INTRODUCTION

There have been 22 recorded deaths from drowning in Junction Creek since 1921, as well as many injuries and near death situations. On August 25th, 2007, Adam Dickie, a 13 year old Sudbury boy, was fishing on the shores of Junction Creek with a friend. Adam slipped and fell into the creek and wasn’t able to get back out because of the depth of the water. Water levels were high due to heavy rainfall.

Adam’s death prompted an appeal by members of the community to find solutions for stopping any further unnecessary deaths and injury in fast-flowing water. “Swift water” in area lakes, rivers and drainage ditches can be life threatening. Education with regards to this issue is a positive step in protecting the children in our community.

BACKGROUND INFORMATION

- water levels for rivers and creeks get very high and currents get very powerful, especially in the spring because of the melting snow, and also during heavy rain
- creek and river bottoms can be dangerous, muddy and unstable
- creek mud is different than regular sand, it exerts a force or suction on objects
- objects or people may get stuck and be unable to move
- murky water can hide objects or debris that can trap someone
- unexpected drop-offs are also a hazard
- even though the temperature outside might be warming up, the water is still very cold
- even ditches beside the road can be dangerous during high water periods
- some roadside ditches are deeper than you think
- even if the water still looks frozen, ice is thinner on moving water because of currents
- banks are soft and slippery, especially in the spring and fall
- the human body does not float well in fast flowing water (has more air, aerated water provides less buoyancy than calm water)
- hydroelectric dams and stations are dangerous places because water is moving fast around them, strong undercurrents can quickly overwhelm even a strong swimmer, water levels change quickly, calm water can quickly become dangerous
CALM WATER:
Water that does not move, no current, waves or ripples

CURRENT:
The flow and direction of water. Water in the centre of a lake moves faster than water on the edges.

UNDERCURRENT:
Current is the way water flows. Undercurrent is water beneath the surface flowing in a different direction from the water on top.

DEBRIS:
Scattered remains of something that has been thrown away (junk, trash, garbage)

DOWNSTREAM:
Moving in the same direction the water is flowing.

BARRIER:
Something that blocks the way

FAST-FLOWING WATER:
Water that moves quickly and steadily along in a stream.

BANK:
The slope bordering a stream or creek.

DRAINAGE DITCH:
A long, narrow trench, made by digging and used for draining water.

RUNOFF:
Water that drains or flows, due to rain or melting snow.

HYDROELECTRICITY:
Hydroelectricity is electricity generated by hydropower (the production of power through use of the gravitational force of falling or flowing water).
**MILLIE SAYS...**

<table>
<thead>
<tr>
<th>Safety Tip</th>
<th>Reason</th>
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<tbody>
<tr>
<td>Never go near the water without an adult.</td>
<td>An adult should always know where you are in case of an emergency.</td>
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<tr>
<td>Stay off the ice over fast-flowing water.</td>
<td>Ice over fast-flowing water may appear safe, but is thin and dangerous.</td>
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<tr>
<td>Never retrieve objects that have fallen in the creek.</td>
<td>The current might be stronger than it seems.</td>
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<tr>
<td>Always use designated trails when walking by the water.</td>
<td>Creek and river banks are soft and slippery.</td>
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<tr>
<td>Stay away from drainage ditches.</td>
<td>Some roadside ditches are deeper than you think.</td>
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<tr>
<td>Stay clear, stay safe.</td>
<td>Stay away from dams, hydroelectric stations and surrounding waterways.</td>
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**WHAT TO DO IF YOU FALL IN THE WATER**

- Don’t try to swim against the current
- Float on your back, draw your knees up to your chest and point your feet to go with the current.
- Try to steer your body gently towards the shore, where the water is shallower and you can regain your footing.

**WHAT TO DO IF A FRIEND FALLS IN THE WATER**

- Never try to rescue a friend who’s in the water.
- If you are with an adult, ask them for help immediately, or if you know someone in the area, go and ask them for help.
- If you have a cell phone, call 911 for help immediately. Tell the operator where you are and what has happened.
- Stay on the shore, away from the water, until help arrives.
- If you do not have a cell phone, you can run to a nearby home to ask an adult for help, or find a pay phone and dial 911 for help immediately. This call is free of charge.
Safety

Be sure and tell children exactly where they can and cannot go and make sure you are nearby and can see them at all times. For their safety, teach them what the signs and other barriers mean.

