Preventing Cold Water Immersion Injury and Death on Lake Superior

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Certification Statement

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed: 

Abstract

The problem was that the Marquette City Fire Department did not have a comprehensive ice safety program to prevent cold water immersion injury and death on Lake Superior. The purpose of the research was to develop a comprehensive ice safety program to prevent cold water immersion injury and death on Lake Superior. Action research was utilized to determine the human body's physical responses to cold water immersion, the consensus components of ice safety programs, the correlations between past ice rescue incidents in Marquette, and the organizational barriers and solutions to the development and implementation of an ice safety program. The research procedures incorporated document analyses of the physical responses to cold water immersion and the history of local ice rescue incidents, an external survey polling public safety organizations, and interviews to ascertain the views of City administration and labor representatives. The research results revealed the need for a broad scope of structural and educational interventions to address the risks presented by diverse user groups. The majority of the queried public safety agencies, however, did not have ice safety programs, and those that did, had not evaluated their effectiveness. It was discovered that program cost was the primary organizational barrier for City administration and the additional time commitment was the fundamental obstacle envisioned by local union representatives. The research results yielded an ice safety program that comprehensively addressed the risks to vulnerable populations and locations. Cost saving solutions were prescribed and interagency collaboration utilized to bridge organizational barriers. Implementation of the ice safety program was recommended, along with regular program evaluation to assure continual program efficacy.

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Immersion deaths are the third leading cause of accidental death for adults and the second for children internationally (Tipton, 2003). An estimated 372,000 people die annually from such incidents according to 2012 data (World Health Organization, 2014). Fire departments and other lifesaving organizations put considerable emphasis on preventing drowning during the summer months for a good reason. However, ice covered water bodies also present a substantial risk of cold water immersion injury and death. Dill (2015) identified 71 fatalities, during the winter of 2015 alone, on ice-covered lakes and rivers in North America. Fire departments put their communities at increased risk of injury and death due to cold water immersion by not providing comprehensive ice safety programs.

The problem was The Marquette City Fire Department did not have a comprehensive ice safety program to prevent cold water immersion injury and death on Lake Superior. The purpose of the research was to develop a comprehensive ice safety program to prevent cold water immersion injury and death on Lake Superior. Action research was used to answer the following research questions:

1. What is the human body's physiological response to cold immersion?
2. What are the correlations between ice rescue incidents over the preceding ten years in Marquette, Michigan?
3. What is the consensus of selected public safety organizations on the necessary components of ice safety programs?
4. What are the organizational barriers and practical solutions to the development and implementation of an ice safety program for the Marquette City Fire Department?

Background and Significance

The City of Marquette is located on the south shore of Lake Superior in the upper peninsula of Michigan. The Marquette City Fire Department (MFD) provides service to approximately 22,000 residents within an 11 square mile area. The city can be characterized as a medium density, non-industrial, urban environment. Typically, a community as described would be considered to have an ordinary risk, with the standard at-risk groups of children under the age of 14 and adults over the age of 65. However, the City of Marquette is somewhat different in that it contains a university and its accompanying high-risk population segment of college age students, numbering over 8,000. Additionally, miles of Lake Superior shoreline and other natural attractions draw tens of thousands of visitors to the city throughout the year.

The MFD is a full service, career organization with a general fund budget of just over three million dollars annually. The fire department consists of 24 fire suppression personnel, a fire inspector, and fire chief. Community risk is managed through the triad of education, enforcement, and emergency operations. These elements are given equal priority and are supported with all available resources. The comprehensive fire prevention and public education programs reach all age groups of the resident and transient populations. The fire inspector oversees robust commercial code enforcement and residential income property code-enforcement programs. In addition to the traditional, core firefighting proficiencies, the MFD specializes in high angle, near shore, ice, and confined space rescue. Vehicle extrication and technician level hazardous materials services are also provided. First response medical service is provided at an advanced life support, non-transport level.

The City of Marquette acknowledged the risk of drowning along the Lake Superior shoreline in the early 1980’s by instituting guarded beaches. From 1960 through 2010 there were

26 drowning deaths, with almost 40 percent occurring from 2000-2010. During 2010 four people drowned at Marquette beaches. This loss of life spurred the city into further action. The Marquette Waterfront Safety Task Force (WSTF) was formed and after diligent study of waterfront risks, recommended changes to increase the safety of residents and visitors. These incidents were also the nexus for the MFD to undertake near shore water rescue response. Fortunately, there have not been any drowning deaths in the city since that time. Marquette's beaches are guarded from Memorial Day to Labor Day, seven days a week. While the MFD has placed lifesaving equipment at the city beaches to safeguard the community when lifeguards are not on duty, there are no targeted interventions to reduce the risk of cold water immersion injury or death during the winter months when Lake Superior is ice covered.

The MFD provides fast, efficient ice rescue response. From 2006-2016, the MFD responded to 39 ice-related incidents. Although none of the events proved fatal, the risk of cold water immersion injury and death is high. The human body's cardiorespiratory response to cold water immersion, termed "cold shock", has the potential to cause drowning or cardiovascular problems (Datta & Tipton, 2006). The history of cold water immersion incidents along the Lake Superior waterfront and the likelihood of these types of events leading to injury or death, will negatively affect the health and safety of the community in the future unless the MFD delivers targeted, preventative interventions as part of a comprehensive ice safety program for the City of Marquette.

Developing a comprehensive ice safety program to prevent cold water immersion injury and death on Lake Superior will "reduce risk at the local level through prevention and mitigation" (United States Fire Administration [USFA], n.d.). This is one of the five strategic goals of the United States Fire Administration. The Executive Analysis of Community Risk

Reduction course, as part of the Executive Fire Officer Program, is designed to teach the value of the philosophy of community risk reduction and its application (USFA, 2015). Developing an effective ice safety program will require the assessment of the community's risk, the development of a draft risk-reduction program, the application of change management models, and the address of community and organizational politics and culture. These areas and ideas are covered by the course content of the Assessment, Planning, Implementation and Results, Leading Organizational and Community Change, and Organizational and Community Politics units of the Executive Analysis of Community Risk Reduction course (USFA, 2016).

Literature Review

The progression of the human body's responses to cold water immersion must be determined in order to successfully identify effective, preventative interventions for cold water immersion emergencies. Cold water immersion has specific, detrimental effects on the human body. During World War II, thousands of men and women lost their lives due to cold water immersion after their ships sank. Research showed that the colder the water temperature, the shorter their survival time and the fewer that survived (Edholm, 1978).

There are four stages to cold water immersion. On initial immersion, the body initiates the cold shock response. After a few minutes, functional disability sets in, precipitating swim failure. Longer term immersion may result in hypothermia, a drop in the body's temperature below 95 degrees Fahrenheit. Even after removal from the water, the victim is still at risk. This last stage is called post-rescue collapse (Steinman & Giesbrecht, 2006).

The cold shock response is caused by the sudden lowering of skin temperature and is believed to cause a majority of cold water drowning deaths. These reactions take place within the first one-to-four minutes of immersion (Steinman & Giesbrecht, 2001). The cold shock response

is broken down into the following cardiovascular and respiratory responses. The cardiovascular responses include increases in blood pressure, increased heart rate, increased cardiac output, and peripheral vasoconstriction. These responses increase the workload on the heart and may induce cardiac arrhythmias. In those that have pre-existing cardiovascular conditions, this can result in heart attack or stroke. It is the cold-shock induced respiratory responses that represent the greatest threat to healthy individuals (Tipton, 1989).

The respiratory responses start with an immediate inspiratory gasp, followed by hyperventilation and a dramatic decrease in breath hold time. If the head is immersed on initial entry into the water, the gasp response may cause drowning. Hyperventilation may lead to disorientation or loss of consciousness (Steinman & Giesbrecht, 2001). Breath hold times may be reduced to as little as ten seconds, which may result in drowning if the airway is intermittently submerged (Golden, Tipton, & Scott, 1997). Equivalent cold shock responses were also observed in children (Bird, House, & Tipton, 2015). These cold shock respiratory responses can be one of the major factors that lead to the next stage of cold water immersion, known as swim failure or functional disability (Golden et al., 1997).

The functional disability stage sets in after the cold shock response and lasts for up to thirty minutes. Peripheral blood circulation decreases, causing a loss of fine and gross motor activity, stiffness, poor coordination, and a loss of muscle power. This could make it difficult or impossible for victims to grasp rescue ropes or effect self-rescue. Drowning may occur since the victim may not be able to maintain swimming or floating (Steinman & Giesbrecht, 2001). It was found by Tipton and Bradford (2014) that the functional disability that leads to swim failure affects novice and expert swimmers equally.

On average, if an immersion incident lasts more than thirty minutes, the body may go hypothermic. Hypothermia is when body temperature drops below 95 degrees Fahrenheit (WebMD, 2016). Hypothermia is not much of a threat until the 30-minute mark, as the body cools relatively slowly. If the body temperature drops to between 86 and 90 degrees Fahrenheit, the victim can lose consciousness and will likely drown, but that can take an hour or more, even in ice water (Steinman & Giesbrecht, 2006). Several studies (Golden et al., 1997; Klein & Kennedy, 2001; Stocks, Taylor, Tipton, & Greenleaf, 2004) state that children have faster cooling rates than adults, due to their greater surface-to-mass ratio and relatively leaner body composition. However, later research did not support this and found they maintained their core temperature as well as adults (Bird et al., 2015).

The last stage of cold water immersion is post-rescue collapse. Severe hypothermia can inhibit the body's ability to correct for a sudden drop in blood pressure. This can occur when the victim is removed from the water, especially if they are in a vertical position and not immediately put in a horizontal position. This may lead to unconsciousness, heart arrhythmias, or cardiac arrest. Also, the body's core temperature continues to fall, even after being removed from the water. This is known as "after drop". If the temperature of the heart drops below 77 degrees Fahrenheit, it may result in cardiac arrest (Steinman & Giesbrecht, 2006). It is also imperative that the patient is handled gently to prevent ventricular fibrillation (Orlowski,1988).

The second research topic reviewed was the commonalities between ice rescue incidents. While demographic studies could not be found on ice rescues, three demographic studies were identified on ice-related fatalities. This author considered it plausible to expect the population breakdown between rescues and fatalities to be similar enough to warrant inclusion in the review.

The Canadian Red Cross Society studied drowning data from 1991 to 2000. They found that 22% of cold water immersion deaths were related to activities on the ice. Of those, 66% resulted from the use of snowmobiles and other vehicles. These victims were predominantly male, with the highest risk age group being those 15 years old and older. Alcohol consumption was noted in at least 40% of the fatalities of victims over 15 years old. Where the light conditions during the incidents were known, 90% of the fatalities occurred between 6:00 PM and 6:00 AM. Only 4% of victims were reported to have worn a flotation device (Canadian Red Cross Society [CRCS], 2006).

Non-motorized activities accounted for 34% of fatalities and included playing, walking, fishing, hunting, and skating on ice. Of those activities, the most prevalent fatalities were when walking, 36%, and fishing, 22%. The major risk group for non-motorized fatalities for both males and females was toddlers, up to 4 years of age. This was followed by five to 14-year-old males. Non-motorized activities accounted for 40% of fatalities related to victims under 15 years old, in contrast to 4% for snowmobile-related fatalities. Alcohol use was noted for 30% of victims 15 years and older. The use of floatation devices was not recorded for any of the incidents. Of note, none of the incidents involving toddlers and only 10% of those between the ages of 5 and 14 were being supervised by an adult (CRCS, 2006).

The next study was conducted by the Minnesota Department of Natural Resources. Ice related fatalities from 2010 through 2015 were considered. It was found that 50% occurred while using snowmobiles, 27% while using other motor vehicles, and 23% while on foot. The majority of fatalities, 45%, were those older than 50. The next highest was 18 to-29-year-olds at 23%, with children under 17 representing 9% (Minnesota Department of Natural Resources [MDNR], 2015).

The last study reviewed was a case study of the ice-related fatalities in North America during the winters of 2013 and 2014. It was found that there were 53 fatalities during the 2013 winter season. Snowmobiling was the leading cause of 36% of the incidents, and 19% occurred while fishing. During the winter of 2014, there were 50 fatalities, with 30% stemming from snowmobiling and 25% from fishing. The 50 – 65 age group accounted for the preponderance of fatalities in both years at 30% and 26% respectively. The second highest level was the 35 to 49-year-old group in 2013, at 25%. In 2014, however, children under the age of 17 accounted for the second highest level, at 22% (Dill, 2015).

Little research or literature directly related to the consensus components of ice safety programs or the possible organizational barriers and solutions to their development and implementation were found. Water safety programs and their associated interventions, however, are substantially similar in type and scope. Prior research conducted on the necessary interventions for water safety programs should provide for a valid comparison to this research, but the necessity of doing so, unfortunately, speaks to the dearth of directly related research currently available.

Most of the ice safety educational materials that were identified amounted to ice safety tips used for public education by state and federal agencies. Two sources of ice safety-related literature were found, however, that spoke to suggested types of interventions. The first was from the Royal Society for the Prevention of Accidents. They advocate for public education through the use of local media, leaflets, flyers, and presentations to local schools. They also suggest using appropriate signage as determined by risk analysis. They finish by calling for increased levels of supervision during times of high usage (Royal Society for the Prevention of Accidents, 2006). Next, Dill (2015) compiled the following suggestions following a case study of North American

ice-related fatalities during the winters of 2013 and 2014. Over half of the victims may have survived if they had used a life jacket. Staying off the ice at night or when the visibility was poor may have helped prevent up to two-thirds of the fatalities. In a significant number of the incidents, a potential rescuer drowned by falling through the ice themselves. Calling 911 and getting professional rescuers on the way is the best response unless bystanders can be sure they are on good ice and at least have a throw rope. Carrying safety equipment such as ice picks, an ice spud to check ice thickness, a throw rope, a cell phone and a flashlight can help reduce the risks associated with cold water immersion. Finally, it is important to know the current ice conditions and stay off the ice on warmer days.

Several studies were identified that sought to determine to the necessary interventions for water safety programs. Knight (2007) found that 93% of polled agencies use public education to prevent drowning. Snowberger (2008) delved deeper into the question and noted that 31% of organizations used the media for education outreach. Printed material, such as brochures and fliers, were utilized by 46% of respondents as a delivery method. It was also found that none of the surveyed organizations used direct public presentations. Another study revealed that 38% of agencies used the media to educate the public on the risk, but there were discrepancies between agencies on how aggressively or thoroughly the medium was utilized. Several agencies provided public presentations at schools and libraries, but the percentages were not identified in the research (Steines, 2004). Knight (2007) found that 85% of respondents used public swimming and CPR training programs to mitigate risk.

The use of engineering interventions was low, with only three agencies being identified by Steines (2004) as using signage to warn the public of danger. Steines, (2004) and Knight, (2007) noted two organizations provided PFDs by loan to the public. One department also

provided rope throw devices (Steines, 2004). One researcher asked if the drowning prevention programs were evaluated for effectiveness with 100% stating they were not evaluated (Snowberger, 2008). Of the identified research only one by Hohl (2010) looked at possible organizational barriers in forming an effective program. It was found that the costs associated with implementing the program and the jurisdictions lack of resources to pay for them were the largest barrier. No possible solutions to the problem were identified.

