



# Ministry of Environment LOWER MAINLAND REGION

## Incident Summary Report

### CN Rail

**August 5, 2005 spill of  
40, 000 litres of 73% solution of  
Sodium Hydroxide  
Into the Cheakamus River  
North of Squamish  
British Columbia**

**Ministry of Environment  
Environmental Protection  
Lower Mainland Region  
April 13, 2006  
DGI #561257**

**EMERGENCY RESPONSE**



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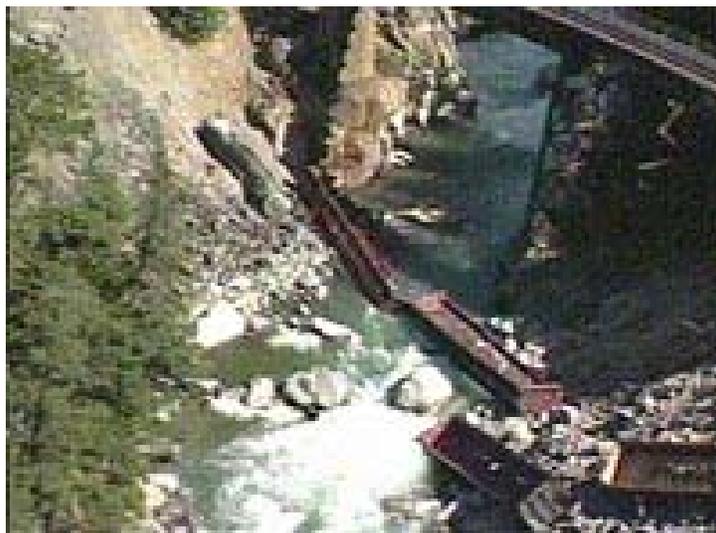
## 1. Purpose

This report details the critical events that occurred August 5, 2005, immediately after a derailment of a freight train and the spillage of a tank car of caustic soda into the Cheakamus River. The report provides the “lessons learned” and recommendations for consideration by the Ministry of Environment (MOE) and the Provincial Emergency Program (PEP).

## 2. Report of Spill

Approximately 07:15 on August 5, 2005, a CN train enroute from North Vancouver to Prince George derailed at mile 56.6 in the Cheakamus River canyon, near Squamish. The train consisted of 144 cars, mainly unloaded lumber cars (141). A total of 9 cars derailed, including one car carrying 73% sodium hydroxide solution (common names: caustic soda or lye). The other eight cars were empty.

CN Rail notified the Provincial Emergency Program (PEP) at 08:11 and PEP began to notify appropriate agencies. Initial reports on the derailment indicated that the car was leaking a small amount. There were no environmental issues identified at that time.



The following table outlines the main actions taken during the initial response:

<b>Aug 5/05 08:20</b>	Ministry of Environment notified of the spill by PEP. The spill was coded a "Code 2" by the Environmental Emergency Response Officer (EERO). The EERO advised agencies of the spill and contacted the spiller for additional information.
<b>09:43</b>	EERO left to attend the spill site.
<b>12:20</b>	EERO arrived at spill site and was briefed, by the spiller, on what had occurred.
<b>12:31</b>	The RCMP had a local radio station broadcast an advisory, for people to stay away from the river.
<b>12:50</b>	Federal Fisheries staff advised that they were receiving reports of dead fish, appearing downstream at Tender Foot hatchery (approximately 10 -15 km downstream).
<b>13:00</b>	CN Rail determined the full extent of the spill, an estimated 40 000 l of sodium hydroxide solution was spilt into the Cheakamus River as an instantaneous release versus the "small leak " as originally reported.
<b>13:30</b>	The emergency response was upgraded to Level 1, and a PREOC was established and 2 TEAMS members were activated to work on the emergency.
<b>15:00</b>	<ul style="list-style-type: none"> <li>• Provincial Incident Commander arrived at the spill site.</li> <li>• Vancouver Coastal Health Authority issued a Health Advisory for well water consumption.</li> <li>• Technical crews from British Columbia Conservation Foundation, Tenderfoot Hatchery and volunteers began collection of dead fish.</li> </ul>
<b>18:00</b>	An Incident Command Post was established at the Squamish Emergency Operations Center. CN Rail and Ministry of Environment implemented unified command.
<b>18:15</b>	Biologists completed pH survey of Cheakamus River, normal pH results found (pH 6.2 – 6.5), except at locations directly adjacent to the spill location.
<b>20:00</b>	Door to door notifications advising residents of the health advisory for well water consumption commenced.

