

A black and white line drawing of a diverse group of Indian people, including men and women of various ages and ethnicities, holding protest signs. The signs read "WHEN DO WE EAT?", "VOTES FOR WOMEN", "WE DEMAND OUR JOBS BACK!", and "WHEN DO WE EAT?". One woman is playing a stringed instrument.

Film Summary: On June 17, 1958, word quickly spread that the bridge crossing under construction across Second Narrows had collapsed. The film examines the reasons for the collapse and the impact it had on the Ironworkers who built it. In memory of the workers killed, the bridge is now known as the Ironworkers' Memorial Bridge.

The Essential Question:

What is the impact of workplace accidents on the lives of the workers and their families and the community at large?

1. Focus questions for the vignette provides a short lesson option. (15 minutes)
2. Students have a variety of writing assignments to complete after watching the vignette and reading the background information on the Second Narrows Bridge collapse.
3. An extension activity where the students investigate frequency and nature of workplace accidents since the collapse of the Second Narrows Bridge.

1. To be able to explain what workplace safety protocols are in place to protect workers in British Columbia.
2. To be aware of how individuals can provide leadership as agents for change in such matters as workplaces safety.
3. Access information and ideas on workplace safety prior to work placement to determine workplace safety risks.
4. Understand occupational health and safety rights and responsibilities, including trade-specific hazards, risk reduction, and the rights and procedures to refuse unsafe work.

Materials and Resources Provided

- [“Dark Day at Second Narrows” Working People – A History of Labour in British Columbia](#)
- Lesson Activity 1: Outline for Class Discussion
- Lesson Activity 2 Extension activities for students
- Lesson Activity 3: Further student inquiries

Additional Suggested Materials

- [Ironworkers Memorial Bridge Tribute](#)
- [George Orr “The Bridge”](#)
- [‘It’s a memory I can’t forget’: 60th anniversary of the Second Narrows Bridge collapse | Vancouver Sun](#)
- [Metro Vancouver Satellite Map](#)
- On the Line: A history of the British Columbia Labour Movement p144-149

Vignette Questions

1. What was the design type for the Second Narrows Bridge? (For further information research the design elements of this bridge type and explain where its design is applied.)
2. Most of the workers killed on the bridge collapse were part of which union?
3. How does the collapse of the Second Narrows Bridge rank as an industrial accident in Vancouver?
4. What was the most dangerous job after the bridge collapsed? Explain.
5. What was determined to be the cause of the collapse of the bridge by the inquiry?
6. What was the Second Narrows Bridge renamed in 1996?
7. What should be the lessons learned from the disaster at Second Narrows?

Lesson Activities

1. A short lesson option would involve showing the vignette and using the vignette questions to guide a follow-up discussion on the collapse of the Second Narrows Bridge.
2. For a more in-depth lesson use the suggested outline in Lesson Activity 1 to guide a more detailed class discussion on the collapse of the Second Narrows Bridge. (1 class period)
3. Further understanding of the event and exploration of current dangers in the workplace, students can be assigned one or more of the questions in Lesson Activity 2: Extension Activity for students. Guiding questions for a debriefing of the activity are found on page 4 of Lesson Activity 2.
4. Further extensions on the lesson are provided in Lesson Activity 3 where students can undertake directed research into a related topic of workplace safety.

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Credit: Teaching Activities and Lesson Plan developed by Al Cornes

Working People: A History of Labour in BC

Lesson: **Dark Day at Second Narrows**

Lesson Activity 1: Outline for class discussion

Notes prepared by A. Cornes

ESSENTIAL QUESTION FOR CLASS DISCUSSION: *What was the cause of the collapse of Ironworkers Memorial Bridge?*

Introduction: This lesson is designed to be taught in conjunction Career Life Education 10, Career Life Connections, Work Experience, Social Justice 12 and Law Studies 12. The homework assignment and the class discussion touch directly on the content of Career Life Education 10 with respect to health and safety inspections and the causes of injury to young workers.

Through extended activities, discussion can also touch on aspects of Law 12 with specific reference to criminal law (Westray amendments to the criminal code), civil law (negligence, liability, contract law, legal remedies).