To summarize, the review of current research and state and national level statistics about cold water immersion emergencies, fatalities, and safety programs, provided sufficient support for additional research to be done specific to the MFD and the Marquette area. The research on the physiologic responses to cold water immersion and the fatality statistics from other regions pointed to the high risk presented by cold water immersion. Similar research on water safety programming identified possible interventions. However, they also showed that the necessary components of ice safety programs and the organizational challenges to their implementation might be unique to an area's demographics, topography, and both public and organizational culture.

The original intent for the development of an ice safety program was to focus on interventions that aided in mitigating the frequency of ice related emergencies. After thoroughly reviewing the human body's physical responses to cold water immersion, this author became convinced that making changes to the MFD's existing ice rescue protocol to mitigate the risks associated with post-rescue collapse was prudent. Lastly, the noted lack of evaluation of existing programs prompted this author to add that line of inquiry to the survey instrument.

Procedures

The purpose of this research project was to develop an ice safety program for the MFD. Substantially quantitative methods were utilized to answer the first, second, and third research questions. These determined current data from relevant local, state and national public safety organizations and research evidence pertaining to the four stages of cold water immersion responses. Qualitative methods were then utilized to identify organizational barriers and practical solutions to the development of a consensus ice safety program, addressing the fourth research question.

The first procedure used for the research project was a document analysis that was twofold. First, the progression of the human body's physical responses to cold water submersion was studied to establish what interventions would be most effective in preventing or mitigating each response. Secondly, the history of ice rescue incidents in Marquette over the preceding ten years was analyzed to determine similarities of the victim's demographics, the locations of the events and the activities that led to the incidents.

The second procedure used was email inquiries used to determine the extent of current ice safety interventions and outreach programs of State and Federal organizations with offices located in the Marquette area. The goal was to assure that the MFD's ice safety program would not duplicate the efforts of these organizations, and that the educational messages would be consistent. The first inquiry was sent to BMC Patrick Brown of the United States Coast Guard Station Marquette (Appendix A). The second query was forwarded to Lieutenant Peter Wright of the Marquette office of the Michigan Department of Natural Resources. After repeated attempts there was no response from the Michigan Department of Natural Resources. This necessitated

gathering available information on ice safety by accessing the Michigan Department of Natural Resources website (Appendix B).

The next procedure that was utilized was an online survey hosted by the online company, Survey Monkey. The goal of the survey was to identify the necessary components of ice safety programs of public safety organizations. The original intent was to limit the surveyed organizations to those in the Great Lakes Water Safety Consortium (GLWSC). Initial reticence by the consortium's director to allow the survey to be disseminated, due to privacy concerns, led to the posting of the survey link to the IAFC's KnowledgeNet forum to solicit responses from public safety organizations throughout North America. This author believed the initial reticence was fortuitous, as it forced him to include agencies spanning North America, which aided in capturing a wider range of views on ice safety interventions. After completion, this author was eventually able to gain permission to call upon the over two hundred members of the GLWSC to take part in the survey. The survey consisted of twelve questions (Appendix C).

Some limitations to this procedure existed. The validity of the survey instrument was not assessed by using a pilot test. The answers provided by the respondents were self-reported and not verified. Respondents were notified that their responses were confidential, however, which increased the likelihood of receiving candid responses.

A situational analysis determined that one of the organizational forces likely to impede the successful formation and implementation of an ice safety program would be reticence by department personnel to take on another program, even when needed, if it added an onerous time commitment. Like most of the fire service, the MFD has added many prevention and rescue programs and their attendant training requirements, without a concurrent increase in staffing.

Making sure that MFD personnel have input into the formation of the program and streamlining the time requirements of its implementation may foster ownership and greater acceptance.

The City administration may not have the necessary political capital to approve funding for another program during a time of fiscal constraints. However, administration objections to funding may be mitigated by application for Assistance to Fire Fighters grants, local Indian tribal grants or other vehicles of financing. Whether or not outside funding sources are found, education about the problem, at the administration and public level, will be needed. Unfortunately, it may take an ice related fatality to secure the necessary political will to move the program forward. Whether these hypotheses mirror reality will be determined by reviewing the proposed program with both City administration and representative members of the firefighter's union.

The results of the document analysis, email inquiries, and survey instrument were used to formulate an initial ice safety program (Appendix D). The program was reviewed during an interview with Marquette City Manager, Mike Angeli, on October 5, 2016, to determine the existence and extent of barriers to the implementation of the ice safety program (Appendix E). After the obstacles had been discussed, possible solutions were studied. Next, the program was reviewed during an interview with the IAFF Local 643 executive board on October 5, 2016, to determine the existence and extent of barriers to the implementation of the ice safety program found by the firefighter’s union membership (Appendix F). After the barriers had been determined, possible solutions were identified. The solutions to the identified barriers were then used to develop the final ice safety program (Appendix G).

Two problems may have limited the validity of the interviews. In addition to the City Manager, other City administration representatives have authority over the fire department’s

operational and capital budgets. Their views on the barriers and solutions may have differed from the city manager's. Likewise, the union executive board, while representative of the union membership, could not speak to the concerns of the entire group.

Results

The results of the document analysis were initially used to answer the first research question seeking to determine the human body's physiological response to cold immersion. Cold water immersion can be life threatening. By understanding the risks of each reaction, it is possible to identify the appropriate interventions to mitigate these incidents in both frequency and severity.

The first stage, cold shock, is represented by the following responses. A sudden inspiratory gasp, hyperventilation, an increase in heart rate, an increase in blood pressure and a decrease in breath hold time. A personal flotation device or PFD can help a victim keep their head out of the water and stay afloat until these cardiorespiratory and cardiovascular responses diminish. Cold shock usually occurs within two minutes of immersion (Steinman & Giesbrecht, 2006).

Once the cold shock responses normalize, the second stage involves the loss of manual dexterity and grip strength. As muscles get cold, it is harder to use the arms and legs to stay afloat. The use of a PFD would reduce the need to swim to keep the head out of the water (Steinman & Giesbrecht, 2006). To enable the victims to remove themselves from the water, before functional disability or the next stage, hypothermia, set in, self-rescue ice picks would be a valuable intervention.

The third stage of cold water immersion is hypothermia, which is defined as a core body temperature below 95 degrees Fahrenheit. Hypothermia typically sets in after 30 minutes of

immersion. Loss of consciousness and drowning can occur within one hour. A PFD will allow victim's heads to stay out of the water if they become unconscious (Steinman & Giesbrecht, 2006). Some interventions to reduce the time in the water include using the buddy system, informing a responsible party of where the persons will be and when they expect to return, and having a rescue whistle and cell phone available to signal for help (MDNR, 2016).

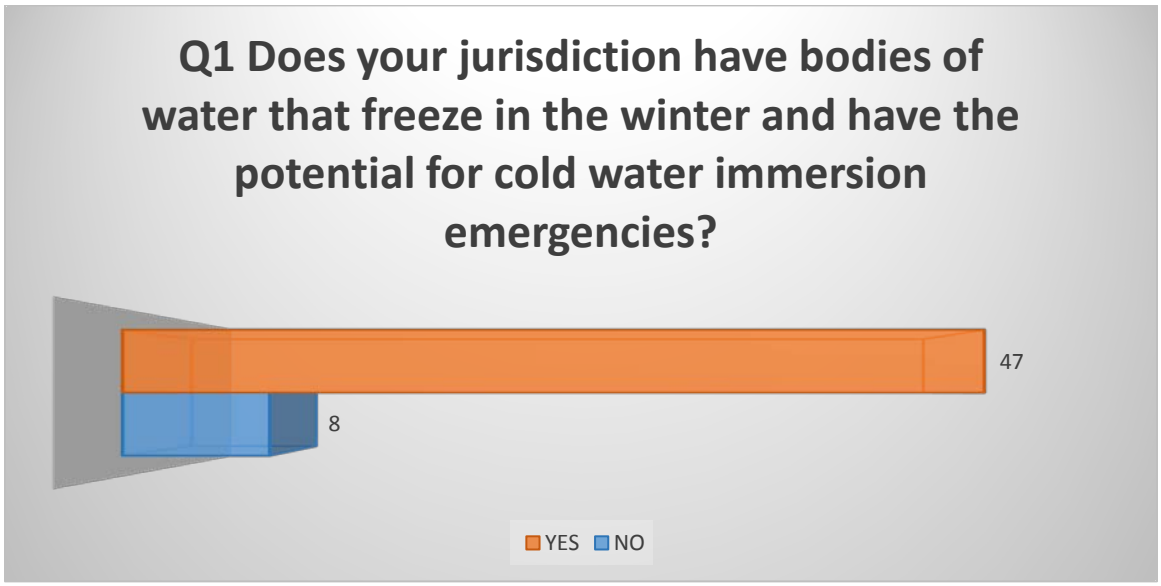
The last stage is called post-rescue collapse. Post-rescue collapse may be caused by a sudden drop in blood pressure, the patient's core body temperature dropping below 77 degrees Fahrenheit, or rough handling of the patient. Any of these conditions may cause unconsciousness, irregular heartbeat, or cardiac arrest. Rescuers should ensure that the patient is removed from the water horizontally or placed in a horizontal position as soon as possible to lessen the chances of these outcomes. Also, rescuers should handle the patient gently and begin rewarming efforts during transport (Steinman & Giesbrecht, 2006).

Next, data was analyzed on the history of ice rescue incidents in Marquette over the preceding ten years to determine the demographics of the victims, the location of the events, and the activity that led to the incidents. The characteristics of the 39 incidents over this period are as follows. All of the victims were male, with an average age of 35. The majority, 56%, were residents, with 44% being visitors to the area. The predominant activities that led to the incidents were ice fishing and walking, each accounting for 44% of emergencies. Notably, snowmobiling was not responsible for any incidents. The area with the most risk, at 44% of events, is an open water area in the ice, formed by a warm water discharge pipe from a local power plant. This area is called the "bubbler" by residents and is located in the upper harbor, adjacent to the Presque Isle Marina. The mouth of the Carp River, located in the southern part of the city, is the next most hazardous at 15% of incidents.

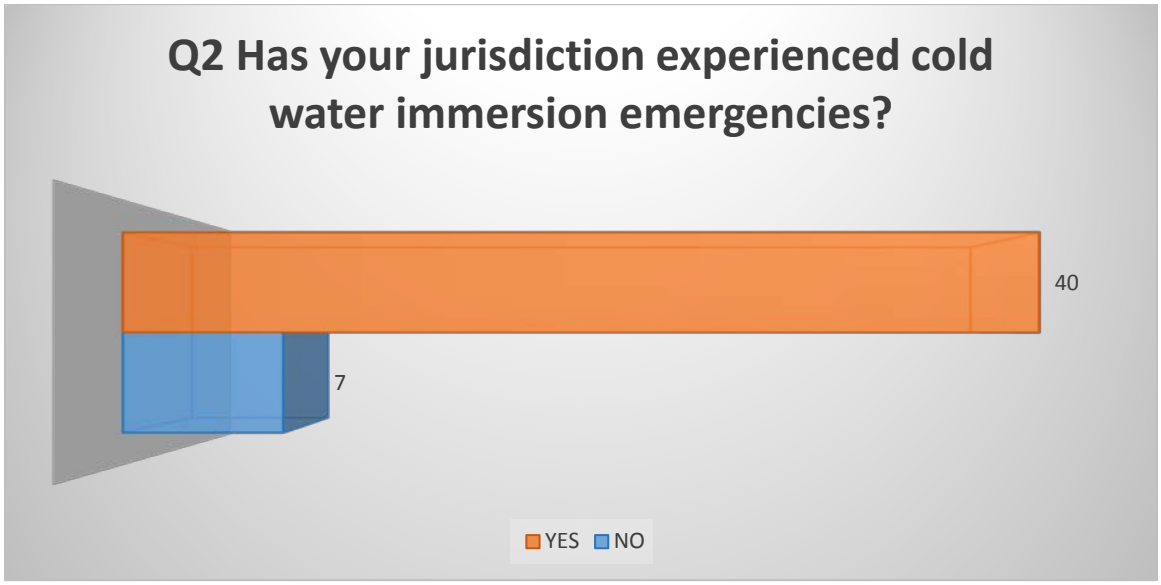
The next research procedure utilized was email inquiries used to determine the extent of current ice safety interventions and outreach programs of State and Federal organizations with offices located in the Marquette area. The Coast Guard conducts interviews with news media and produces a brochure that is given directly to ice fishers and promotes ice safety during station tours (Appendix A). The Michigan Department of Natural Resources uses both press releases and interviews with news media (Appendix B). BMC Patrick Brown of the United States Coast Guard Station Marquette and Lieutenant Peter Wright of the Marquette office of the Michigan Department of Natural Resources concur that:

- Knowing up-to-date information on weather and ice conditions is important before going on the ice.
- No ice is safe ice. Ice thickness and strength can vary with weather conditions and water currents.
- Notify someone of where the people are going and when they will be back.
- Use the buddy system and spread out when traveling on the ice.
- Use proper safety equipment, a cell phone, life jacket, ice picks, whistle, and compass (BMC Patrick Brown & Lt. Peter Wright, personal communication, September 13, 2016).

The next procedure used was a survey. The survey was used to answer research question number three. Fire departments and other water safety organizations were solicited to answer the questionnaire. Each survey question will be followed by a graphic illustration of the results. A corresponding narrative summary of the results of each survey question will follow. The individual responses to the survey are listed in Appendix H. Percentages have been rounded to the nearest whole number. The first question asked whether bodies of water were present that posed a risk of cold water immersion emergencies.

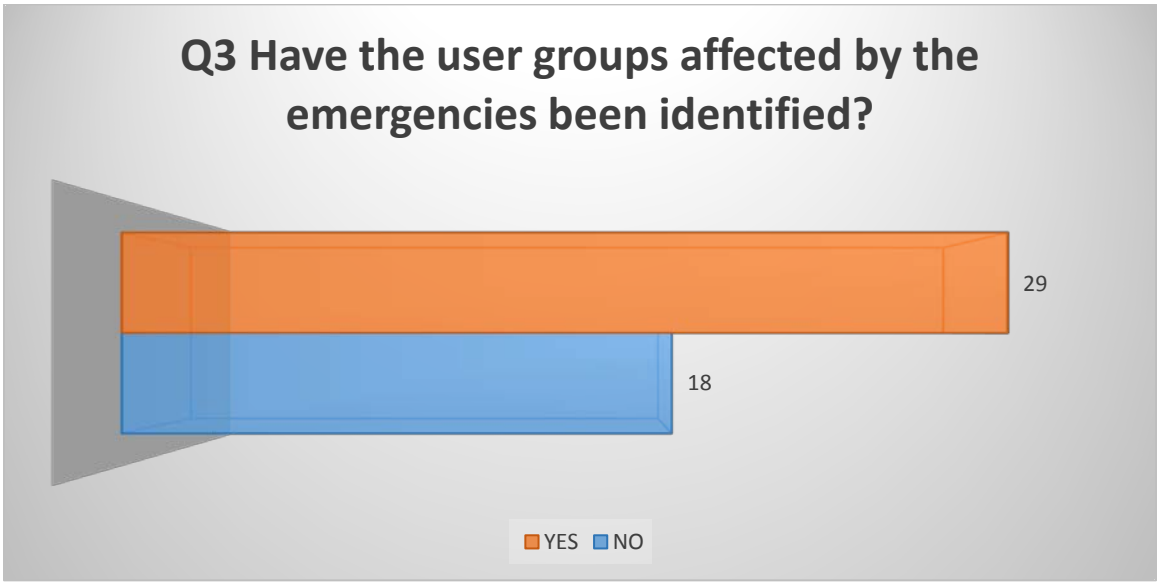


All fifty-five respondents answered this question, with an 85% majority indicating their jurisdiction does have bodies of water of some form that have the potential for cold water immersion emergencies. Having determined that most of the jurisdictions experience frozen bodies of water, the next question sought to determine if the respondent's jurisdiction has had cold water emersion emergencies.