Appendix A contains a detailed timeline of events for August 5, 2005. In the days that followed the spill, well testing, removal of the tanker car, river monitoring and closure of the EOC were some of the notable activities. Appendix B contains a list of the significant actions conducted as post-spill response activities.

### 3. Environmental Impact

#### Effect on the Fish Populations

The anadromous and resident fish species in the Cheakamus River were immediately affected by the spill. The effect was observed as skin burns and gill haemorrhaging, which resulted in suffocation. Both salmonids: trout, salmon and char and non-salmonids: bull-heads, lamprey and stickleback were observed dead in the river margins after the concentrated pulse of sodium hydroxide passed down the river.

Virtually all free swimming fish occupying the Cheakamus River at the time of the spill were killed. Those surviving the event were either still within the gravel as developing alevins, residing in tributary streams, or in back-channels. Others had not yet entered the river from the ocean during their annual spawning or feeding migrations. While over **4,700 dead fish were collected**, examined and archived, the numbers killed were clearly much greater, with **estimates as high as 501,000 fish killed**. Recovery of the dead fish carcasses was limited by high turbid discharge, safety concerns and limited personnel. Scavengers and the quick rate of fish decomposition due to high air temperatures limited the number of carcasses recovered. Nonetheless, all species and age classes of fish that are found in the Cheakamus River during the summer months were retrieved, indicating the non-selective nature of the toxic event. The most severely affected were rearing juvenile steelhead/rainbow trout, with approximately 90% mortality in four age classes, as well as multiple age classes of coho and chinook juveniles. Among adult salmon, already low returns of pink salmon were further reduced in abundance, as any spawning adults present in the river at the time of the spill were likely killed. An estimated 40-50% of the 2005 adult chinook spawning run was also lost.

The fish kill and survivorship data indicate multiple brood years, of the majority of salmonid and all non-salmonid species, will be depressed in the future. Pink salmon are slightly less affected with one of two brood years impacted while chum salmon were largely unaffected as all life stages were in the ocean at the time of the incident.

Additional studies undertaken on invertebrate health, water quality and human health are covered in a separate report. A report titled "**Assessment of the CN Caustic Soda Spill August 5, 2005 of the Fish Populations of the Cheakamus River**" is being prepared. The report is currently in draft.

## Recovery Efforts

A Recovery Team comprising of steering and technical committees has been established to address the restoration issues as a result of the spill. The Cheakamus Ecosystem Restoration Technical Committee is mandated to complete a comprehensive impact assessment and make recommendations on restoration strategies for all species affected in order to return the natural biodiversity of the Cheakamus ecosystem to a pre-spill state as fast as reasonably possible. The Technical Committee has prepared a draft Fisheries Impact Assessment; a benthos assessment is currently under development and is anticipated to be in draft form by the Spring of 2006.

Membership on the Technical Committee consists of representatives from the Squamish First Nation, District of Squamish, Department of Fisheries and Oceans, Environment Canada, Ministry of Environment, and CN Rail. Recommendations from the Technical Committee will be submitted to the Steering Committee for consideration. A decision regarding the recovery strategies to be adopted is anticipated mid 2006, with implementation commencing later in 2006.

Some time-sensitive work, such as fish cultures (hatchery work) for chinook and pink salmon, began in the fall of 2005.



## 4. Evaluation of Response

A debriefing of all the response agencies involved with the Cheakamus River spill was held on September 7, 2005. The purpose of the meeting was to review the response and recovery actions and the issues associated with the Cheakamus spill. The following agencies participated:

### Federal Government:

1. Environment Canada
2. Transport Canada
3. RCMP
4. Transportation Safety Board
5. Public Safety and Emergency Preparedness Canada

### Provincial Government:

1. Ministry of Environment
2. Ministry of Public Safety and Solicitor General
3. Public Affairs Bureau
4. Vancouver Coastal Health Authority

### First Nations:

1. Squamish First Nation

### Local Governments:

1. District of Squamish
2. Squamish Lillooet Regional District

During the meeting the notification process for hazardous materials spills on CN Railway lines was reviewed and discussed. The notification process is as follows:

1. Spill occurs: CN Rail is responsible for the spill and the restoration of the damaged environment. CN Rail is also responsible to provide the correct information when they are reporting a hazardous material spill.
2. Spiller contacts internal CN staff and provides the details relating to the hazardous material that was spilt. CN Police informs local RCMP and PEP of the spill.
3. PEP contacts appropriate parties depending upon the nature of the spill and provides the information received from the spiller:
  - Ministry of Environment determines if spill is Code 1 or 2 according to written guidelines. If Code 2 – MOE will call: Health Authority, Fire Department, RCMP, Local government, and other agencies with interest.