Prior to showing the vignette, the teacher should ask the class whether they have ever crossed the Ironworkers Memorial Bridge at Second Narrows. Locate it on a map or have them do so. [Metro Vancouver Satellite Map](#)

Then read the first page of the introduction to “The Tragedy In Brief: Then and Now” (Appendix 1) up to and including the sentence that reads: “There we no major challenges that could not be handled in the first two years of construction. Things ran smoothly until June 17,1958.”.

Start the video; Dark Day at the Second Narrows

Once the video is finished, the teacher should review with the students the section of the reference notes (Appendix 1) dealing the Coroner’s Inquest, the findings of the Royal Commission, and Beyond the Commission of Inquiry. Teachers can then solicit some class discussion with the following prompts: (answers have been provided to assist with the discussion but should not be viewed as definitive)

1. Was the collapse of the Ironworkers Memorial Bridge (then the Second Narrows Bridge) preventable?

Answer: Considering the findings of the Inquiry Commission and the comments of Eric Jamieson, author of *Tragedy at Second Narrows*, the collapse was preventable when the following four problems occurred:

a. Only one supervisor approved calculations made by the assistant field engineer.

Murray McDonald, was the only supervising engineer assigned to approve the work of John McKibbin, the assistant field engineer. McKibbin was twenty-three years old and two years out of university. This supervisory arrangement grew out of the company’s unwritten policy of (isolating major projects—meaning that one project group of the company worked in total isolation of another and did not use resources or staff of another project. In this case it meant that McKibbin’s work was only checked by McDonald who had many other significant responsibilities.

Remedy Required: Ensure that at least one additional experienced senior engineer approves calculations.

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- b. **Lower standards for falseworks (temporary support structure) were applied making the structure unsafe.**

Remedy required: Materials used in the construction of falseworks should have the same material strength requirements as materials used in the main construction of the bridge.

- c. **One I-beam in the structure that collapsed was not up to standard.** (*The beam in cross section looks like an "I" and sits on top of a pillar.*)

Remedy Required: Review to determine what steps need to be taken with respect to quality control of component parts of the structure.

- d. **The use of "soft packing" for the beams that supported the temporary tower was a contributing cause of the collapse.**

Remedy required: Review to determine how the beams that supported the temporary tower will be soft packed in the future.

2. **The Ironworkers Memorial Bridge is one of three connections between Vancouver and the North Shore. Why is it so important?**

Answer: The three current connections are Ironworkers, Lions Gate and the Seabus. The Ironworkers is a vital connection between the North Shore, the communities that lie to the north—Squamish, Whistler and Pemberton and the lower mainland. It is also a vital commercial corridor to Vancouver Island via BC Ferries.

3. **What is a disaster? Would you call the collapse of the bridge a disaster?**

Answer: The Oxford dictionary defines a disaster as "...a sudden accident or a natural catastrophe that causes great damage or loss of life.

4. **What is the difference between a sudden accident and a natural catastrophe?**

Answer: The term "**accident**" can be defined as an unplanned event that interrupts the completion of an activity and may (or may not) include injury or property damage. It can include both human error, human neglect or a natural catastrophe.

A natural catastrophe is a major adverse event resulting from natural processes of the Earth examples includes floods, volcanoes, earthquakes, tsunamis and other geological processes.

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5. Under what circumstances are authorities required to conduct investigations into workplace safety? What is the purpose of the investigation?

Answer: In situations that present a high risk of causing a serious injury or death and accidents(incidents) and natural catastrophes that have caused a serious accident or death.

Investigations determine the causes and underlying factors

- Provide recommendations to industry to aid in the prevention of future injury and disease
- Gather information to help monitor and analyze industry trends on workplace fatalities, serious injuries, and diseases
- Identify associated compliance issues and help ensure compliance with law, regulation, and policy
- Refer cases for prosecution or administrative penalties, when necessary

6. Why is it important to determine the causes of an accident?

Answer: The term "accident" can be defined as an unplanned event that interrupts the completion of an activity, and that may (or may not) include injury or property damage. In addition to comments in #4, determination of cause is required to fulfill any legal requirements, to determine the cost of an accident, to determine liabilities and other financial obligations.

7. Your school is used by students, teachers, other employees, your parents and the public. What steps are taken to prevent accidents and to ensure that the building and grounds are healthy and safe? What steps are taken to ensure that unwanted people don't come into the building?