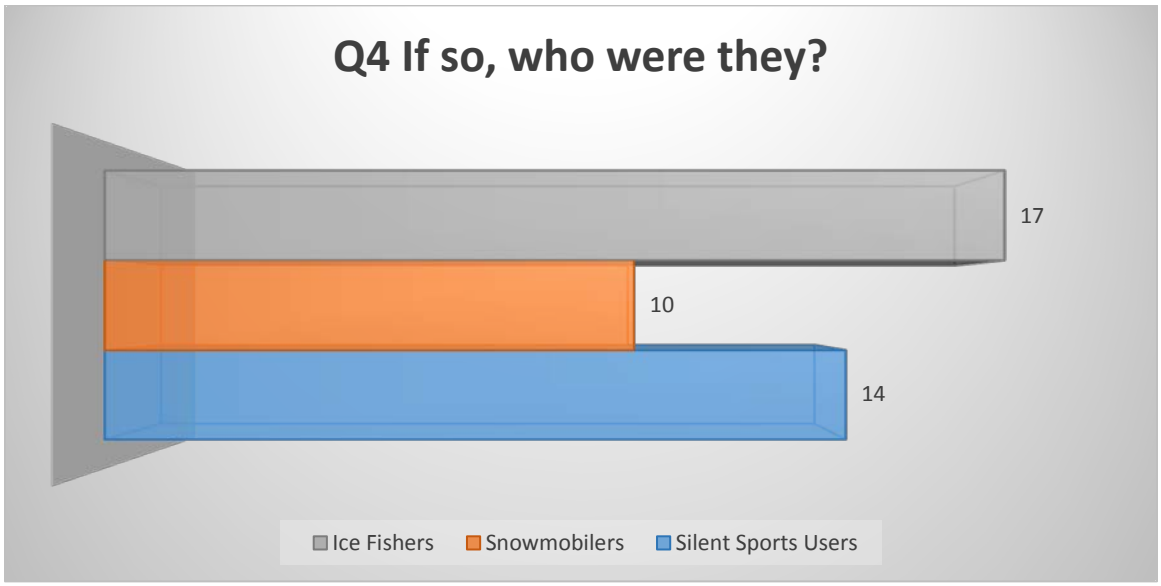


Although all fifty-five respondents answered this query, this author omitted the eight "no" responses from the respondents who initially indicated that their jurisdictions didn't have

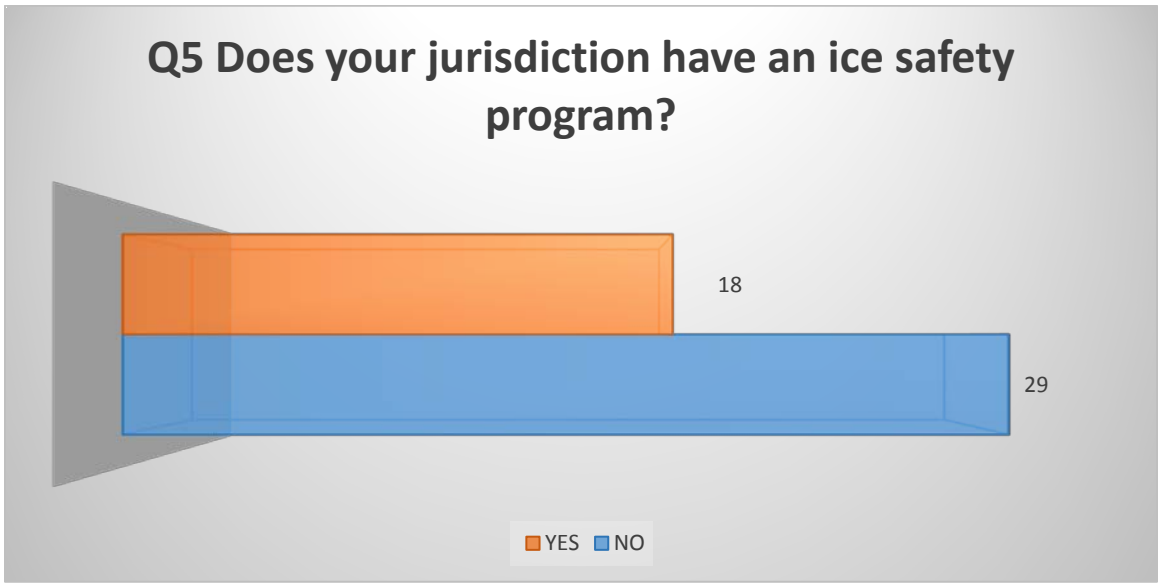
bodies of water that freeze over. Their response data was excluded from here forward, as they are outside the scope of the research. The total number of relevant respondents is, therefore, forty-seven. As indicated, 85% have experienced cold water immersion injuries. The following question was designed to determine whether the victims in the emergencies had been identified by their user group.



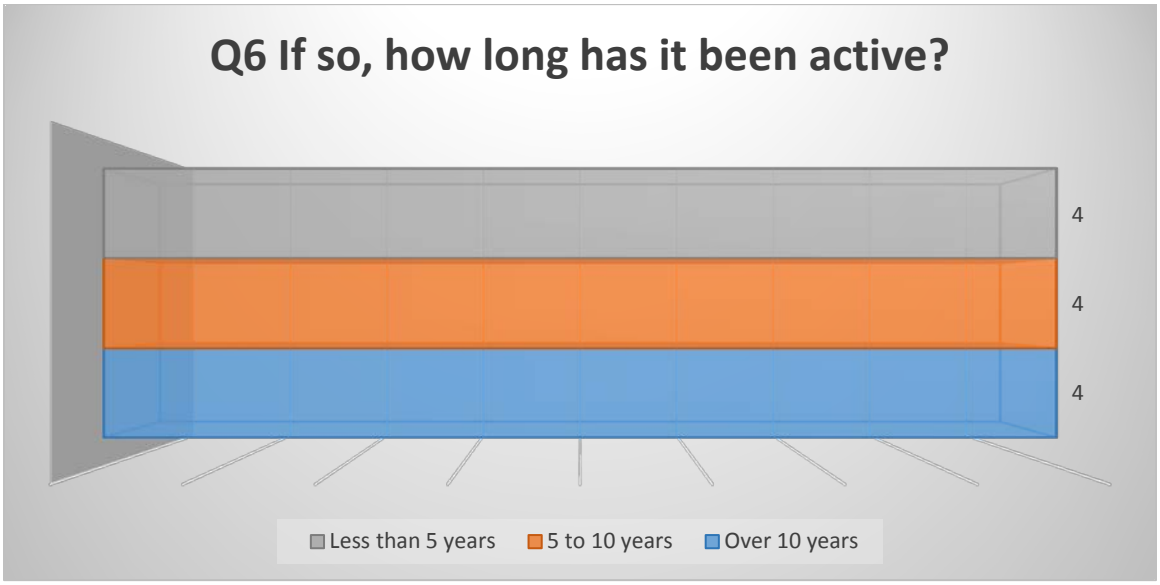
All forty-seven respondents answered the question, with the majority, 62%, stating the user groups had been identified. The remaining 38% of respondents had not identified the affected groups. The next question sought to determine the identities of the affected user groups.



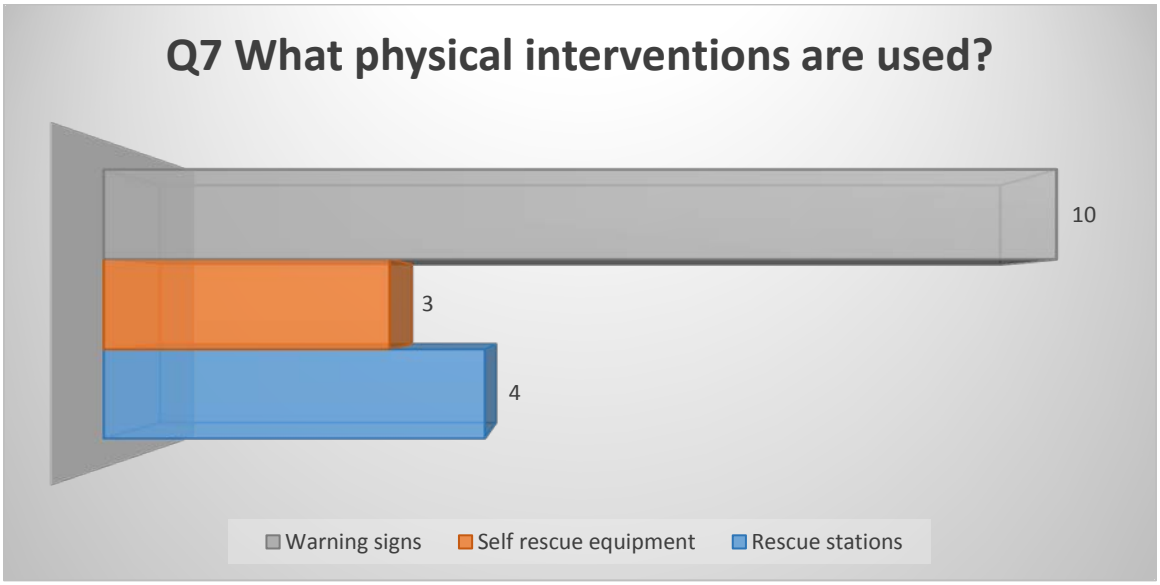
Twenty-three respondents answered this question. 74% of respondents indicated ice fishers had a history of cold water immersion emergencies. This was followed by 61% for silent sports users, such as bikers and hikers. Lastly, 43% of respondents listed snowmobilers. There were nineteen additional comments from the respondents on this query. The majority stated that children were most likely to be at risk on the ice. The following question asked respondents if they provided an ice safety program.



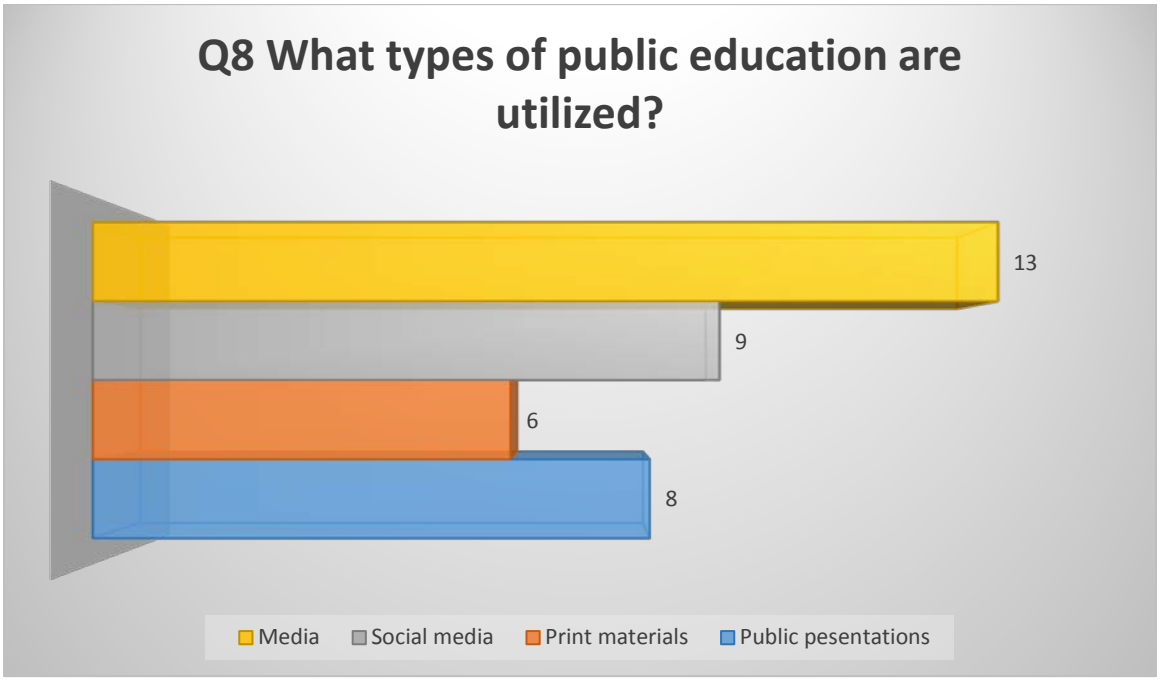
Forty-six respondents answered this question. One respondent skipped this question. However, his responses to questions seven and eight revealed he did provide interventions, which for this research constitutes a program. Likewise, nine respondents answered "no," but went on to state that they provide interventions. These ten responses were counted as "yes" responses to accurately reflect the results within the scope of the research. The majority, 62%, do not provide ice safety programs. That left eighteen jurisdictions, 38%, that do have ice safety programs. The next question was posed to confirm how long the programs have been in existence for the respondents that answered the last question affirmatively.



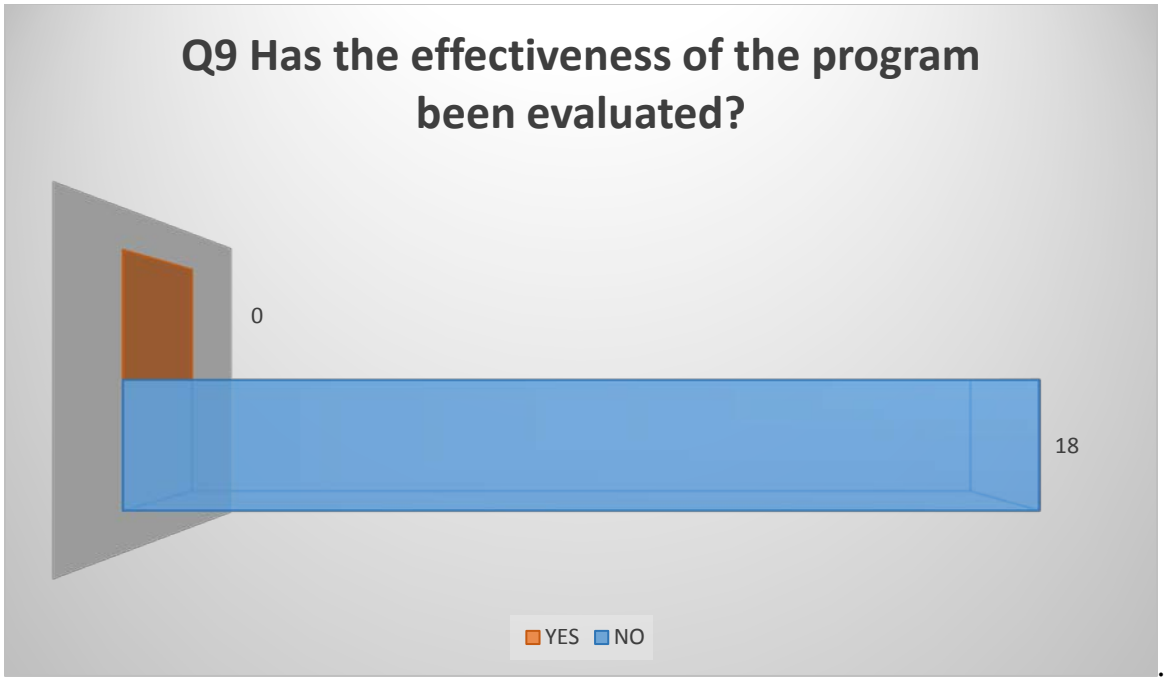
Twelve respondents answered this question, and they were split evenly with 33% each having their programs in place for less than five years, five-to-ten years, and over ten years. The following question sought to determine what physical interventions were utilized as part of the ice rescue program.