As a rule, remember to:

- Stay out of dry or calm riverbeds below dams. They can quickly change into rapidly flowing waterways with dangerous currents.
- Stay a safe distance outside of warning signs, buoys, booms and barriers and be alert for changes in water levels.
- Stay away from the edge of a waterway where footing may be slippery.
- Don't wade into moving water.
- When swimming, fishing, boating or paddling in a river, be aware of the water level and check upstream frequently for any sign of increasing currents or rising water. If the water level is rising or the flow is speeding up, get out of the water or move your boat downstream. Obey all signs and barriers.

Teach children to Stay Clear and Stay Safe!

For more information or to obtain a FREE DVD and FREE interactive, educational computer game for children, simply visit www.opg.com

The area between booms and dams is very dangerous. Stay Clear!

We take pride in operating our facilities around dams, hydroelectric stations & surrounding waterways

Stay Clear. Stay Safe!

TRESPASSERS CAN BE CHARGED. TO ENSURE YOUR SAFETY, TRESPASSING ON OPG PROPERTY IS ILLEGAL.
Stay Clear, Stay Safe around dams, hydroelectric stations and surrounding waterways

Getting too close to dams and hydroelectric stations is always dangerous. A spot that seems calm and safe one moment can turn into a dangerous surge of rising and fast-flowing water – quickly and often without any warning.

Our operators can’t see you

Most facilities are remotely-controlled by operators many kilometres away. They open or close dams, to manage river flows, and start or stop generators throughout the day and night as demand for electricity rises and falls.

This may result in frequent, rapid and dangerous changes in water levels and flows, changes that can harm those who venture too close.

Be especially careful when near waters above and below dams and hydroelectric stations.

At a generating station, water from above the dam runs through the station and then surges out to join the main stream of the river.

In areas above and below dams, fast-moving water creates dangerous turbulence and strong undercurrents which are not always apparent from the calm looking surface waters.

Stay Clear, Stay Safe around dams, hydroelectric stations and surrounding waterways

Remotely-operated dam gates can quickly turn calm waters or dry riverbeds into dangerous flows.

Stay Clear, Stay Safe

What happens when you fail to stay clear, stay safe?

Before

After
Stay Clear, Stay Safe around dams, hydroelectric stations and surrounding waterways

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Be especially careful when near waters above and below dams and hydroelectric stations. At a generating station, water from above the dam runs through the station and then surges out to join the main stream of the river. In areas above and below dams, fast-moving water creates dangerous turbulence and strong undercurrents which are not always apparent from the calm looking surface waters. Even if you can’t see a generating station or dam, waterways upstream and downstream can still be affected by their operations. It’s important to be aware of the potential dangers caused by changing flows, and stay clear of waters near stations and dams.

Don’t find yourself on thin ice. Winter brings more dangers. Ice forming near a dam or hydroelectric station can be thinner and less consistent than ice in other locations because of changing water flows beneath it.

Be Alert!
Even if you can’t see a generating station or dam, waterways upstream and downstream can still be affected by their operations. It’s important to be aware of the potential dangers caused by changing flows, and stay clear of waters near stations and dams.

Dams and hydroelectric stations are not recreation areas
Be wise not to treat hydroelectric facilities as fishing holes, boating areas or swimming areas. These areas are not safe for any recreational activities, including camping, picnicking or even winter activities such as snowmobiling or cross-country skiing.

Put safety first. When travelling on unfamiliar paths or waterways, plan your trip ahead. For your own safety near a dam or hydroelectric station, make sure that you:

- Obey ALL warning signs, fences, buoys, booms and barriers. They are put there to protect you. The areas inside are dangerous, so stay clear.
- Some signs have pictures that show the consequences of not staying clear.
- Stay well back from the edge of waters above and below dams and hydroelectric stations.
- Never stand below a dam, or anchor or tie your boat there. Rapidly changing water levels and flows can swamp your boat or pull you into an undertow.
- Stay off dams or hydroelectric station structures, unless OPG has clearly indicated where it is safe to walk or drive.
- Avoid snowmobiling, cross-country skiing, skating or ice fishing on rivers or lakes near dams and generating stations.
- Don’t risk walking onto a river or lake around dams and generating stations where the ice may be thin due to the current. Changing water levels can crack the ice, leaving it weak and unstable.
Teach children to Stay Clear and Stay Safe!