Answer: [The BC Healthy School Initiative/Vancouver Coastal Health Authority School Inspection Guideline](#) provides for school Inspections from the perspective of students: food services, communicable disease control, water supply, temperature, washrooms and change rooms, labs (handling of chemicals), exhaust ventilator, personal protective and safety equipment, indoor air quality, buildings and grounds, etc. Locate the Regional Health Authority Inspection Guideline document that applies to your school.

WorkSafe BC/BCTF Workplace Inspections provide support and direction for safe schools. Go to WorkSafe web for their information and search for the [BCTF Health and Safety Manual](#) at on the BCTF website and locate the requirements for the conducting workplace health and safety inspections in your school. The [BC Public Schools Employers' Association](#) also have resources on their website dealing with a range of health and safety topics.

8. Where negligence can be shown arising from an accident, what remedies are available to parents, teachers, other employees, members of the public? (Answer: civil lawsuits for injury or death, if an injured person proves that another person acted negligently to cause

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their injury, they can recover damages to compensate for their harm. A worker injured in the course of employment **cannot** sue his or her employer, any other employer, or any worker who is a part of the B.C. workers' compensation system and whose activities relating to the accident or disease also arose out of and in the course of employment. The *Workers Compensation Act* replaces lawsuits against employers and workers in a British Columbia workplace for injury, disease, or death caused to a worker acting in the course of employment. Compensation is provided without needing to establish that someone else was at fault for the accident.**

See [WorkSafeBC](#) for further details

* Key policies applicable to these sections of the WCA are RSCM II, Chapter 16, #110.00–112.40.

[Generally, a worker has no right to sue an employer or another worker in the course of their employment for a workplace injury.](#) Instead, they are entitled to benefits from the Board. This is the “Historic Trade Off” discussed above and set out at s. 127 of the WCA [Former Act, s. 10(1)]. Note that the conduct causing the injury must arise out of and in the course of employment before this bar against litigation will apply. Actions outside of the course of employment (for example, assault or criminal negligence) do not attract this bar against litigation.

**Note: Federal government employees are governed by the Government Employees Compensation

Act, RSC 1985, c G-5 which provides that injured federal government workers in a given province are to have their claims addressed by the provincial administrative body in that province.

Lesson: Dark Day at Second Narrows

Lesson Activity 2: Extension Activity for students

Homework Assignment: Complete the following questions/inquiries as directed by your teacher

Source: *Statistics, 2022*, Worksafe BC Publication date: January 2, 2024

<https://www.worksafebc.com/en/resources/about-us/annual-report-statistics/2022-statistics?lang=en>

Note: A Glossary of Terms Used by WorkSafe BC can be found in the Glossary of Terms pp 114-120 of the report; additionally, this resource is produced annually by WorkSafeBC

Compensation to Survivors

1. The Workman's Compensation Act of 1958 (now Workers' Compensation Act) forbade families from launching lawsuits against employers who paid into the WCB Fund. Dominion Bridge was a contributor to the WCB Fund. This meant that families could not sue either Dominion Bridge or the other sub-contractors who paid into the fund and were working on the site. The only remedy was to seek benefits from WCB.

Widows were given a one-time \$100 carry-over allowance followed by a \$75 monthly base pension plus \$25 per month for each eligible child in the victim's family. Widows were given a one-time \$100 carry-over allowance followed by a \$75 monthly base pension plus \$25 per month for each eligible child in the victim's family.

Assuming that the widow had two dependents the survivor would be entitled to \$75 per month, plus \$50 per month for the two dependent children for a total of \$125 per month or \$0.78 per hour based on a 2080-hour work year or a 160-hour work month.

Using the [Bank of Canada inflation calculator](#), determine what that amount of money would be today. (Put in \$0.78 for the beginning entry and December 1958). Assume that the amount calculated is non-taxable, meaning that you don't have to pay income tax on it.

Is the number you calculated financially sufficient for a family of one adult and two dependent children today? For a comparison, you might want to look at the [hourly living wage](#) that has been calculated for a place to start. (The living wage is calculated as the hourly rate at which a household can meet its basic needs, once government transfers have been added to the family's income (such as the Universal Child Care Benefit) and deductions have been subtracted (such as income taxes and Employment Insurance premiums).

Additional information may be found at [the WorkSafe website](#) and the Government of British Columbia [website](#).

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Who Are the Investigators?