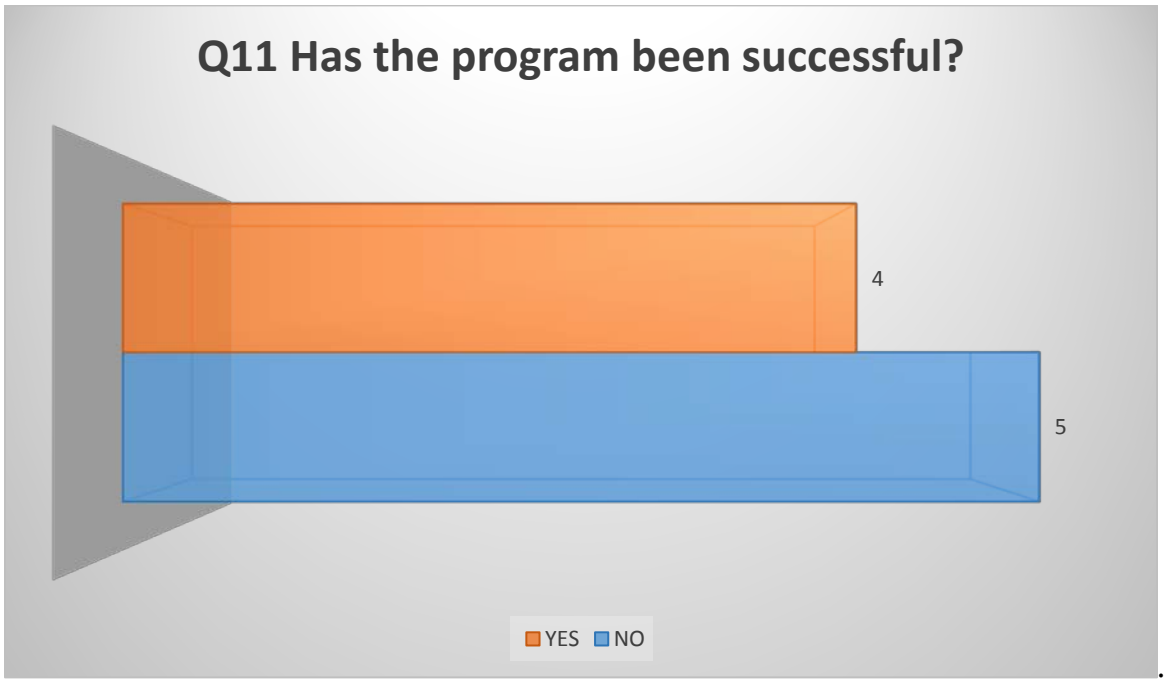
Fifteen respondents answered this question. The most frequent intervention being employed is warning signs, with 59% of agencies having them. Rescue stations, such as those equipped with rope bags or throw rings, were used by 24% of organizations. Lastly, 18% utilize self-rescue equipment like ice picks, rescue whistles, and traction aids. The next question was posed to determine what types of public education are administered.



This question garnered eighteen responses. Media, such as television, radio, and newspapers are used by 72% of the agencies to educate the public on ice safety. Next, 50% utilize social media in some form. Direct public presentations were used by 44% of respondents to inform the public. Print materials, like brochures, posters, and mailings, were used by 33% of agencies. The following question asked the respondents if their programs had been evaluated for effectiveness.



Although twenty-three respondents answered this question, only the eighteen that responded affirmatively to question five as utilizing interventions or formal ice safety plans were included in the results to reflect the findings of the survey more accurately. The other five "NO" respondents do not provide interventions or programs to be evaluated. All of the legitimate responses indicated that none of the surveyed agencies provide for program evaluation. Subsequently, no respondents answered question ten, which asked what assessments were utilized and what the conclusions were. Question eleven sought to determine if the program had been deemed successful.



A total of nine agencies that provide interventions or programs responded to this question. Four organizations, comprising 44% of the total, stated that their program had been successful. Their comments on this question revealed that they correlated program success with a low incidence of cold water immersion related emergencies, with occurrences ranging from one-to-two incidents per year to one event in the last twenty years.

Five agencies, 56% of the total, felt their program was not effective. The most common reason given was that the effectiveness was unknown or unable to be quantified. The last question asked the respondents to provide any additional information that would help the research endeavor. Two responses were germane to the focus of the research. They both stated that cold water immersion emergencies are rare or low frequency, but high-risk events. One said that even though the risk has been identified, it will take a loss of life for the problem to come to light and the necessary funding to be provided.

The resultant consensus components derived from the survey are as follows. An ice safety program should target a broad range of user groups, such as ice fishers, snowmobilers, and

silent sports enthusiasts, with an emphasis on reaching children with the program. The use of warning signs, self-rescue equipment, and rescue stations are valid physical interventions to prevent or mitigate cold water immersion emergencies. Likewise, the use of all forms of news media, social media, printed materials, and public presentations to educate the public on ice safety was supported by the survey results.

The results of the survey were compared to the results of the document analyses and the results of the email inquiries and used to formulate the draft program (Appendix D). The draft program was reviewed during an interview with Marquette City Manager, Mike Angeli, on October 5, 2016, to determine the existence and extent of barriers to the implementation of the ice safety program (Appendix E). After the obstacles had been studied, possible solutions were discussed.

The only obstacle to implementation identified by the manager was the cost of the program. It was considered that possible solutions could include mounting the warning signs to the lifesaving stations. Also, soliciting local businesses to sponsor the lifesaving stations could be explored. Lastly, a grant request to the Keweenaw Bay Indian Community could be used to cover the costs of the ice pick and whistle sets.

The draft program was then reviewed during an interview with the IAFF Local 643 executive board on October 5, 2016. The discussion sought to determine the existence and extent of barriers to the implementation of the ice safety program which were found by the firefighter's union membership (Appendix F). After the barriers had been determined, possible solutions were identified.

The only obstacle determined by the union board was the program evaluation method determining the use of ice picks and whistles. The union board felt that there would be pushback

from the membership, due to the extra time commitment for direct observation of their use. I contacted BMC Patrick Brown of the U.S. Coast Guard, and he agreed to have his personnel check on the usage of the ice picks and whistles when they make contact with ice fishers and other user groups.

Discussion

The purpose of this research was to develop a comprehensive ice safety program to prevent cold water immersion injury and death on Lake Superior. The results of the literature review, the data analyses, email inquiries, and survey instrument were compared and analyzed. It was found that significant scientific research into the human body's responses to cold water immersion and their attendant causes have been conducted. Because of these reactions, immersion into cold water can be life threatening. By understanding the physical risks attendant to each stage of immersion, people can be better prepared to survive a cold water immersion emergency (Steinman & Giesbrecht, 2006).

The analysis of recent ice rescue incidents in Marquette indicated that the majority of the victims, 44%, were in the 18-24 age group. In contrast, Dill (2015) found the 50-65 age group were most often victims, while the MDNR (2015) stated that the majority of victims were over 50. This difference was likely due to the presence of Northern Michigan University in Marquette and its attendant 18 to 24-year-old population. Several studies (CRCS, 2006; Dill, 2015; MDNR, 2015) determined that snowmobiling was the primary activity that led to ice-related fatalities. Fishing and walking on the ice resulted in the most ice rescues in Marquette, while snowmobiles didn't account for a single incident. This discrepancy is understandable, as snowmobiles are barred from operating within the city limits of Marquette. Finally, all of the ice rescue victims in

Marquette were male, which corresponds closely with the findings of the CRCS (2006), which found that males were at the highest risk by a five-to-one margin.

Considering the risks to the human body posed by cold water immersion found by Steinman & Giesbrecht (2006) and Golden et al. (1997), it is discouraging to note that, although 85% of the polled agencies have experienced cold water immersion emergencies, only 38% have ice safety programs in place. This rate does mirror the findings of Snowberger (2008) and Knight (2007), who found that 38% and 25% of departments provide drowning prevention programs. The survey respondents indicated that the user groups most affected by the emergencies were ice fishers, followed by silent sports users. This was consistent with the data analysis of Marquette's ice rescue history, which found that ice fishers and ice walkers accounted for the most emergencies. As stated earlier the data for Minnesota, Canada, and North America all differs, in that snowmobilers were the most at-risk group (CRCS, 2006; Dill, 2015; MDNR, 2015). This difference may have been due to these studies focusing strictly on fatalities.

In regards to the use of physical or engineering interventions to mitigate risk, 59% of respondents indicated they used warning signs and 24% used rescue stations. Steines (2004) found that only 10% of agencies used warning signs. Both Steines (2004) and Knight (2007) indicated that the provision of life jackets and throw ropes were low, at 6% and 4% respectively.

On the topic of public education interventions, most respondents indicated they predominately used traditional media (72%) and social media (50%)to educate the public. Direct public presentation was used by 44% and 33% utilized print materials. Snowberger (2008) and Steines (2004) found lower rates, 31% and 38%, of agencies used the media, while Snowberger (2008) also noted that 46% relied on the use of print material. It may be inferred that the higher reliance on the use of print material and the non-reported use of social media was due to the date

of the studies. The use of social media as a public education tool may not have been widely utilized at that earlier time.

All of the responding agencies stated that their programs had not been evaluated for performance. Snowberger (2008) also found that 100% of the queried departments had not evaluated their programs. He then stated that drowning incidents needed to be tracked for the programs to be successful. This idea supports this study's findings, indicating that agencies correlated program success with the number of cold water immersion incidents. For the 56% of organizations that felt their programs were not effective, the main reason given was the inability to quantify the effectiveness.

Across the fire service, departments are being asked to do more with less. Similarly, the organizational barriers to the implementation of the ice rescue program were principally financial in nature for the administration and workload related for the union body. This was reinforced by the findings of Holm (2010) that the primary reason deficiencies remained in his jurisdiction's drowning prevention program was the lack of revenue to make needed structural improvements. This barrier pointed to the need for identifying outside funding vehicles and the use of public/private partnerships to resolve financial obstacles. Likewise, these same alliances, along with interagency cooperation may help to spread the workload associated with area-wide outreach programs, simultaneously diminishing the duplication of efforts, and providing for a consistent educational message.

Two respondents indicated that cold water immersion emergencies happen infrequently, but pose a high risk when they do. This reality led one respondent to state that, even though a large risk had been identified, it would likely take a loss of life to secure the necessary funding to abate it. The political and financial ramifications of implementing an ice safety program for

Marquette would be negligible compared to the liability of not addressing the risk until a loss of life occurred. The organizational implications for the City would be minimal as it relates to cost, as long as outside funding could be obtained. Furthermore, the City administration and the fire department may realize a positive return on investment, in political capital, for being proactive in managing the problem. The primary beneficiaries of the adoption of the program would be the residents and visitors of the City of Marquette. A reduction in the number of cold water immersion emergencies and minimizing their severity would increase the health and safety of the community and have a positive influence on the public's recreational enjoyment of Lake Superior.

Recommendations

The purpose of this research was to develop a comprehensive ice safety program to prevent cold water immersion injury and death on Lake Superior. This was action research and resulted in the creation of a consensus program. The following are recommendations regarding program implementation for the Marquette City Fire Department.

- Implement all of the ice safety program interventions before the start of the winter recreation season.
- Work with local organizations and businesses to secure funding for the engineering interventions through grant opportunities or sponsorships.
- Determine an efficient and accurate procedure for documenting the use of life safety devices by users as recorded by the U.S. Coast Guard.
- Improve ice rescue incident documentation to identify the use of life-saving and self-rescue devices.
- Monitor and collect evaluative data on each intervention.

- Track the short and long-term incident trends to determine overall program efficacy.
- Analyze the results and make improvements to the program as indicated.

The following are general recommendations for future readers who may wish to replicate Or elaborate on this research.

- In regards to the survey, pilot testing would be beneficial to make sure all of the questions are clear and produce the desired information. Directing respondents to skip ensuing questions if they answered "no" on a question would have provided more accurate responses and made analysis easier.
- In regards to the inquiries into possible organizational obstacles, the inclusion of all administration personnel with financial oversight would provide more conclusive results.
- The use of a larger focus group to determine organizational barriers for labor may have identified other undisclosed obstacles and solutions.

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Appendix A

Email transcript for questions posed to BMC Patrick Brown of Coast Guard Station Marquette on September 13, 2016.

Ian Davis <idavis@mqtcty.org>

Hi Patrick,

Thanks for taking the time to help me out with this.

Beyond ice rescue, does the Coast Guard employ any other interventions to prevent ice immersion injuries or deaths on Lake Superior.

Examples could include public education through media, social media, print materials, public presentations, signage, etc.

If so, could you provide copies or a link to the information?

Thanks again,

--

Ian Davis

Marquette City Fire Chief

418 S. Third St.

Brown, Patrick R BMC

Ian,

1. We actively conduct interviews with the media before, during, and near the end of ice season. We have included our partners in some of the media coverage to include how we respond, the training we conduct, and general ice safety for the public.

We do produce a brochure and have actively walked around to ice shanties and ice fishermen, distributing the material. For the entire Great Lakes, we use social media to get the message out regularly.

Here is an example of one of the media news releases:

http://www.uscgnews.com/go/doc/4007/2694370/Coast-Guard-Think-ice-safety-this-Black-Friday-Cyber-Monday

What these news releases do is get the media thinking about the message [sic] and they typically contact the local Coast Guard station to cover a story on ice safety.

Whenever we do tours with the schools here at the station [sic] we push the ice safety message. There are no signs we put anywhere.

2. We prepare for ice rescue, but we are inhibited by our response time to the area we cover. Because of this, we rely heavily on our partner agencies who perform this mission. Thankfully, the Coast Guard has invested much time and money into training and preparing our crews for this mission. Additionally, we have taken the responsibility to train our partners in the latest techniques and with the most up to date [sic] equipment. We send our members to a "train the

trainer" course. At this course, we learn how to conduct training in a classroom setting and then on the ice.