- Environment Canada informs other federal agencies and local contacts, including Indian and Northern Affairs Canada, DFO, Coast Guard, and local First Nations representatives.
- Regional Emergency Response (PEP) manager calls: Local emergency coordinators and other local agencies, including First Nations where known.

Also applicable to railway spill events is a Federal/Provincial agreement. Under a June 1981 agreement between Canada and the Province, Canada, with the cooperation of B.C., will promote and assist spill prevention and contingency planning for the railways under the jurisdiction of RTC/CTC (Railway Transport Committee of the Canadian Transport Commission). CN falls under the jurisdiction of Canada.

The following is a list of observations or concerns raised by participants at the debriefing meeting:

1. There were no issues raised with the notification procedures; notifications were done according to protocols. However, **there were problems with the terminology used in the early messages concerning the potential consequences of the spill.**
  - Some agencies were told the spill was a “leak,” was “small” and was “contained.” It is unclear who provided these messages; they did not come from the Incident Commander at the site (CN Rail).
  - CN Rail did not know the extent of the spill until 1:00 PM. It took time to gather information (a hazardous materials crew was called in and sent down to the wreck to assess the damage).
  - RCMP was not informed that this “was or maybe” a public safety issue at first; they received a report that it was “small” and was a “leak” and responded accordingly. RCMP determined there was no danger to the motoring public.
  - Vancouver Coastal Health heard the spill was “contained” and a “leak” and therefore did not attend early or participate in first public alert (issued by RCMP around 12 noon).
2. When agencies were alerted, they first gathered at the Incident Command Post (ICP), established at a CN Rail vehicle about 5 kilometres from site. The Incident Commander addressed agency representatives from time to time to share information.
  - The early (within 6 hours of the incident), response by agencies occurred in silos. There was no central point of control until the first action planning meeting at 2:00 PM.
3. The MOE Incident Commander was requested by the EP Manager around noon. The initial Incident Command structure moved to Unified Command at the Squamish EOC by 8:00 PM.

- The District of Squamish was not included in Unified Command. The District of Squamish EOC facility and structure was well designed and was essential to success. All benefited from a strong local emergency response organization. Squamish mobile ICP was available but not used.
  - This hybrid ICP/EOC worked well because it focused on functions. Good information flowed once EOC was established.
  - With the BCERMS “goals” on the EOC wall, it was easy to identify objectives and develop actions.
  - BCERMS helped structure a coordinated effort, allowing CN Rail and support agencies to work well together in an organized response.
  - Media relations were well done.
4. There were difficulties in obtaining information:
- The Cheakamus River is a complex system where only spot sampling was possible and there may have been residual pockets of concentrated product pooled within the river.
  - There was no information on local water wells available at the beginning of the spill response.
5. During the spill response it was fortunate to have:
- In terms of environmental protection, good weather during the response: heavy rains would have caused operational problems.
  - No human injuries or illnesses were reported to the hospital.
  - Water levels were maintained by BC Hydro, allowing for effective site clean-up.
6. Potpourri of comments or issues identified by agency participants:
- A public meeting was held on September 14, 2005 to provide information and respond to questions related to the spill and subsequent response. A time line document was prepared and is attached as Appendix A.
  - Appendix B contains 25 concerns, comments or suggestions from the responding agencies.

## 5. Overall Lessons Learned and Recommendations

### **Prior to an EOC being established**

- a. Require the party responsible for the environmental emergency to immediately engage independent third party professionals to determine the impact and assessment of the situation and impacts to: public, economy (business operations), and environment.
- b. Initiate a conference call with the spiller and the agencies within two hours of a Code 2 spill event being reported. PEP should arrange this call, as agencies are preparing to respond to the emergency. The

roles of agencies are to be discussed, confirmed or assigned during the initial information conference call. In addition, consistent information about the spill will be provided to all agencies. However, once an EOC is established all communications go through the EOC procedures.