2. Identify the investigators for the following serious events where death has occurred

(Complete chart with the menu provided. In most cases, there will be more than one answer; provide a web resource to validate your selection)

Event	Serious incident/event where a death occurred.	Who are the investigators?
1.	Motor Vehicle Accident	
2.	Explosion in a building causing a fire	
3.	Airplane crash	
4.	Workplace accident at a school construction site	
5.	Student death at a school site where school is undergoing major renovation and expansion	

Menu of Investigators: BC Coroner Service, BC Safety Authority, Office of the Fire Commissioner, fire department, police, lawyers, insurance investigators, Transport Canada, Transportation Safety Board, Human Resources Skills and Development Canada, WorkSafe BC investigators, school board, construction contractor and sub-contractor.

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Use Table 1-1 to answer question 2a

Table 1–1: All reported fatalities and injuries, 2013–2022

In 2022, 150,369 claims were reported to WorkSafeBC — a 6.5 percent increase from claims reported in 2021.

Year	New injuries reported in the year	Fatalities occurring in the year and reported by March 31 of the following year	Fatalities as a percentage of new injuries
2013	144,866	186	0.13%
2014	146,621	203	0.14%
2015	145,530	187	0.13%
2016	148,923	164	0.11%
2017	152,627	198	0.13%
2018	155,576	190	0.12%
2019	158,113	203	0.13%
2020	128,217	177	0.14%
2021	141,229	224	0.16%
2022	150,369	242	0.16%

Source: [Statistics 2022 | WorkSafeBC](#) page 8

- 2a. Are there number of deaths increasing or decreasing? What observations can be made about injuries over the ten- year period? What observations can be made about deaths over the ten- year period?

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Use Table 1-2 to answer the question 3-6

Table 1–2: Fatalities occurring in 2022¹

Category of injury or disease	Adjudication completed by March 31, 2023			Awaiting adjudication or application at March 31, 2023	Total fatalities occurring in 2022 and reported by March 31, 2023
	Allowed	Disallowed ²	Rejected ³		
Motor vehicle incident ⁴	12	3	4	12	31
Other injury ⁵	40	7	3	25	75
Asbestos exposure	60	1		7	68
Other disease	35	5		28	68
Total	147	16	7	72	242

Source: [Statistics 2022 | WorkSafeBC](#) page 9

1 All fatalities in this table occurred in 2022 and were reported by March 31, 2023; some incidents and exposures leading to those deaths occurred before 2022.

2 Disallowed claims are those deemed unrelated to work.

3 Claims are rejected if the worker does not have WorkSafeBC coverage. These claims were included in the “awaiting adjudication” column in previous versions of this table.

4 Motor vehicle incident also includes all vehicle incidents involving pedestrians.

5 The classification criteria for other injury include, among others: incidents involving industrial vehicles (such as loaders, skidders, and forklifts), and deaths caused by a disease condition that is a compensable consequence of the original injury.

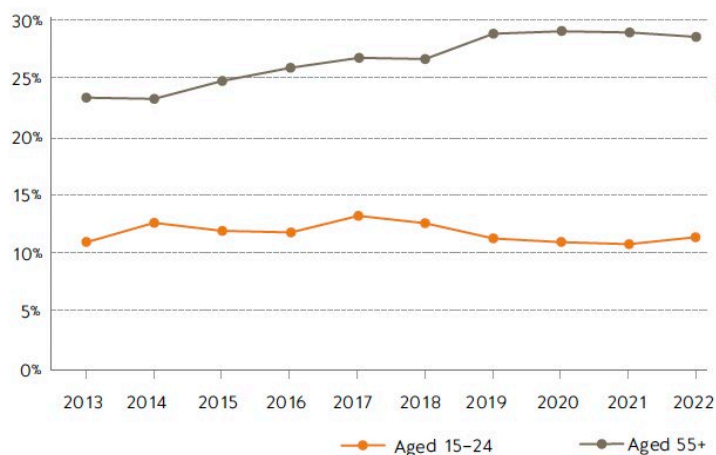
3. Suggestions reasons as to why so many accidents involve motor vehicles.
4. “Other injuries” among other involve industrial vehicles—what are industrial vehicles. Why are these vehicles treated differently from motor vehicles?
5. What is asbestos? It is no longer used in constructure, so how are workers exposed to it?
6. Name other diseases that cause work related deaths (examples: **loss of hearing** as a result of your exposure to loud industrial machinery for long periods, **influenza**)