Every agency is at a different level, and the training varies. With a department like Marquette, it is more of an interagency coop [sic], and we practice working together refreshing each other on techniques. With smaller departments, we go over the basics, and it is strictly a teaching session.

Due to our limited response, our hope is the training we provide will give the agency the ability to respond quickly to the incident and save the lives of each victim. By the time we arrive at the further [sic] points in our coverage area, it is to provide any assistance in extended searches or in wrapping up the mission.

If you have any questions about this or need more info, please let me know.

Thanks,

Patrick

Very Respectfully and God Bless,

BMC Patrick R. Brown

USCG Station Marquette

Appendix B

Email transcript for questions posed to Lieutenant Peter Wright of the Marquette office of the Michigan Department of Natural Resources on September 13, 2016.

Lt. Wright,

I am writing a research paper on preventing cold water immersion injuries on Lake Superior for my executive fire officer program. I was wondering if you would be able to answer a couple of questions.

Does the MIDNR employ any interventions to prevent ice immersion injuries or deaths on Lake Superior?

Examples could include public education through media, social media, print materials, public presentations, signage, etc.

If so, could you provide copies or a link to the information?

Thank you for your time and consideration.

--

Ian Davis

Marquette City Fire Chief

Chief Davis,

Sorry for the delayed response. I forwarded your initial email onto another, and it looks like it didn't get answered. We've done press releases and media interviews (print and tv) on a yearly basis. For example, http://www.michigan.gov/dnr/0,4570,7-153-10364_52261_63242-160657--,00.html and

http://www.mlive.com/outdoors/index.ssf/2015/01/dnr_provides_safety_tips_for_i.html

Hopefully, you find this information helpful and again, I apologize for the delayed response.

F/Lt. Peter Wright

Department of Natural Resources

Law Enforcement Division

District 1 Law Supervisor

1990 U.S. Hwy 41 South

Marquette, MI 49855

Appendix C

1. Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?

   Yes

   No

2. Has your jurisdiction experienced cold water immersion emergencies?

   Yes

   No

3. Have the user groups affected by the emergencies been identified?

   Yes

   No

4. If so, who were they?

   Ice fishers

   Snowmobilers

   Silent sports users (biking, snowshoeing, ice sailing, etc.)

   Other (please specify)

5. Does your jurisdiction have an ice safety program?

   Yes

   No

6. If so, how long has it been active?

   Less than five years

   5 to10 years

   Over ten years

7. What physical interventions are utilized?

   Warning signs

   Self-rescue equipment (ice picks, whistles, traction aids, etc.)

   Rescue stations (rope bags/throw rings, etc.)

   Other (please specify)

8. What types of public education are utilized?

   Media (TV, radio, newspaper)

   Social media

   Print materials (brochures, posters, etc...)

   Public presentations

   Other (please specify)

9. Has the effectiveness of the program been evaluated?

   Yes

   No

10. If so, what evaluation methods were utilized, and what were the conclusions?

11. Has the program been successful?

Yes, (please explain)

No, (please explain)

12. Please provide any additional information that would help this research.

Appendix D

Acknowledging the risk to Marquette city residents and visitors posed by cold water immersion emergencies on Lake Superior, the Marquette City Fire Department will dovetail the following interventions into the existing waterfront safety program.

Warning Signs

Warning signs will be placed at the following locations:

1. Presque Isle Marina boat launch
2. The mouth of the Dead River
3. The mouth of the Carp River

These are the most frequently used access points for ice fishing in the City of Marquette.

Ice Pick and Safety Whistle Program

Self-rescue ice picks and safety whistles will be distributed to the public free of charge from Stations one and two. The public will be notified of their availability on the City's website and the fire department's Facebook page, by press release to the news media, and included on all ice safety print materials.

Lifesaving Stations

Additional lifesaving stations, such as the one pictured below, will be constructed adjacent to the mouth of the Carp River, the mouth of the Dead River, and near the boat launch at the Presque Isle Marina.

Public Education Interventions

Consistent and comprehensive ice safety education information will be provided to the public via all available news media, social media, print materials, public presentations, and the fire department's website.

Marquette City Website

The following ice safety information will be added to the City of Marquette's website on the fire department's page.

ICE SAFETY

The Marquette City Fire Department would like to remind residents and visitors that no ice is safe ice, so take safety precautions to reduce the risk of falling through the ice.

- Ensure you have up-to-date information on ice conditions before venturing out on the ice.
- Ice thickness may be affected by the wind, rain, snow, water currents, and temperature.
- Never go out on the ice alone without letting someone know where you are going and when you expect to return. Fill out the ICE PLAN (hyperlink) and leave it with a responsible person.
- The buddy system works best but make sure to spread out when traveling on ice.
- Never go out on the ice without safety equipment.
- A life jacket, ice picks, a whistle, rope, and a cell phone can all help you survive if you or your buddy falls through the ice.
- Self-rescue ice pick and whistle kits are available free of charge from the Marquette City Fire Department, stations 1 and 2, through a generous grant from the Keweenaw Bay Indian Community.

WHAT IF I FALL IN?

- Don’t panic!
- The safest place to pull yourself out of the water is the last place you stepped before you broke through.
- Kick your feet and use your ice picks to assist in pulling yourself onto the ice.
- Don’t try to stand up. Roll away from the weak ice.
- Call 911

The following link will take you to a video demonstration of self-rescue techniques.

https://www.youtube.com/watch?v=QKpAzvXSldA

WHAT IF MY BUDDY FALLS IN?

- Don’t panic!
- If your buddy isn’t wearing a life jacket, throw him something buoyant to keep him afloat.
- Call 911. The faster rescuers get on scene, the better chances of survival.
- If you don’t have a rope, locate the nearest lifesaving station. Don the life jacket and grab the life ring with attached rope.
- Throw the life ring to your buddy and assist pulling him onto the ice.
- If he begins to pull you in, release your grip and try again.

ICE PLAN

Complete this page before you go out onto the ice. Leave it with a reliable person who will notify 911 if you do not return as scheduled.

1. Number of persons on the ice: _____

   Name Age Address/phone

2. Does anyone have medical conditions?

   YES NO Explain: _____

   _____

3. Trip expectations: Leaving at _____

   From _____

   Going to _____

   Expected to return by _____

4. Protective equipment (circle as appropriate)

   Life jackets Dry suit Ice picks

   Flashlight Rope Whistle

5. Radio/cellphone: YES NO # _____

6. Vehicle information

   License plate# _____ Type _____

   Make _____ Color _____

   Location _____

7. Purpose of trip _____

   Call 911 if not returned by _____

PSA Example for Newspaper, Radio, and TV

PUBLIC SERVICE ANNOUNCEMENT

For Immediate Release

September 30, 2016

For More Information:

Marquette City Fire Department / (906) 225-8936

Ice Safety

With Lake Superior and other water bodies beginning to ice up, the Marquette City Fire Department would like to remind residents and visitors that no ice is safe ice, so take safety precautions to reduce the risk of falling through the ice.

- Ensure you have up-to-date information on ice conditions before venturing out on the ice. Ice thickness may be affected by the wind, rain, snow, water currents, and temperature.
- Never go out on the ice alone without letting someone know where you are going and when you expect to return. The buddy system works best but make sure to spread out when traveling on ice.
- Never go out on the ice without safety equipment. A life jacket, ice picks, a whistle, and a cell phone can all help you survive if you fall through the ice.
- Self-rescue ice pick and whistle kits are available free of charge from the Marquette City Fire Department, stations 1 and 2.
- For instruction on self-rescue and buddy rescue techniques, please consult the City's website at www.mqtcty.org and click on the fire department link.

For additional information, consult the City's website or access the fire department's Facebook page at www.facebook.com/Marquette-City-Fire-Department. For questions or concerns, please call the Marquette City Fire Department at (906) 225-8936.

Facebook

The Marquette City Fire Department Facebook page will be utilized to deliver ice safety educational material by directly posting department approved ice safety content and by sharing related content from the U.S. Coast Guard and Michigan Department of Natural Resources Facebook pages.

Brochure

The following brochure will be given to all Marquette hotels and gas stations for distribution to the public by November 1st of every year. The hotels will cover a significant portion of the visitors to Marquette. The gas stations will be able to give out the brochures to fishers as they purchase their fishing licenses. Additionally, the brochure will be provided to Northern Michigan University to disseminate to students during their fall orientation.

ICE PLAN

Complete this page before you go out on the ice.
Leave it with a reliable person who will notify 911 if you do not return as scheduled.

1. Number of persons on the ice: _____
   Name Age Address/phone

2. Does anyone have medical conditions?
   Yes No Explain: _____
   _____
   _____

3. Trip expectations: Leaving at _____
   From _____
   Going to _____
   Expected to return by _____

4. Protective equipment (circle as appropriate)
   Life jackets Dry suit Ice picks
   Flashlight Rope Whistle

5. Radio/cellphone: Yes No #_____

6. Vehicle information
   License#_____ Type_____
   Make _____ Color _____
   Location _____

7. Purpose of trip _____

Call 911 if not returned by _____

More information is just a click away

www.mqtcty.org

www.facebook.com/Marquette-City-Fire-Department

Marquette City Fire Department

Marquette City Fire Department
418 S. Third Street
Marquette, MI 49855
Phone: 906-225-8936

For emergencies dial 911

SAFETY ON THE ICE

TIPS FOR STAYING SAFE ON LAKE SUPERIOR IN THE WINTER

ICE SAFETY

With Lake Superior and other water bodies beginning to ice up, the Marquette City Fire Department would like to remind residents and visitors that no ice is safe ice, so take safety precautions to reduce the risk of falling through the ice.

- Ensure you have up to date information on ice conditions before venturing out on the ice.
- Ice thickness may be affected by wind, rain, snow, water currents, and temperature.
- Never go out on the ice alone without letting someone know where you are going and when you expect to return. Fill out the ICE PLAN and leave it with a responsible person.
- The buddy system works best but make sure to spread out when travelling on ice.
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WHAT IF I FALL IN?

- Don't panic!
- The safest place to pull yourself out of the water is the last place you last stepped before you broke through.
- Kick your feet and use your ice picks to assist in pulling yourself onto the ice.
- Don't try to stand up. Roll away from the weak ice.
- Call 911

WHAT IF MY BUDDY FALLS IN?

- Don't panic!
- If your buddy isn't wearing a life jacket, throw him something buoyant to keep them afloat.
- Call 911. The faster rescuers get on scene, the better chances of survival.
- If you don't have a rope, locate the nearest lifesaving station. Don the life jacket and grab the life ring with attached rope.
- Throw the life ring to your buddy and assist pulling him onto the ice.
- If he starts to pull you in, release your grip and try again.
- For more information on self-rescue and buddy rescue techniques, please consult the City's website at www.mqtcty.org and click on the fire department link.

Public Presentation

The following PowerPoint slides will be added to the existing water safety presentation delivered annually to the 6th-grade students at Bothwell Middle school.

Ice Water Safety
No Ice is Safe Ice

- Never go onto the ice on Lake Superior without a responsible adult.
- Let someone know where you are going and when you plan to return.
- Know the current ice conditions before you go.
- Always bring safety equipment including, life jackets, ice picks, whistles, rope, and a cell phone.

Ice Water Safety

- January 20th - 11:00pm: A Marquette man was looking for a fishing spot in the city's Lower Harbor. He was walking on the ice near the ore dock when the surface beneath him fell out, dropping him into the frigid waters of Lake Superior.

1 - 10 - 1

- 1-10-1 is a simple way to remember the first three phases of cold water immersion and the approximate time each phase takes.
- Cold Shock
- Functional Disability
- Hypothermia

Cold Shock

- 1 - Cold Shock. An initial deep and sudden gasp followed by hyperventilation. You must keep your airway clear or run the risk of drowning. Cold Shock will pass in about one minute. During that time concentrate on avoiding panic and getting control of your breathing. Wearing a lifejacket during this phase is critically important to keeping you afloat and breathing.

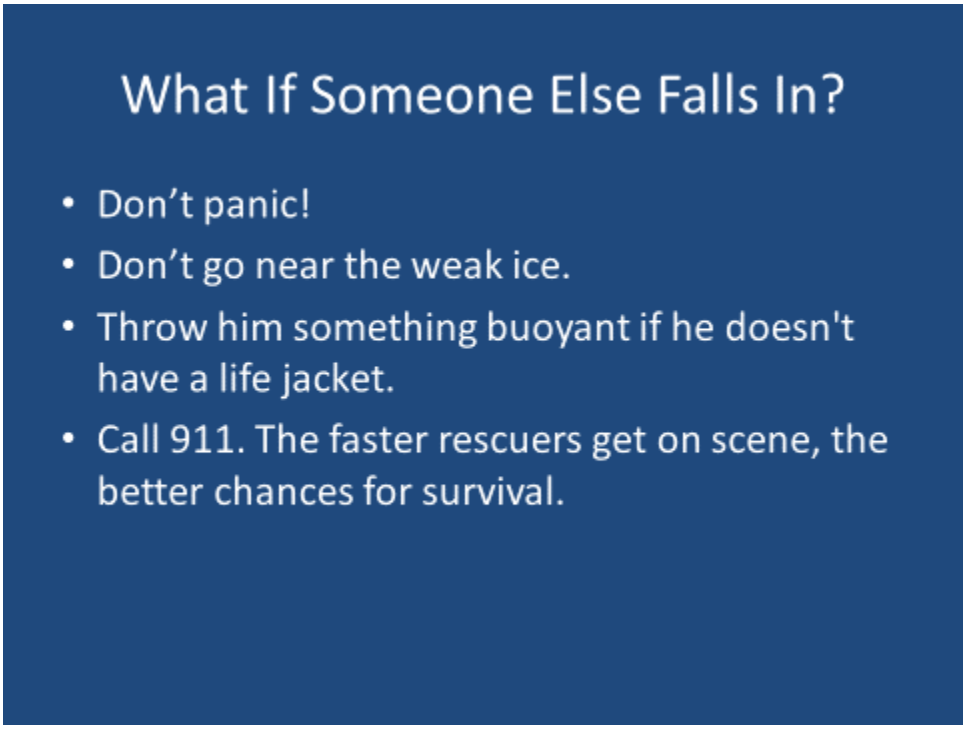
Functional Disability

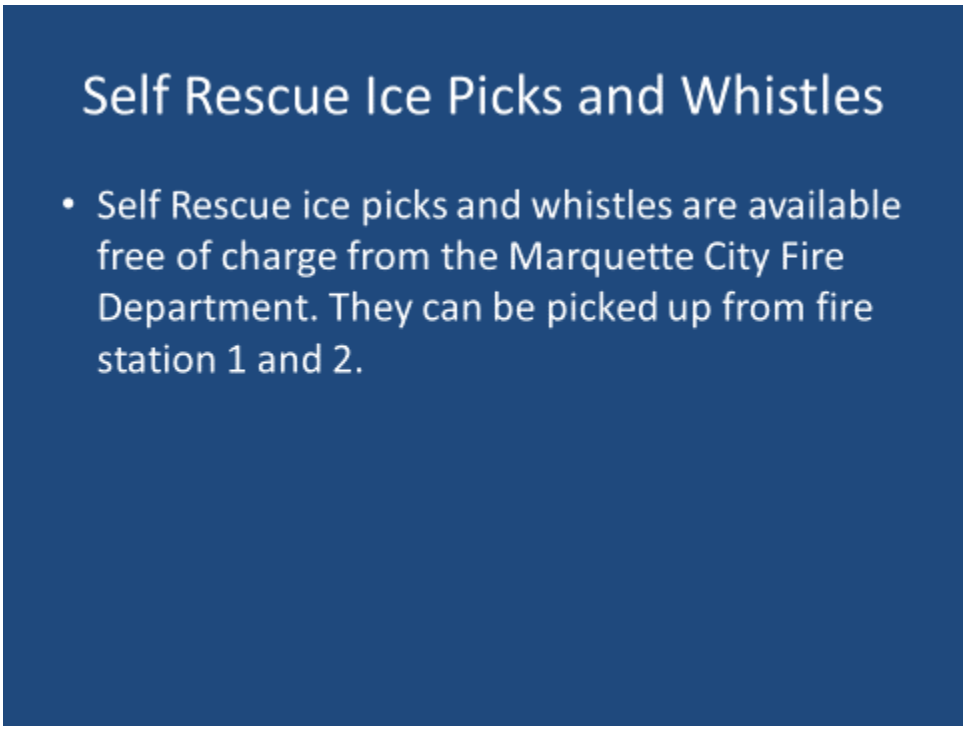
- 10 – Functional Disability. Over approximately the next 10 minutes you will lose the effective use of your fingers, arms and legs for any meaningful movement. Concentrate on self rescue initially, and if that isn't possible, prepare to have a way to keep your airway clear to wait for rescue. Swim failure will occur within these critical minutes and if you are in the water without a lifejacket, drowning will likely occur.

