous areas should be identified and avoided. You must maintain the signs if you use this option. *Consult your agency's attorney for wording that is appropriate to your situation.*
- 3. Active Supervision:** This requires a great deal of time and effort. Not only must conditions be monitored on weekends, but employees must regularly test ice thickness, thus risking them falling through the ice. If you elect to provide the supervision, the following guidelines should be considered.

Conditions and Standards

According to the Cold Regions Research and Engineering Lab in Hanover, New Hampshire, ice is a material capable of supporting weight (a load), but ice is also affected by temperature, water quality, and other elements. Ice varies in thickness depending on flow/current conditions below. The following are a few of the more significant fluctuations that should be considered when deciding about the safety of a specific site:

- Generally, the deeper the water, the less ice is formed.
- **Cold Ice:** (or clear ice) is the first ice that forms; it has large columnar grains and is transparent. It is maintained at approximately 20° Fahrenheit (F) to 25° F or colder.
- **Black Ice:** Newly-formed ice that is thin enough for the dark water to be visible through it.
- Ice forms at 32° F and is always close to its melting point.
- During warm periods, ice can melt from both the top and from the bottom. The water temperature below the surface may be warmer.
- Ice over moving water is probably unsafe and should be avoided.
- Snow ice may form from saturating snow on top of cold ice; it has small grains. Snow ice is only about half as strong and melts quicker

- Ice "creeps" or deforms over time even without an increase in load.
- Ice clouded with air bubbles should be avoided
- Continuous walking (or skating) over ice will cause it to fatigue.

Ice-skating areas that operate safely, at minimum, must have at least 4" of cold ice or at least 6" of snow ice at temperatures of 30-40° Fahrenheit. The depth of the ice should be checked daily by qualified agency representatives. Multiple readings are needed to define the safe areas. If hazardous conditions exist, the areas should be kept closed to the public until conditions improve. The following figures are based on guidelines by the U.S. Army Corps of Engineers:

30-40 Degree Temperature

5" cold ice	Group skating	7" snow ice	Group skating
7" cold ice	Equipment up to 2500 lbs.	9" snow ice	Equipment up to 2500 lbs.

0-30 Degree Temperature

5" cold ice	Equipment up to 2500 lbs.	7" snow ice	Equipment up to 2500 lbs.
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Consider the weight of any snow on the ice in addition to the weight of any snow-removing or maintenance equipment. If possible, skating areas with water depths less than 12" should be provided for ice-skating. That way, if the ice should fail, exposure from possible drowning is minimized.

Testing Procedures

Several holes should be tested throughout designated skating areas, especially in high-hazard areas, such as (inlets, dams, or springs). Testing should be completed in the presence of 2 individuals on safety lines. Testing should be documented in a log. This procedure should be done on Saturdays, Sundays, and holidays, as well as weekdays. Establishing a land-based Safety Post* at all ponds and lakes where the public may gather for ice skating or ice fishing is recommended.

***Safety Post** refers to a 6-foot tall yellow post set about 2 feet into the ground with a spike or arm to hold a coiled rope and water jug for throwing to victims. Also, a 10-12 foot bamboo pole can be secured to the post.

Snow Removal Procedures

Following heavy snowfalls, it might be necessary to clear snow from the ice for ice skating activity. Be sure to follow the recommendations pertaining to ice depth for equipment usage detail in the table above.

Summary

Even as we do our best to provide ice-related recreation, using open-water venues is still a judgment call and must be decided by local management. Agencies should formulate a policy for determining safe ice thickness, taking into account the particular conditions and uses of open-water areas. If your agency chooses to allow cold-weather recreational water activities, you may consider forming a cold water rescue team.

Contact the Safety Director's office for additional guidance on winter ice activities.