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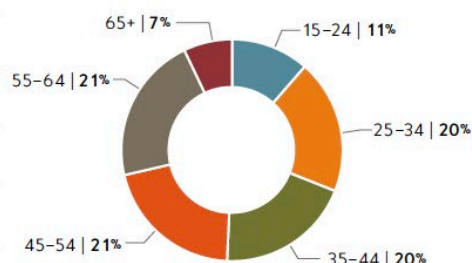
Use Table 1-7a to answer the question 7

Chart 1-7a: Serious injury claims by age group¹

Percentage of serious injury claimants aged 15-24 or 55 years or older, 2013-2022



Serious injury claims by age group, 2022



Source [Statistics 2022 | WorkSafeBC](#) page 31

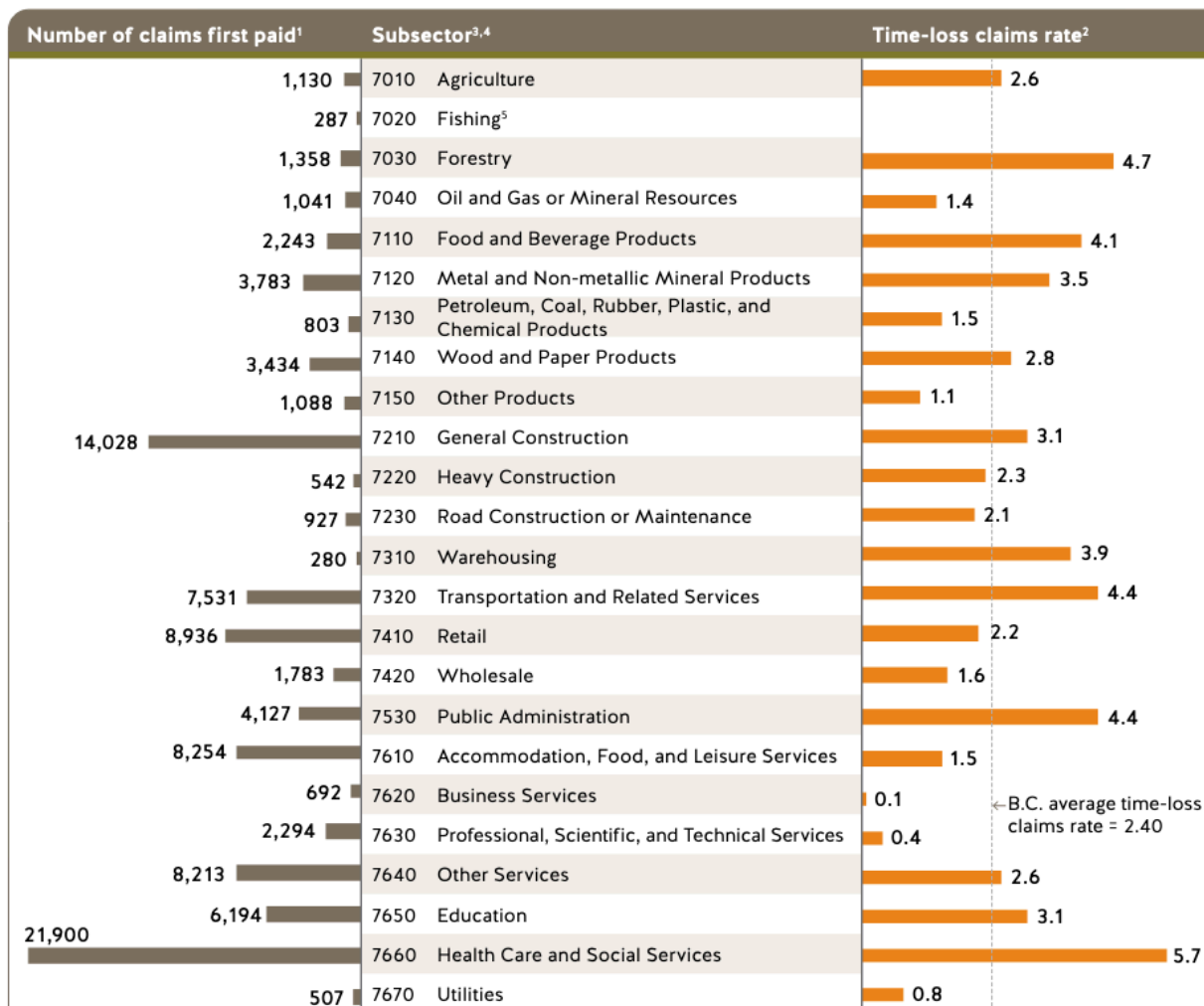
7. There are is a higher percentage to serious injury claimants in the 55 years or older category than in the 15-24-year-old category, list some factors that might account for this reason. (example hearing loss)

Discuss how can employees and employers can help to reduce the numbers of deaths and injuries amongst young workers in BC.