Hypothermia

- 1 - Hypothermia. Even in ice water it could take approximately one hour before becoming unconscious due to Hypothermia.
- Hypothermia is when the body's core temperature falls below 95° F.
- Body heat can be lost 25 times faster in cold water than in cold air.


What If I Fall In?
• Don’t panic!
• The safest place to pull yourself out is the last place you stepped before you fell in.
• Kick your feet and use your ice picks to assist in pulling yourself onto the ice.
• Don’t try to stand up. Roll away from the weak ice.
• Call 911


What If Someone Else Falls In?
• Don’t panic!
• Don’t go near the weak ice.
• Throw him something buoyant if he doesn't have a life jacket.
• Call 911. The faster rescuers get on scene, the better chances for survival.



Program Evaluation

- The knowledge of the ice warning signs and the utilization rate for the ice pick and whistle program will be measured by direct inquiry of users by the Marquette Fire Department.
- The use of the lifesaving stations will be directly measured by their reported use during lifesaving incidents.
- The ice safety information on the fire department's web page and Facebook page will be measured by clicks and shares.
- The utilization of the ice safety brochure will be measured by the number disseminated to the public.
- The public education presentation will be evaluated by pre and post-testing. The following questions will be added to the current waterfront safety pre and post-test.

1. Is it ever okay to go out onto the ice by yourself?

2. Can you name three pieces of safety equipment that could help you if you fell through the ice?

3. What are the three phases of cold water immersion?

4. What is the first thing to remember if you fall through the ice?

5. What is the best tool to keep your head above water if you fall through the ice?

6. What is the best tool to help pull you out of the water?

7. What number should you call if you have an emergency?

Appendix E

The following is the transcript of an interview with Marquette City Manager, Mike Angeli, on October 5, 2016, to determine the existence and extent of barriers to the implementation of the ice safety program.

Davis: “After reviewing the draft ice safety program, do you see any barriers to its implementation?”

Angeli: “What’s this going to cost?”

Davis: “The cost of erecting the signage would be $300. The lifesaving stations would cost $3,000 total, and the ice pick and whistle sets would cost about $4,000 for 450-500 sets.”

Angeli: The only thing I see is the cost. We could install the signs on the lifesaving stations. That would lower that cost a bit.

Davis: On the ice picks and whistles, we could approach the KBIC (Keweenaw Bay Indian Community) and see if they would consider covering it. They’ve covered life safety equipment costs in the past as part of their 2% gaming revenue payment.

Angeli: What about asking local businesses to sponsor those and the lifesaving stations?

Davis: Sounds good. I’ll incorporate these ideas into the final draft.

Appendix F

The following is the transcript of an interview with the IAFF Local 643 executive board on October 5, 2016, to determine the existence and extent of barriers, found by the firefighter's union membership, to the implementation of the ice safety program. President, Kurt Hillier and Vice President, Kirk Vogler present. The interview was conducted at the Marquette City Fire Department, station 1.

Davis: “After looking over the program, do you see any barriers or problems?”

Hillier: “Only one. Under program evaluation it says that we'll be going out on the ice to see if people are using the ice picks. I think we'll get some push back on this. We're pressed for time as it is.”

Davis: “Kirk?”

Vogler: "I think Kurt's right. That would take up too much time. I don't think we'd be able to fit it in. I don't see anything else, though."

Davis: “The Coast Guard mentioned that they already make contact with fishermen out on the ice. I can contact them and see if they’d be willing to check on the use of the picks and whistles while they’re out there.”

Appendix G

Acknowledging the risk to Marquette city residents and visitors posed by cold water immersion emergencies on Lake Superior, the Marquette City Fire Department will dovetail the following interventions into the existing waterfront safety program.

Warning Signs

Warning signs will be placed on new lifesaving stations at the following locations:

1. Presque Isle Marina boat launch
2. The mouth of the Dead River
3. The mouth of the Carp River

These are the most frequently used access points for ice fishing in the City of Marquette. Marquette businesses will be solicited to sponsor the cost of the signs as part of the lifesaving stations.

Ice pick and safety whistle program

Self-rescue ice picks and safety whistles will be distributed to the public free of charge from Stations one and two. The public will be notified of their availability on the City's website and the fire department's Facebook page, by press release to the news media, and included on all ice safety print materials. A grant application will be submitted to the Keweenaw Bay Indian Community asking them to pay for 500 sets.

Lifesaving Stations

Additional lifesaving stations, such as the one pictured below, will be constructed adjacent to the mouth of the Carp River, the mouth of the Dead River, and near the boat launch at the Presque Isle Marina. Marquette businesses will be solicited to sponsor the lifesaving stations.

Public Education Interventions

Consistent and comprehensive ice safety education information will be provided to the public via all available news media, social media, print materials, public presentations, and the fire department's website.

Marquette City Website

The following ice safety information will be added to the City of Marquette's website on the fire department's page.

ICE SAFETY

The Marquette City Fire Department would like to remind residents and visitors that no ice is safe ice, so take safety precautions to reduce the risk of falling through the ice.

- Ensure you have up-to-date information on ice conditions before venturing out on the ice.
- Ice thickness may be affected by the wind, rain, snow, water currents, and temperature.
- Never go out on the ice alone without letting someone know where you are going and when you expect to return. Fill out the ICE PLAN (hyperlink) and leave it with a responsible person.
- The buddy system works best but make sure to spread out when traveling on ice.
- Never go out on the ice without safety equipment.
- A life jacket, ice picks, a whistle, rope, and a cell phone can all help you survive if you or your buddy falls through the ice.
- Self-rescue ice pick and whistle kits are available free of charge from the Marquette City Fire Department, stations 1 and 2, through a generous grant from the Keweenaw Bay Indian Community.

WHAT IF I FALL IN?

- Don’t panic!
- The safest place to pull yourself out of the water is the last place you stepped before you broke through.
- Kick your feet and use your ice picks to assist in pulling yourself onto the ice.
- Don’t try to stand up. Roll away from the weak ice.
- Call 911

The following link will take you to a video demonstration of self-rescue techniques.

https://www.youtube.com/watch?v=QKpAzvXSldA

WHAT IF MY BUDDY FALLS IN?

- Don’t panic!
- If your buddy isn’t wearing a life jacket, throw him something buoyant to keep him afloat.
- Call 911. The faster rescuers get on scene, the better the chances of survival.
- If you don’t have a rope, locate the nearest lifesaving station. Don the life jacket and grab the life ring with attached rope.
- Throw the life ring to your buddy and assist in pulling him onto the ice.
- If he begins to pull you in, release your grip and try again.

ICE PLAN

Complete this page before you go out onto the ice. Leave it with a reliable person who will notify 911 if you do not return as scheduled.

1. Number of persons on the ice: _____

Name Age Address/phone

2. Does anyone have medical conditions?

YES NO Explain: _____

_____

3. Trip expectations: Leaving at _____

   From _____

   Going to _____

   Expected to return by _____

4. Protective equipment (circle as appropriate)

   Life jackets Dry suit Ice picks

   Flashlight Rope Whistle

5. Radio/cellphone: YES NO # _____

6. Vehicle information

   License plate# _____ Type _____

   Make _____ Color _____

   Location _____

7. Purpose of trip _____

   Call 911 if not returned by _____

PSA example for newspaper, radio, and TV

PUBLIC SERVICE ANNOUNCEMENT

For Immediate Release

September 30, 2016

For More Information:

Marquette City Fire Department / (906) 225-8936

Ice Safety

With Lake Superior and other water bodies beginning to ice up, the Marquette City Fire Department would like to remind residents and visitors that no ice is safe ice, so take safety precautions to reduce the risk of falling through the ice.

- Ensure you have up-to-date information on ice conditions before venturing out on the ice. Ice thickness may be affected by the wind, rain, snow, water currents, and temperature.
- Never go out on the ice alone without letting someone know where you are going and when you expect to return. The buddy system works best but make sure to spread out when traveling on ice.
- Never go out on the ice without safety equipment. A life jacket, ice picks, a whistle, and a cell phone can all help you survive if you fall through the ice.
- Self-rescue ice pick and whistle kits are available free of charge from the Marquette City Fire Department, stations 1 and 2.
- For instruction on self-rescue and buddy rescue techniques, please consult the City's website at www.mqtcty.org and click on the fire department link.

For additional information, consult the City's website or access the fire department's Facebook page at www.facebook.com/Marquette-City-Fire-Department. For questions or concerns, please call the Marquette City Fire Department at (906) 225-8936.

Facebook

The Marquette City Fire Department Facebook page will be utilized to deliver ice safety educational material by directly posting department approved ice safety content and by sharing related content from the U.S. Coast Guard and Michigan Department of Natural Resources Facebook pages.

Brochure

The following brochure will be given to all Marquette hotels and gas stations for distribution to the public by November 1st of every year. The hotels will cover a significant portion of the visitors to Marquette. The gas stations will be able to give out the brochures to fishers as they purchase their fishing licenses.

ICE PLAN

Complete this page before you go out on the ice. Leave it with a reliable person who will notify 911 if you do not return as scheduled.

1. Number of persons on the ice: _____
   Name Age Address/phone
2. Does anyone have medical conditions?
   Yes No Explain: _____
   _____
3. Trip expectations: Leaving at _____
   From _____
   Going to _____
   Expected to return by _____
4. Protective equipment (circle as appropriate)
   Life jackets Dry suit Ice picks
   Flashlight Rope Whistle
5. Radio/cellphone: Yes No #_____
6. Vehicle information
   License#_____ Type_____
   Make _____ Color _____
   Location _____
7. Purpose of trip _____
   Call 911 if not returned by _____

More information is just a click away

www.mqtcty.org

www.facebook.com/Marquette-City-Fire-Department

Marquette City Fire Department

SAFETY ON THE ICE

TIPS FOR STAYING SAFE ON LAKE SUPERIOR IN THE WINTER

Marquette City Fire Department
418 S. Third Street
Marquette, MI 49855
Phone: 906-225-8936

For emergencies dial 911

ICE SAFETY

With Lake Superior and other water bodies beginning to ice up, the Marquette City Fire Department would like to remind residents and visitors that no ice is safe ice, so take safety precautions to reduce the risk of falling through the ice.

- Ensure you have up to date information on ice conditions before venturing out on the ice.
- Ice thickness may be affected by wind, rain, snow, water currents, and temperature.
- Never go out on the ice alone without letting someone know where you are going and when you expect to return. Fill out the ICE PLAN and leave it with a responsible person.
- The buddy system works best, but make sure to spread out when travelling on ice.
- Never go out on the ice without safety equipment.
- A life jacket, ice picks, a whistle, rope, and a cellphone can all help you survive if you or your buddy falls through the ice.
- Self-rescue ice pick and whistle kits are available free of charge from Marquette City Fire stations 1 and 2.

WHAT IF I FALL IN?

- Don't panic!
- The safest place to pull yourself out of the water is the last place you last stepped before you broke through.
- Kick your feet and use your ice picks to assist in pulling yourself onto the ice.
- Don't try to stand up. Roll away from the weak ice.
- Call 911

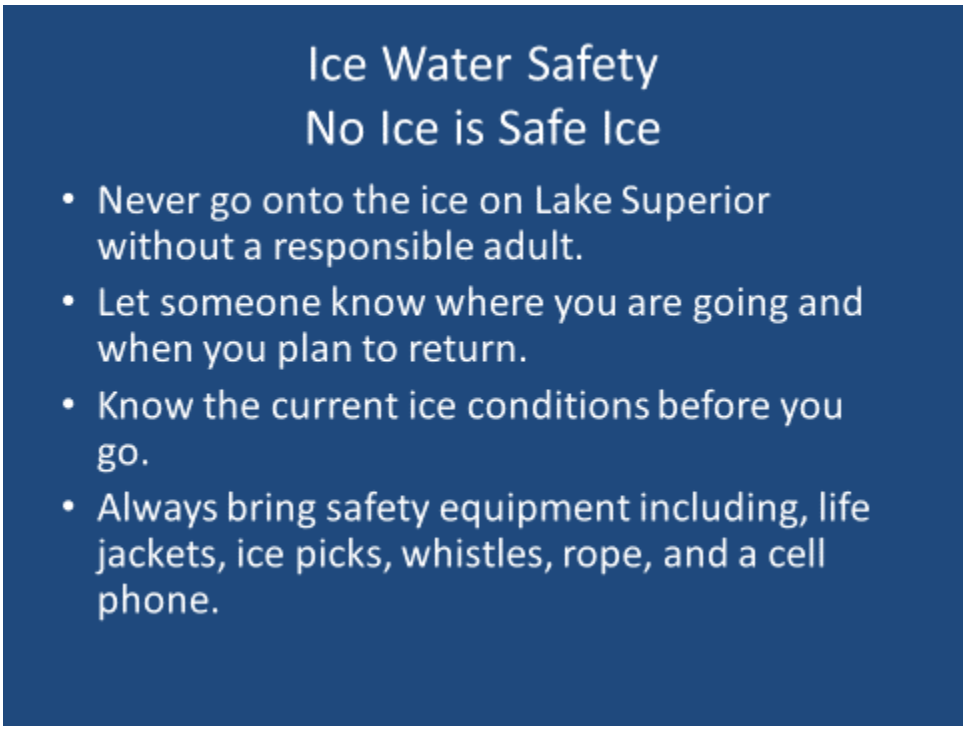
WHAT IF MY BUDDY FALLS IN?