Be sure and tell children exactly where they can and cannot go and make sure you are nearby and can see them at all times. For their safety, teach them what the signs and other barriers mean.

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Stay Clear. Stay Safe!

We take pride in operating our facilities safely, in a manner that respects the environment and the rights of other users of the waterways.

Please respect the hazards near our dams and stations, and obey all warning signs, booms, buoys, and barriers. They are there for your protection.

For more information or to obtain a FREE DVD and FREE interactive, educational computer game for children, simply visit www.opg.com
OBJECTIVE:
Educate students about the dangers of fast-flowing water in the community.

STUDENTS WILL LEARN:
1. It is not safe to play near or in fast-flowing water (lakes, rivers, creeks, ditches)
2. Fast-flowing water safety practices.
3. How to respond when confronted with an emergency.

CURRICULUM EXPECTATIONS (HEALTH AND PHYSICAL EDUCATION):
GRADE 7
A3.1 demonstrate behaviours and apply procedures that maximize their safety and the safety of others during physical activity
C2.2 demonstrate the ability to assess situations for potential dangers

GRADE 8
A3.1 demonstrate behaviours and apply procedures that maximize their safety and the safety of others during physical activity
A3.2 demonstrate a basic understanding of how to deal with emergency situations that may occur while participating in physical activities

The grade 7 and 8 expectations for Personal Safety and Injury Prevention focus mainly on harassment and situations involving violence. Discussion related could highlight how to deal with peer pressure and possible dangerous consequences.

RESOURCES
• storybook
• poster
• colouring
• puppet
• DVD (refer to suggested activities)
LITERACY CONNECTION (ONTARIO WRITING EXEMPLAR TASK)

http://www.edu.gov.on.ca/eng/curriculum/elementary/writing18ex.pdf

GRADE 7 – Students can create a public service announcement, commercial or advertisement about the dangers of fast flowing water.

GRADE 8 – Using the newspaper article provided, students will write a letter to the editor taking a position on the issue of the creation of an emergency dive team in Sudbury.

OTHER CROSS-CURRICULAR SUGGESTIONS

1. Dramatize the story or an excerpt from the story.
3. Complete science experiment/demonstration (Appendix)
The father of a boy who drowned last summer in Junction Creek is disappointed in the city’s response to the tragedy following several months of study.

“It’s a start, but it’s not enough,” a sombre Denis Croteau said after city council endorsed a series of recommendations Wednesday aimed at preventing tragedies in Junction Creek.

Croteau’s son, Adam Dickie, 13, drowned in the creek on Aug. 25, 2007. The boy was playing with a friend along the banks of the rain-swollen, fast-flowing creek when he fell and was pulled underwater.

Denis Croteau observed police, firefighters and paramedics search a considerable distance along the creek for Adam on the day the boy died. It took about two hours for emergency workers to locate the boy’s body, found a few feet from where he fell in.

In subsequent days, Croteau called for the creation of a local diving team to search underwater for victims of such tragedies. Such a crew could have found Adam almost immediately after arriving on the scene, the boy’s father suggested.

Croteau made the same request to the Junction Creek Safety Committee, a city council advisory committee that was created last fall. He was on hand Wednesday as the committee presented several recommendations to council and said he was disappointed there was no proposal for creation of an emergency dive team.

“Where’s the diving team? The lack of a diving team is what held up the entire (search) process” the day Adam drowned, he said. “If the divers had been there earlier, they could have found him faster.”

The Junction Creek Safety Committee rejected the proposal for an emergency dive team due to cost implications, Ray Croteau said.

“That was my first recommendation to them and the answer was, ‘that would cost a lot.’ And I said, ‘how much is a life worth?’ “

Ward 12 Coun. Joscelyne Landry-Altmann, who chairs the safety committee, said she sympathizes with the Croteau family’s feelings. But Landry-Altmann said she has been informed there are “phenomenal” cost and logistical implications of maintaining a municipal rescue dive team.

“There are rarely, if ever, situations where an emergency dive team could rescue a potential drowning victim, said Marc Leduc, the city’s acting fire chief.

“Unfortunately, dive teams are used mostly for recovery,” Leduc said.