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Use Table 2-12a to answer the question 8

Chart 2-12: Number of claims first paid¹ and time-loss claims rate² for rateable subsectors, 2022



Source: [Statistics 2022 | WorkSafeBC](#) page 55

8. List of the top three industries/sub-sectors that have the highest time-loss due to claims.
9. List some factors that would help explain why Health Care and Social Services, Forestry and Transportation and Related Services have above average time-loss claims.

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Closure: (the following class)

A class discussion of the homework activity can follow. Key questions that you will want to consider include:

1. Answers to the who investigates: motor vehicle accidents, explosions in a building causing a fire, an airplane crash, a workplace accident at a school construction site, a student death at a school site where the school is undergoing major renovation and expansion
2. Are there number of deaths increasing or decreasing? What observations can be made about injuries over the ten- year period? What observations can be made about deaths over the ten-year period?
3. Suggestions reasons as to why so many accidents involve motor vehicles
4. “Other injuries” among other involve industrial vehicles—what are industrial vehicles. Why are these vehicles treated differently from motor vehicles?
5. What is asbestos? It is no longer used in constructure, so how are workers exposed to it?
6. Name other diseases that cause work related deaths (examples: **loss of hearing** as a result of your exposure to loud industrial machinery for long periods, **influenza**)
7. There are is a higher percentage to serious injury claimants in the 55 years or older category than in the 15–24-year-old category, list some factors that might account for this reason. (example hearing loss)
8. List of the top three industries/sub-sectors that have the highest time-loss due to claims.
9. List some factors that would help explain why Health Care and Social Services, Forestry and Transportation and Related Services have above average time-loss claims.
10. How does Workers Compensation (WorkSafeBC) benefit workers? How can individuals advocate effectively for changes in workplace safety?

Additional Classroom or school-based activity suggestion, organize a Day of Mourning event at your school.

Day of Mourning: Accidents and Deaths in BC

Across Canada, April 28 has been designated the Day of Mourning, a time when workers, families, employers, and others come together to remember those who have lost their lives to work-related incidents or occupational diseases. Every year, WorkSafeBC, the B.C. Federation of Labour, and the Business Council of British Columbia co-host a public ceremony to honour the occasion. Resources for teachers and students are available at the URL below in both English and French.

Day of Mourning Schools Project



Day of Mourning BC School Project: <https://domschools.ca/>

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Lesson Activity 3

Lesson: Dark Day at Second Narrows

Student Inquiry: Pick one of the following topics for further research.

1. Prepare a chart showing a list of the major bridge failures in Canada, the causes of the failure and the number of resulting deaths.

<https://www.thecanadianencyclopedia.ca/en/article/bridge-disasters>

Investigate who paid the clean-up costs of the damaged/destroyed part of the bridge and how cleanup costs were assessed.

2. Review the Coroners Act [SBC 2007] <http://goo.gl/EBjzRf>.

Outline when an inquest must be conducted? What are the powers of investigation of a coroner? When is an Inquest held?

A witness can be compelled to attend and give evidence at an Inquest. Can a witness be compelled to give self-incriminating evidence that could be used in a subsequent criminal or civil proceeding against them? Can evidence introduced at a Coroner's inquest be introduced into a criminal or civil proceeding?

3. Prepare a brief summary of the [Westray amendments to the criminal code](#) and the reasons for them.

4. Investigate and write a short report on how the [BC Healthy School Initiative](#) has been implemented in your school. (check your school district and regional health authority websites)

Workplace Health and Safety Inspections are designed to cover workers in your school but in many instances, they also protect students (eg trip hazards, air quality etc). Examples of guidelines for Health and Safety inspections can be found at these websites.