- Don't panic!
- If your buddy isn't wearing a life jacket, throw them something buoyant to keep them afloat.
- Call 911. The faster rescuers get on scene, the better chances of survival.
- If you don't have a rope, locate the nearest lifesaving station. Don the life jacket and grab the life ring with attached rope.
- Throw the life ring to your buddy and assist pulling them onto the ice.
- If they start to pull you in, release your grip and try again.

- For more information on self-rescue and buddy rescue techniques, please consult the City's website at www.mqtcty.org and click on the fire department link.

Public presentation

The following PowerPoint slides will be added to the existing water safety presentation delivered annually to the 6th-grade students at Bothwell Middle school.



Ice Water Safety

- January 20th - 11:00pm: A Marquette man was looking for a fishing spot in the city's Lower Harbor. He was walking on the ice near the ore dock when the surface beneath him fell out, dropping him into the frigid waters of Lake Superior.

1 - 10 - 1

- 1-10-1 is a simple way to remember the first three phases of cold water immersion and the approximate time each phase takes.
- Cold Shock
- Functional Disability
- Hypothermia

Cold Shock

- 1 - Cold Shock. An initial deep and sudden gasp followed by hyperventilation. You must keep your airway clear or run the risk of drowning. Cold Shock will pass in about one minute. During that time concentrate on avoiding panic and getting control of your breathing. Wearing a lifejacket during this phase is critically important to keeping you afloat and breathing.

Functional Disability

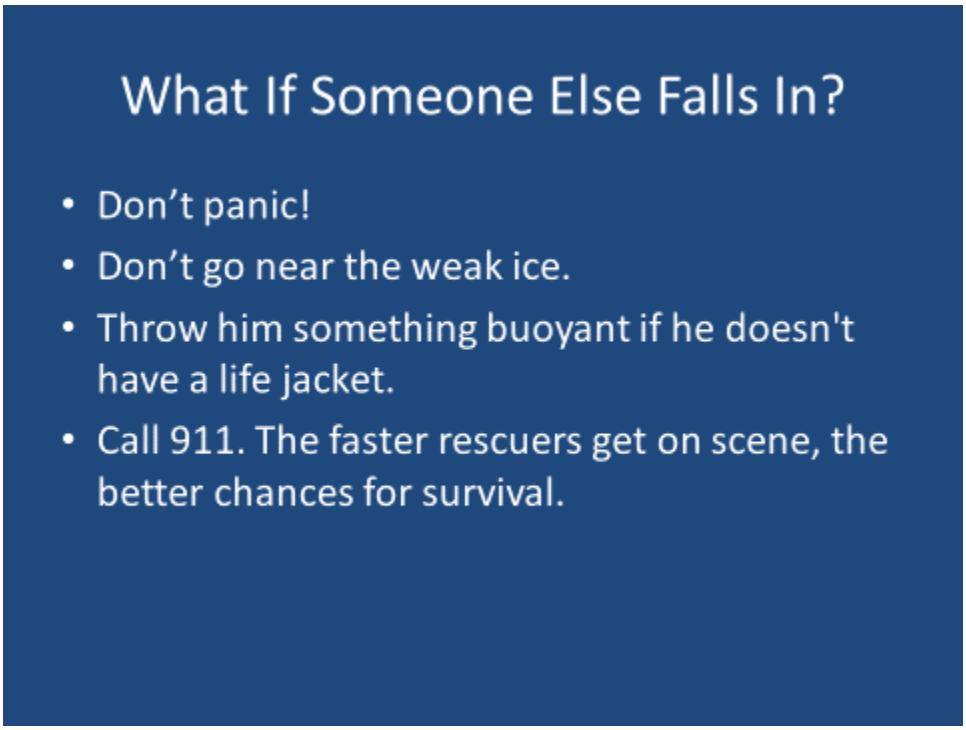
- 10 – Functional Disability. Over approximately the next 10 minutes you will lose the effective use of your fingers, arms and legs for any meaningful movement. Concentrate on self rescue initially, and if that isn't possible, prepare to have a way to keep your airway clear to wait for rescue. Swim failure will occur within these critical minutes and if you are in the water without a lifejacket, drowning will likely occur.

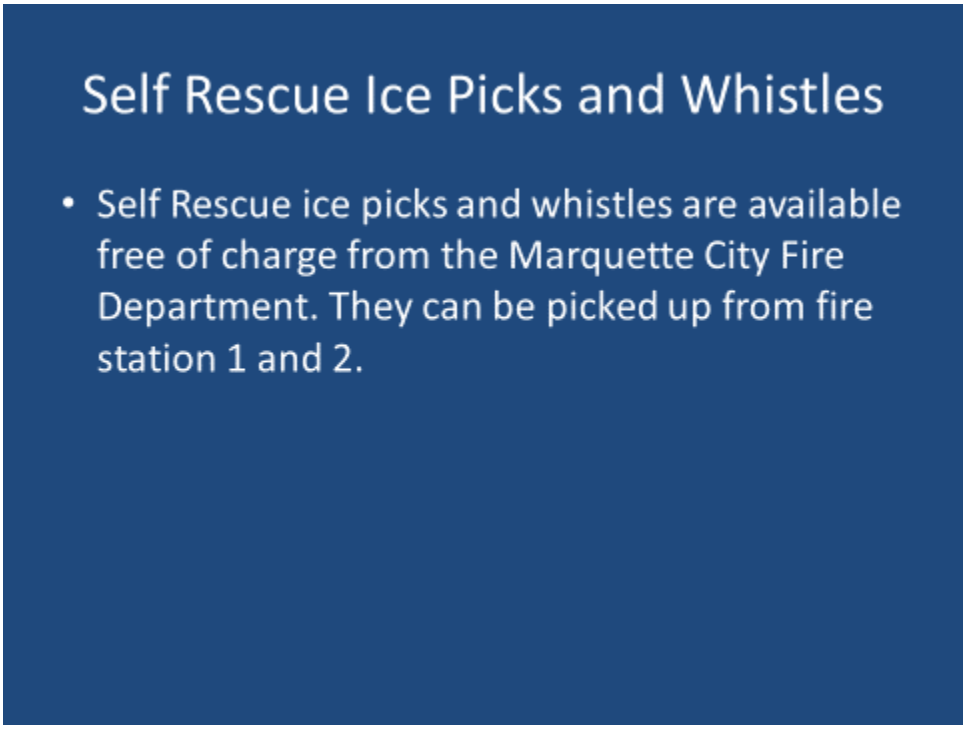
Hypothermia

- 1 - Hypothermia. Even in ice water it could take approximately one hour before becoming unconscious due to Hypothermia.
- Hypothermia is when the body's core temperature falls below 95° F.
- Body heat can be lost 25 times faster in cold water than in cold air.

What If I Fall In?

- Don't panic!
- The safest place to pull yourself out is the last place you stepped before you fell in.
- Kick your feet and use your ice picks to assist in pulling yourself onto the ice.
- Don't try to stand up. Roll away from the weak ice.
- Call 911


What If Someone Else Falls In?
• Don’t panic!
• Don’t go near the weak ice.
• Throw him something buoyant if he doesn't have a life jacket.
• Call 911. The faster rescuers get on scene, the better chances for survival.


Self Rescue Ice Picks and Whistles
• Self Rescue ice picks and whistles are available free of charge from the Marquette City Fire Department. They can be picked up from fire station 1 and 2.

Program Evaluation

- The knowledge of the ice warning signs and the utilization rate for the ice pick and whistle program will be measured by direct inquiry of users by U.S. Coast Guard Station Marquette personnel.
- The use of the lifesaving stations will be directly measured by their reported use during lifesaving incidents.
- The ice safety information on the fire department's web page and Facebook page will be measured by clicks and shares.
- The utilization of the ice safety brochure will be measured by the number disseminated to the public.
- The public education presentation will be evaluated by pre and post-testing. The following questions will be added to the current waterfront safety pre and post-testing.

1. Is it ever okay to go out onto the ice by yourself?
2. Can you name three pieces of safety equipment that could help you if you fell through the ice?
3. What are the three phases of cold water immersion?
4. What is the first thing to remember if you fall through the ice?
5. What is the best tool to keep your head above water if you fall through the ice?
6. What is the best tool to help pull you out of the water?
7. What number should you call if you have an emergency?

Appendix H

Cold Water Immersion Emergencies — SurveyMonkey

#1 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 1:25:57 PM
Last Modified: Wednesday, June 15, 2016 1:26:57 PM
Time Spent: 00:01:00
IP Address: 70.196.201.251

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Silent sports users (biking, snowshoeing, ice sailing, etc...)
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

1 / 57

Cold Water Immersion Emergencies SurveyMonkey

#2 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 1:30:08 PM
Last Modified: Wednesday, June 15, 2016 1:31:56 PM
Time Spent: 00:01:47
IP Address: 70.194.135.86

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Ice fishers, Snowmobilers
Q5: **Does your jurisdiction have an ice safety program?**	Yes
Q6: **If so, how long has it been active?**	5 to10 years
Q7: **What physical interventions are utilized?**	Warning signs
Q8: **What types of public education are utilized?**	Media (TV, radio, newspaper), Social media, Public presentations
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#3 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 1:28:44 PM
Last Modified: Wednesday, June 15, 2016 1:32:57 PM
Time Spent: 00:04:13
IP Address: 66.241.66.84

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	No
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	No
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: **If so, who were they?**	Other (please specify) N/A
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: **What physical interventions are utilized?**	Other (please specify) No program
Q8: **What types of public education are utilized?**	Other (please specify) No program
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*

Q10: **If so, what evaluation methods were utilized, and what were the conclusions?**

N/A

Q11: **Has the program been successful?**

Yes, (please explain)	N/A
No, (please explain)	N/A

Q12: **Please provide any additional information that would help this research.**

We have mountainous areas around our jurisdiction that would potentially benefit from this type of a program.

Q13: **If you would like a copy of the completed research, please provide your name, organization, and email address.**

N/A

Cold Water Immersion Emergencies SurveyMonkey

#4 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 1:33:52 PM
Last Modified: Wednesday, June 15, 2016 1:34:32 PM
Time Spent: 00:00:39
IP Address: 173.13.31.185

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: **What physical interventions are utilized?**	Warning signs
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#5 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 1:35:50 PM
Last Modified: Wednesday, June 15, 2016 1:36:31 PM
Time Spent: 00:00:41
IP Address: 128.177.40.53

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#6 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 1:36:19 PM
Last Modified: Wednesday, June 15, 2016 1:37:20 PM
Time Spent: 00:01:01
IP Address: 71.89.135.210

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#7 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 1:38:33 PM
Last Modified: Wednesday, June 15, 2016 1:39:11 PM
Time Spent: 00:00:37
IP Address: 208.187.105.70

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#8 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 1:39:29 PM
Last Modified: Wednesday, June 15, 2016 1:40:32 PM
Time Spent: 00:01:03
IP Address: 75.144.70.141

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#9 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 1:38:29 PM
Last Modified: Wednesday, June 15, 2016 1:40:44 PM
Time Spent: 00:02:14
IP Address: 142.165.199.15

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Ice fishers, Snowmobilers, Silent sports users (biking, snowshoeing, ice sailing, etc...) , Other (please specify) Citizwens walking across the water body
Q5: **Does your jurisdiction have an ice safety program?**	Yes
Q6: **If so, how long has it been active?**	5 to10 years
Q7: **What physical interventions are utilized?**	Warning signs
Q8: **What types of public education are utilized?**	Media (TV, radio, newspaper), Social media, Print materials (brochures, posters, etc...)
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: **Has the program been successful?** Yes, (please explain)	We haven't had anyone go through the ice in the past 10 years
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#10 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 1:39:55 PM
Last Modified: Wednesday, June 15, 2016 1:41:07 PM
Time Spent: 00:01:11
IP Address: 75.77.50.162

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	No
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#11 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 1:40:13 PM
Last Modified: Wednesday, June 15, 2016 1:41:20 PM
Time Spent: 00:01:07
IP Address: 50.195.221.69

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Ice fishers
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#12 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 1:41:16 PM
Last Modified: Wednesday, June 15, 2016 1:42:13 PM
Time Spent: 00:00:57
IP Address: 216.54.20.2

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	No
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: **If so, how long has it been active?**	Less than 5 years
Q7: **What physical interventions are utilized?**	Warning signs
Q8: **What types of public education are utilized?**	Media (TV, radio, newspaper), Social media
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#13 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 1:43:45 PM
Last Modified: Wednesday, June 15, 2016 1:45:18 PM
Time Spent: 00:01:33
IP Address: 70.192.202.24

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Other (please specify) Cold ocean water
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: **If so, how long has it been active?**	Less than 5 years
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: **What types of public education are utilized?**	Public presentations
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#14 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 1:45:17 PM
Last Modified: Wednesday, June 15, 2016 1:46:58 PM
Time Spent: 00:01:41
IP Address: 75.133.66.210

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Ice fishers, Snowmobilers, Silent sports users (biking, snowshoeing, ice sailing, etc...) , Other (please specify) Sledders
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#15 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 1:46:43 PM
Last Modified: Wednesday, June 15, 2016 1:48:13 PM
Time Spent: 00:01:29
IP Address: 24.236.150.70

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Ice fishers
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#16 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 1:43:51 PM
Last Modified: Wednesday, June 15, 2016 1:49:32 PM
Time Spent: 00:05:40
IP Address: 209.112.153.166

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Ice fishers, Snowmobilers, Silent sports users (biking, snowshoeing, ice sailing, etc...) , Other (please specify) children
Q5: **Does your jurisdiction have an ice safety program?**	Yes
Q6: **If so, how long has it been active?**	Over ten years
Q7: **What physical interventions are utilized?**	Warning signs, Other (please specify) Education and Awareness programs
Q8: **What types of public education are utilized?**	Media (TV, radio, newspaper), Social media
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*

Q12: **Please provide any additional information that would help this research.**

We have not evaluated the effectiveness of the program. Cold water immersion emergencies are a rare event when compared to other incidents. Due to our long winters information on ice safety is disseminated by a wide variety of groups throughout the state and municipality.

Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#17

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 1:56:33 PM
Last Modified: Wednesday, June 15, 2016 1:57:50 PM
Time Spent: 00:01:17
IP Address: 66.110.218.159

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Silent sports users (biking, snowshoeing, ice sailing, etc...)
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#18 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 2:00:19 PM
Last Modified: Wednesday, June 15, 2016 2:01:31 PM
Time Spent: 00:01:12
IP Address: 38.101.101.254

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Ice fishers, Snowmobilers
Q5: **Does your jurisdiction have an ice safety program?**	Yes
Q6: **If so, how long has it been active?**	5 to10 years
Q7: **What physical interventions are utilized?**	Rescue stations (rope bags / throw rings, etc...)
Q8: **What types of public education are utilized?**	Media (TV, radio, newspaper)
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#19 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 2:01:06 PM
Last Modified: Wednesday, June 15, 2016 2:03:13 PM
Time Spent: 00:02:07
IP Address: 216.54.131.135

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: **If so, who were they?**	Other (please specify) They are usually individuals who accidently fall into our rivers
Q5: **Does your jurisdiction have an ice safety program?**	Yes
Q6: **If so, how long has it been active?**	Over ten years
Q7: **What physical interventions are utilized?**	Other (please specify) none
Q8: **What types of public education are utilized?**	Media (TV, radio, newspaper), Public presentations
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: **Has the program been successful?** Yes, (please explain)	not sure, we only have one or two per year
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#20 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 2:02:40 PM
Last Modified: Wednesday, June 15, 2016 2:03:32 PM
Time Spent: 00:00:52
IP Address: 142.166.100.70

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Ice fishers, Snowmobilers, Silent sports users (biking, snowshoeing, ice sailing, etc...)
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: **What types of public education are utilized?**	Media (TV, radio, newspaper)
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#21 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 2:06:11 PM
Last Modified: Wednesday, June 15, 2016 2:09:08 PM
Time Spent: 00:02:57
IP Address: 67.253.24.81

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Other (please specify) we are a commercial fishing community
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#22 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 2:15:51 PM
Last Modified: Wednesday, June 15, 2016 2:20:04 PM
Time Spent: 00:04:12
IP Address: 208.87.234.201

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Ice fishers, Other (please specify) Chlidren exploring frozen waters
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: **What physical interventions are utilized?**	Warning signs
Q8: **What types of public education are utilized?**	Media (TV, radio, newspaper)
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: **Has the program been successful?** No, (please explain)	No real follow-up but have seen a decrease in incidents.
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#23 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 2:19:38 PM
Last Modified: Wednesday, June 15, 2016 2:20:45 PM
Time Spent: 00:01:06
IP Address: 173.9.112.76

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Ice fishers, Other (please specify) Pond hockey
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#24 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 2:21:41 PM
Last Modified: Wednesday, June 15, 2016 2:23:07 PM
Time Spent: 00:01:26
IP Address: 12.231.44.178

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: **If so, how long has it been active?**	Less than 5 years
Q7: **What physical interventions are utilized?**	Warning signs, Self rescue equipment (ice picks, whistles, traction aids,etc...)
Q8: **What types of public education are utilized?**	Media (TV, radio, newspaper)
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: **Has the program been successful?** Yes, (please explain)	undetermined. It has been a few years since an ice immersion incident has occurred
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#25 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 2:22:39 PM
Last Modified: Wednesday, June 15, 2016 2:23:57 PM
Time Spent: 00:01:17
IP Address: 192.132.206.4

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Other (please specify) Personnel working near water.
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: **What physical interventions are utilized?**	Rescue stations (rope bags / throw rings, etc...)
Q8: **What types of public education are utilized?**	Print materials (brochures, posters, etc...)
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: **Has the program been successful?** Yes, (please explain)	One event in 20 years.
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#26 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 2:29:36 PM
Last Modified: Wednesday, June 15, 2016 2:30:28 PM
Time Spent: 00:00:52
IP Address: 12.187.77.2

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	No
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	No
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#27 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 2:34:31 PM
Last Modified: Wednesday, June 15, 2016 2:35:58 PM
Time Spent: 00:01:27
IP Address: 67.52.221.162

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Snowmobilers, Silent sports users (biking, snowshoeing, ice sailing, etc...)
Q5: Does your jurisdiction have an ice safety program?	*Respondent skipped this question*
Q6: **If so, how long has it been active?**	Less than 5 years
Q7: **What physical interventions are utilized?**	Warning signs
Q8: **What types of public education are utilized?**	Social media, Print materials (brochures, posters, etc...), Public presentations
Q9: **Has the effectiveness of the program been evaluated?**	No

Q10: **If so, what evaluation methods were utilized, and what were the conclusions?**

N/A

Q11: **Has the program been successful?**

No, (please explain)	Unknown at this time
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#28 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 2:25:07 PM
Last Modified: Wednesday, June 15, 2016 2:43:00 PM
Time Spent: 00:17:52
IP Address: 64.181.34.236

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	No
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: **What physical interventions are utilized?**	Other (please specify) N/A
Q8: **What types of public education are utilized?**	Other (please specify) N/A
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*

Q10: **If so, what evaluation methods were utilized, and what were the conclusions?**

N/A

Q11: Has the program been successful?	*Respondent skipped this question*

Q12: **Please provide any additional information that would help this research.**

N/A

Q13: **If you would like a copy of the completed research, please provide your name, organization, and email address.**

N/A

Cold Water Immersion Emergencies SurveyMonkey

#29 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 2:42:41 PM
Last Modified: Wednesday, June 15, 2016 2:43:52 PM
Time Spent: 00:01:10
IP Address: 216.56.49.162

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	No
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*

Q12: **Please provide any additional information that would help this research.**

We have a total of 2 small ponds in our response area.

Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#30 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 2:46:07 PM
Last Modified: Wednesday, June 15, 2016 2:48:43 PM
Time Spent: 00:02:36
IP Address: 198.59.47.100

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Other (please specify) Anecdotally, we experience general recreationalist going though the ice. A significant number are those that go in after dogs, geeses, deer and other critters
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#31

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 2:51:12 PM
Last Modified: Wednesday, June 15, 2016 2:51:47 PM
Time Spent: 00:00:34
IP Address: 24.236.53.42

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	No
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	No
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#32 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 2:54:12 PM
Last Modified: Wednesday, June 15, 2016 2:55:40 PM
Time Spent: 00:01:28
IP Address: 66.49.89.168

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Silent sports users (biking, snowshoeing, ice sailing, etc...)
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#33 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 3:10:46 PM
Last Modified: Wednesday, June 15, 2016 3:12:40 PM
Time Spent: 00:01:53
IP Address: 98.249.254.32

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Other (please specify) people wandering onto ice, chasing after a dog
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#34 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 3:38:36 PM
Last Modified: Wednesday, June 15, 2016 3:39:53 PM
Time Spent: 00:01:16
IP Address: 38.126.110.9

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Silent sports users (biking, snowshoeing, ice sailing, etc...) , Other (please specify) children
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: **What physical interventions are utilized?**	Warning signs
Q8: **What types of public education are utilized?**	Media (TV, radio, newspaper), Social media
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#35 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 3:48:26 PM
Last Modified: Wednesday, June 15, 2016 3:49:01 PM
Time Spent: 00:00:35
IP Address: 216.188.192.249

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	No
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#36 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 4:18:47 PM
Last Modified: Wednesday, June 15, 2016 4:19:30 PM
Time Spent: 00:00:43
IP Address: 70.195.64.58

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	No
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	No
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies — SurveyMonkey

#37

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 4:25:00 PM
Last Modified: Wednesday, June 15, 2016 4:25:52 PM
Time Spent: 00:00:51
IP Address: 50.245.114.69

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Silent sports users (biking, snowshoeing, ice sailing, etc...)
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#38 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 4:29:13 PM
Last Modified: Wednesday, June 15, 2016 4:31:30 PM
Time Spent: 00:02:17
IP Address: 206.40.109.123

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Ice fishers, Snowmobilers
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*

Cold Water Immersion Emergencies — SurveyMonkey

#39

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 4:49:40 PM
Last Modified: Wednesday, June 15, 2016 4:51:19 PM
Time Spent: 00:01:38
IP Address: 38.86.75.240

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Ice fishers, Snowmobilers, Silent sports users (biking, snowshoeing, ice sailing, etc...)
Q5: **Does your jurisdiction have an ice safety program?**	Yes
Q6: **If so, how long has it been active?**	Less than 5 years
Q7: **What physical interventions are utilized?**	Self rescue equipment (ice picks, whistles, traction aids,etc...)
Q8: **What types of public education are utilized?**	Media (TV, radio, newspaper), Social media, Print materials (brochures, posters, etc...), Public presentations
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#40 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 5:01:15 PM
Last Modified: Wednesday, June 15, 2016 5:02:19 PM
Time Spent: 00:01:04
IP Address: 198.1.40.246

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Other (please specify) Children and dog walkers primarily.
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#41 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 5:11:22 PM
Last Modified: Wednesday, June 15, 2016 5:12:36 PM
Time Spent: 00:01:14
IP Address: 96.63.178.47

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	No
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Ice fishers, Silent sports users (biking, snowshoeing, ice sailing, etc...)
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#42 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 5:30:31 PM
Last Modified: Wednesday, June 15, 2016 5:32:34 PM
Time Spent: 00:02:02
IP Address: 70.163.45.7

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Ice fishers, Other (please specify) Children as well as adolescents venturing onto unsafe frozen streams and ponds
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#43

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 6:20:07 PM
Last Modified: Wednesday, June 15, 2016 6:20:57 PM
Time Spent: 00:00:49
IP Address: 207.170.240.238

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Ice fishers, Silent sports users (biking, snowshoeing, ice sailing, etc...)
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#44

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 7:37:35 PM
Last Modified: Wednesday, June 15, 2016 7:38:53 PM
Time Spent: 00:01:18
IP Address: 66.119.2.33

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#45 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 8:30:48 PM
Last Modified: Wednesday, June 15, 2016 8:31:32 PM
Time Spent: 00:00:44
IP Address: 70.194.135.59

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	No
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#46

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 10:11:15 PM
Last Modified: Wednesday, June 15, 2016 10:22:08 PM
Time Spent: 00:10:52
IP Address: 166.175.188.9

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Other (please specify) Children and adolescents. Also several events related to animal rescues and the public getting into trouble trying to take action prior to FD arrival
Q5: **Does your jurisdiction have an ice safety program?**	Yes
Q6: **If so, how long has it been active?**	Over ten years
Q7: **What physical interventions are utilized?**	Self rescue equipment (ice picks, whistles, traction aids,etc...)
Q8: **What types of public education are utilized?**	Public presentations, Other (please specify) All elementary schools in our jurisdiction are taught water safety and ice safety topics within our public safety education programs at our schools
Q9: **Has the effectiveness of the program been evaluated?**	No

Q10: **If so, what evaluation methods were utilized, and what were the conclusions?**

NA

Q11: **Has the program been successful?**

No, (please explain)	Since we haven't really done a full eval of the program it is hard to quantify the results. However anecdotally it appears we have had less pediatric events

Q12: **Please provide any additional information that would help this research.**

Wish I had more to offer, but congrats to you for your EFO efforts! Good luck

Cold Water Immersion Emergencies SurveyMonkey

#47

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, June 15, 2016 11:47:18 PM
Last Modified: Wednesday, June 15, 2016 11:50:08 PM
Time Spent: 00:02:50
IP Address: 108.79.46.103

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Ice fishers, Snowmobilers, Silent sports users (biking, snowshoeing, ice sailing, etc...) , Other (please specify) Ice skaters
Q5: **Does your jurisdiction have an ice safety program?**	Yes
Q6: **If so, how long has it been active?**	Over ten years
Q7: **What physical interventions are utilized?**	Other (please specify) Community education
Q8: **What types of public education are utilized?**	Media (TV, radio, newspaper), Print materials (brochures, posters, etc...), Public presentations
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: **Has the program been successful?** No, (please explain)	Unable to quantify
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#48 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Thursday, June 16, 2016 9:02:57 AM
Last Modified: Thursday, June 16, 2016 9:04:37 AM
Time Spent: 00:01:39
IP Address: 184.191.234.11

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	No
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#49

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Thursday, June 16, 2016 9:45:06 AM
Last Modified: Thursday, June 16, 2016 9:48:33 AM
Time Spent: 00:03:27
IP Address: 199.188.121.224

PAGE 1

Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Ice fishers, Other (please specify) Children on family or subdivision lakes/ponds
Q5: **Does your jurisdiction have an ice safety program?**	Yes
Q6: **If so, how long has it been active?**	5 to10 years
Q7: **What physical interventions are utilized?**	Other (please specify) Public education only
Q8: **What types of public education are utilized?**	Social media, Print materials (brochures, posters, etc...), Public presentations
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#50

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Thursday, June 16, 2016 11:32:55 AM
Last Modified: Thursday, June 16, 2016 11:33:47 AM
Time Spent: 00:00:51
IP Address: 170.232.28.4

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Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#52 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Thursday, June 16, 2016 12:59:56 PM
Last Modified: Thursday, June 16, 2016 1:02:31 PM
Time Spent: 00:02:35
IP Address: 70.209.19.19

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Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	No
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: **What physical interventions are utilized?**	Warning signs, Rescue stations (rope bags / throw rings, etc...)
Q8: **What types of public education are utilized?**	Media (TV, radio, newspaper), Social media
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#53 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Thursday, June 16, 2016 6:38:24 PM
Last Modified: Thursday, June 16, 2016 6:44:22 PM
Time Spent: 00:05:58
IP Address: 73.177.160.215

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Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	Yes
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	No
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: **Has the program been successful?**	
No, (please explain)	No funding

Q12: **Please provide any additional information that would help this research.**

As a high risk low frequency event, the county has not seen fit to find any ice rescue equipment. Being located in central Virginia, we receive thin to moderate ice over our lakes and ponds during the winter months. The risk has been identified but due to finding restraints and the ruralness of the county, no training/funding have taken place. Unfortunately it will take a loss of life for full recognition of the problem to come to light.

Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#54 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Friday, June 17, 2016 9:40:06 AM
Last Modified: Friday, June 17, 2016 9:45:38 AM
Time Spent: 00:05:31
IP Address: 69.80.69.131

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Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	No
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	Yes
Q3: **Have the user groups affected by the emergencies been identified?**	Yes
Q4: **If so, who were they?**	Other (please specify) South Fla does freeze but all FD's have potential issues during the winter, ie veh in canal/lake/pond etc Quest 1 is flawed
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: **If so, how long has it been active?**	Less than 5 years
Q7: **What physical interventions are utilized?**	Rescue stations (rope bags / throw rings, etc...)
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: **Has the effectiveness of the program been evaluated?**	No
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: **Has the program been successful?**	
No, (please explain)	included in all first aid, BLS and ALS training certification

Q12: **Please provide any additional information that would help this research.**

Little does anyone think of So Fla having issues with cold water but any time in both of our winter days (jk). We have many days "blustery and cold at 50 degrees) over the winter months but longer term exposure at far higher temps can also create issues. this is difficult if not more specific.

Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*

Cold Water Immersion Emergencies SurveyMonkey

#55 COMPLETE

Collector: Web Link 1 (Web Link)
Started: Friday, June 17, 2016 11:01:12 PM
Last Modified: Friday, June 17, 2016 11:02:16 PM
Time Spent: 00:01:03
IP Address: 70.193.27.136

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Q1: **Does your jurisdiction have bodies of water that freeze in the winter and have the potential for cold water immersion emergencies?**	No
Q2: **Has your jurisdiction experienced cold water immersion emergencies?**	No
Q3: **Have the user groups affected by the emergencies been identified?**	No
Q4: If so, who were they?	*Respondent skipped this question*
Q5: **Does your jurisdiction have an ice safety program?**	No
Q6: If so, how long has it been active?	*Respondent skipped this question*
Q7: What physical interventions are utilized?	*Respondent skipped this question*
Q8: What types of public education are utilized?	*Respondent skipped this question*
Q9: Has the effectiveness of the program been evaluated?	*Respondent skipped this question*
Q10: If so, what evaluation methods were utilized, and what were the conclusions?	*Respondent skipped this question*
Q11: Has the program been successful?	*Respondent skipped this question*
Q12: Please provide any additional information that would help this research.	*Respondent skipped this question*
Q13: If you would like a copy of the completed research, please provide your name, organization, and email address.	*Respondent skipped this question*