Still, city officials are open to further study of the merits of a municipal dive team, Leduc said. But it likely is more practical to consider establishing “swift-water” rescue capabilities, he said, referring to one of the Junction Creek Safety Committee’s recommendations.

RESPONSE NOT ENOUGH, VICTIM’S FATHER SAYS
Boy drowned in junction creek
By Denis St. Pierre | June 20, 2008

Given that Greater Sudbury has more than 300 water bodies, it makes sense to have a local emergency dive team, said Ray Croteau, Denis’s father and Adam’s grandfather.

“It took two hours to find Adam -- that’s ridiculous,” Ray Croteau said.

“This wouldn’t just be for Junction Creek,” he added. “We are the city of lakes. For Pete’s sake, let’s get a diving team here in Sudbury.”

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The committee provided city council with numerous recommendations for measures such as improved public education, creek monitoring and water-management planning; new policies to reduce dangerous obstructions and refuse in the creek; and infrastructure work such as fencing, signage and wires across culverts to improve safety and rescue efforts.

“The committee members realize that the actions required to improve the safety of Junction Creek will call upon many departments and community agencies,” Landry-Altmann said. “I will be taking this presentation to all agencies involved in fulfilling the recommendations over the next several months.”

Council endorsed the recommendation that immediate action be launched on five proposals, including the installation of a temporary fence along the creek in the Louis Street area where Adam drowned last year. The temporary fence will be installed while the city considers a long-term policy for fencing along the creek.

Other immediate measures call for city crews to remove fallen trees that hinder the creek’s current and often become unsafe “balance beams” that attract children, as well as pursuing a new bylaw to reduce the number of shopping carts dumped into the creek.

Landry-Altmann ended her presentation by reading aloud the names of 23 drowning victims known to have lost their lives in Junction Creek since 1921. She said later that she expects the city to create a memorial for Adam Dickie along Junction Creek.
OBJECTIVE:

Demonstrate the physical effects of cold water temperature (ability to move and control the body, reasoning, hypothermia).

MATERIALS:

- bucket
- ice
- water
- paper towels
- 100 coins (pennies)

PROCEDURE:

1. Place the coins in the bottom of the bucket. Fill the bucket with ice. Add water to fill almost to the top.

2. Ask for a student volunteer. Explain that they will have 3 minutes to pick out the coins one at a time and place on a paper towel. Ask for predictions from the class of how many coins the students will be able to remove.

3. Ask the student volunteer to explain how their hand feels after 1, 2, and 3 minutes in the ice water (numbness, stiffness, white colouring and lack of muscle control should be noticed). Ask the students to imagine the results if their entire body were to fall in cold water.

OTHER SUGGESTIONS

You may wish to try this experiment in smaller groups and have predictions, observations and conclusions recorded on a data sheet. Then have a group discussion after.

You may wish to research and discuss cold water conditions and the effects of cold water on the body before or after this activity.
OBJECTIVE:
Demonstrate the weight and force of moving water.

MATERIALS:
- bucket
- water
- cork
- hose or tap

ACTIVITIES:
1. In a large bucket or a sink full of water, swirl your hand around in the water to form a whirlpool. Drop a cork in the water and note how rapidly it moves and in which direction. Discuss the connection to current in fast-flowing water.

2. With a hose or water flowing from the tap, let the children feel the force of the water comin gout when you: turn it on slowly, half way, then full force. Water can exert a lot of pressure. Relate this to the force of the water in a fast-flowing river or creek.
SCIENCE CONNECTIONS

OBJECTIVE:
Determine the effect of aerated water on buoyancy.

MATERIALS:
• Several pennies
• 2 squares of aluminum foil (15cm x 15cm)
• a rectangular container with water in it
• straws

ACTIVITIES:
1. Design a boat made of aluminum foil that can hold pennies.
2. Experiment with different shapes and structures to come up with your best design.
3. Draw a diagram of your boat design.
4. Before you test your boat, predict how many pennies your boat will hold.
5. Test your boat to determine how many pennies it will hold before it sinks.
6. Record data.
7. Repeat the experiment using aerated water. (Using a straw, blow bubbles in the water).

CONCLUSIONS:
1. Discuss the difference between the two sets of data.
2. Why do you think this was the case? Refer specifically to the effect of the air bubbles in the water.
3. How does this relate to fast flowing water?
4. Does fast flowing water contain more air? If so, how would that affect the buoyancy of an object or person?