Occupational Health and Safety Regulations that require the conducting of health and safety inspections: <http://goo.gl/ILpfjx>

BCTF Occupational Health and Safety Manual provides examples of issues that must be investigated. Review the BCTF Health and Safety Manual at www.bctf.ca and identify examples where when investigations must be initiated.

Note: As a courtesy, the teacher should speak to the school administration and the BCTF staff rep before assigning this question.

5. British Columbia Royal and Special Commissions are established by government to investigate important questions. They can take the form of a study commission (should we build a pipeline across northern BC?) or a hearing commission (why did the Second Narrows bridge collapse?). Commissions are established by the Provincial Cabinet of Government which determines the scope of responsibilities and the powers of the commission.

Cabinet is given authority to establish Commissions under the Public Inquiry Act <https://www.leg.bc.ca/learn/legislative-library/library-publications/library-royal-commissions>

Visit the Legislative library and review the list of commission reports between 1872 and 1980. Identify ONE report that is of interest to you and try to determine whether it is a “study” inquiry or “hearing” inquiry.

Lesson: Dark Day at Second Narrows

Appendix 1: Information sheet for class discussion and student research

THE TRAGEDY IN BRIEF: THEN AND NOW

From the early 1950s to 1980, British Columbia embarked on a significant period of economic growth and development. The growth was driven by an increased external demand for primary resources—lumber, paper, minerals as well as significant increases in the post-war population. During that period of time, the government of the province initiated an ambitious program of hydro electric development as well as highway, bridge and ferry development.

In addition to paving of existing highways, new bridges were built throughout the province. The Trans Canada Highway in British Columbia was completed in the early 1960s, connecting Victoria to the Alberta border.

In the lower mainland, the Trans Canada Highway was transformed into a multi-lane freeway throughout much of the stretch between Horseshoe Bay and the upper Fraser Valley. This massive project included the construction of two important bridges – the Port Mann and the Second Narrows Bridge (now named the Ironworkers Memorial Second Narrows Crossing)

The Port Mann Bridge was built to cross the Fraser River connecting North Surrey and Coquitlam and the Ironworkers Memorial (Second Narrows Crossing) was built to span Burrard Inlet connecting Vancouver and North Vancouver. Construction on the Second Narrows crossing began in July 1956.

There were no major challenges that could not be handled in the first two years of construction. Things ran smoothly until June 17, 1958.

The collapse occurred near quitting time on June 17, 1958. At about 3:40 pm ironworkers toiling 40 metres above the inlet heard a horrific noise as Span 5 began to crash into the inlet in a mass of tangled steel. The momentum dislocated the columns of Pier 14, causing Span 4 to lose its grip and tumble into the sea. Seventy-nine workers fell. Among the 19 dead were 14 ironworkers, 3 engineers, a painter and a commercial diver who died a few days later when he drowned trying to recover a body. Twenty others were seriously injured.

The disaster was immediately labeled Vancouver's worst industrial accident.

On the same day, City of Vancouver, Glen McDonald made arrangements to start performing autopsies on the victims and making the necessary arrangement for an Inquest into the disaster. ⁽¹⁾

On June 18, within a day of the collapse, the Provincial Cabinet established a Royal Commission of Inquiry.

Despite the collapse, the bridge was completed in August of 1960. In 1994 it was re-christened the Ironworkers Memorial Second Narrows Crossing, to honour the 19 men who died on June 17, 1958, as well as eight others who perished during the three-year construction of the bridge.

1. CORONER'S INQUEST

Autopsies were performed on fifteen of the victims. The verdict of the jury was that the "deaths were "unnatural and accidental and that another man died of accidental drowning while looking for some of the missing bodies underwater." ⁽²⁾

• REPORT OF THE BRITISH COLUMBIA ROYAL COMMISSION , SECOND NARROWS BRIDGE INQUIRY 1958 [Document Link](#)

A Royal Commission of Inquiry was established for the purposes of determining:

- what technical or engineering advice there was provided for the project;
- whether such advice was followed or disregarded;
- whether anyone in the employ of BC Toll Highways and Bridges Authority or contractor or sub-contractor was negligent or faulty in their judgments in any way that contributed to or caused the collapse

Justice Sherwood Lett was appointed the sole Commissioner with the responsibility of reporting to the BC Provincial Cabinet ⁽³⁾

PERSONS INTERVIEWED

The Royal Commission interviewed eighty-five (85) witnesses and workers engaged on the bridge at the time of its collapse.

TESTIMONY

Sixty-seven (67) witnesses provided testimony before the Commission.

CAUSES OF THE COLLAPSE (Findings)

The Royal Commission called to investigate determined that it was an erroneous engineering calculation for a temporary support (temporary arm) compounded by other contributory factors.

The design for the Span 5 falsework was done by engineer John McKibbin, who made several errors that were not caught by the engineer in charge Murray McDonald.

MAJOR CONTRIBUTING FACTOR

The Royal Commission concluded that the use of plywood alone as "soft packing" for the beams that supported the temporary tower "was a contributing cause of the failure of the grillage solely because of the absence of stiffeners and effective diaphragming in the upper tier of the grillage."

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BEYOND THE COMMISSION OF INQUIRY

Eric Jamieson, author of the comprehensive history of the bridge disaster, notes that the collapse was only one factor - others included questionable steel quality and lax engineering practices. McKibbin was killed in the collapse.

Jamieson's comments are as follows:

1. It is an irrefutable fact that McKibbin and McDonald were responsible for the dimensional errors on the critical falsework design sheet
2. In addition to the company's unwritten policy of isolating major projects, thus removing them from the mainstream checking process, of burdening McDonald with an impossible load and placing an important design feature in the hands of a relatively inexperienced engineer, there was the startling admission by Professor Hrennikoff that the upper grillage I-beams were weak with respect to buckling strength.
3. Professor Armstrong's investigation of I-beam no. 2, and his discovery that it was from a different heat and parts of it had a lower yield point and tensile strength than specifications required.
4. The falseworks were considered pieces of equipment and therefore not subject to the same scrutiny given steel erection, was also problematic, as was the difference on the shear strength calculation formulas between CSA and AASHTO, the former of which was 30 percent more tolerant and according to Professor Hrennikoff, "at some level, actually unsafe." ⁽⁴⁾

Compensation to Families and Widows

The Workman's Compensation Act forbade families from launching lawsuits against employers who paid into the WCB fund. Dominion Bridge was a contributor. Widows were given a one-time \$100 carry-over allowance followed by a \$75 monthly base pension plus \$25 per month for each eligible child. This was approximately a quarter of what most ironworkers made at the time, forcing many widows to seek work. Sixteen families benefited from the pensions, two of the victims being single. ⁽¹⁾

Closure

Dominion Bridge accepted the conclusion of the Commission of Inquiry and, in doing so, were forced to assume the responsibility for the \$3 million cost of repairing the bridge. Despite the collapse, the bridge was completed in August of 1960. Dominion Bridge closed its Vancouver operations in 1975 and all of the files and drawings were thrown out

In 1994 it was re-christened the Ironworkers Memorial Second Narrows Crossing, to honour the nineteen men who died on June 17, 1958, as well as four others who perished during the three-year construction of the bridge. An annual memorial is held each year to commemorate the anniversary of the collapse.

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Footnotes

1. Eric Jamieson, *Tragedy at Second Narrows: The Story of the Ironworkers Memorial Bridge* Harbour Publishing, Madeira Park, BC. 2008, pp. 280-282
2. Glen McDonald with John Kirkwood, *How Come I'm Dead?* Hancock Publishing, Surrey, B.C. 1985 page 119
3. Order-In –Council (No. 1466)—the above is a paraphrase of the wording of the original order.
4. Ibid
5. Eric Jamieson, *Tragedy at Second Narrows: The Story of the Ironworkers Memorial Bridge* Harbour Publishing, Madeira Park 2008, p. 178

For Further information

SUGGESTED READING

Eric Jamieson, *Tragedy at Second Narrows: The Story of the Ironworkers Memorial Bridge* Madeira Park, B.C.: Harbour Publishing, 2008.

Glen McDonald, *How Come I'm Dead?* Surrey, B.C.: Handcock House, 1985.

SUGGESTED WEBSITES

Diachi Ishikawa, *Collapse of the Second Narrows Bridge --interview with survivor Lucien Lessard and Patrick Glendinning* (History of Metropolitan Vancouver)

Ishikawa, a former student at Edith Cavell Elementary School in Vancouver, interviewed survivor Lucien Lessard and Patrick Glendinning, the son of a survivor of the collapse—Colin Glendinning. [Link](#)