- c. Establish a government lead person (ideally the Planning Liaison with the EOC) to work with the independent third party professionals to determine the impact and assessment of the situation and impacts to: public, economy (business operations), and environment. Government's role is to determine human health impacts given the worse case scenario information as provided by the spiller. It is anticipated that the third party professionals become a part of the EOC.
- d. Err on the side of caution when a spill report of a large or significant quantity of hazardous or dangerous goods is received:
  - The conference call recommended in 1 above should confirm the resources required.
  - Initiate the start of the ramp up process.
  - Provide early notification to local government and First Nations. Assessment information (risk, potential risk, advice) is needed so that notifications can be made to the public. Provide cautionary statements for the local government and First Nations to use.
  - In the absence of information, the provincial response actions should be based on a worse case scenario.

## Policy Reviews

- a. Review the criteria for designating spills as Code 1 or 2. Determine if an additional "Code 3" would be beneficial. A Code 3 would identify spills that have the potential to be life threatening or significantly damaging to the environment. The British Columbia Emergency Response Management System would be immediately initiated if a Code 3 were triggered.
- b. Conduct a review of the agencies currently on the automatic call out from PEP if a spill is designated as "Code 2". Any group that is included in the automatic call out must develop a contact list for staff authorized to respond to emergency events. The contact list must have names and numbers to allow a contact any time of the day (24 hours) and any day of the week (7 days). The list will have to be maintained and updated on a regular basis. Agencies or groups to be considered are:
  - Ministry of Health
  - All local health authorities
  - All First Nations
  - All local governments, cities, towns, villages and districts
  - All regional districts

## **Planning and Preparedness**

- a. Prepare a summary of all government databases that contain information on licensed users of the environment (water licenses, wells, river rafting etc). The summary should include: a description of what data is available and how to access the data. This information could be coordinated by PEP and would be available to responding agencies should there be a need to notify users of situations.
- b. Develop agreements with local government for the use of their resources such as the EOC facility and staff in Squamish. These resources would be activated in the community should a spill have the potential to be life threatening and/or to significantly damage the environment.
- c. Educate parties such as First Nations, local governments and industry to the role of ICS: explain how they need to be engaged during a spill event. A common understanding would have resulted in an ICP and an EOC being established sooner and thus quick provision of information to all agencies.
- d. Ensure adequate staffing and training for Ministry of Environment Incident Management Teams.
- e. Initiate discussions between the province and the Federal government with regard to the updating and clarifying of roles and responsibilities under the June 1981 agreement.

## Appendix A: August 5, 2005 Timeline of Events

(Approximate - All times Pacific Daylight Time)

Note: this document was provided to the public on September 14, 2005

<b>07:15</b>	<p><b>DERAILMENT OCCURS</b></p> <ul style="list-style-type: none"> <li>• CN reports derailment internally</li> </ul>
<b>07:53</b>	CN calls shipper (Nexen)
<b>07:55</b>	RCMP receives call from CN re: derailment
<b>08:00 – 9:30</b>	<ul style="list-style-type: none"> <li>• Agencies are advised and begin gathering information re: spill and making other notifications - Agencies = RCMP, Fire Department, District of Squamish, Ministry of Environment (MOE), Environment Canada, Department of Fisheries and Oceans (DFO), Vancouver Coastal Health Authority (VCHA), Squamish Emergency Coordinator, Transport Canada, and Indian Northern Affairs Canada (INAC)</li> <li>• Consideration given to possible human exposure by Vancouver Coastal Health (VCHA): <ul style="list-style-type: none"> <li>▪ confirmation that there are no public water supply systems drawing from the Cheakamus River</li> <li>▪ number of and location of private water supply systems (wells) unknown</li> <li>▪ direct contact to humans via beach access – no public beaches on the Cheakamus</li> </ul> </li> </ul>
<b>08:11</b>	<ul style="list-style-type: none"> <li>• CN Edmonton reports the spill to Provincial Emergency Program (PEP). Site is north of Squamish</li> <li>• Two cars in creek; one car confirmed leaking</li> <li>• Spill of unknown caustic material; unknown quantity</li> </ul>
<b>08:15</b>	CN calls CANUTEC
<b>08:19</b>	CN calls PEP - confirming product as sodium hydroxide solution and not confirming leaking but to assume the tanker is leaking
<b>08:30</b>	CN (Edmonton) call to CANUTEC
<b>09:45</b>	<ul style="list-style-type: none"> <li>• CN on scene, establish Incident Command</li> <li>• CN police contacted RCMP to put forward an advisory to public on Mountain FM</li> <li>• Access controlled to scene by CN Police (at Garibaldi siding)</li> </ul>
<b>10:30</b>	<ul style="list-style-type: none"> <li>• RCMP received reports from public reporting dead fish in the Cheakamus river</li> <li>• PEP Manager reports that Squamish Emergency Coordinator indicates 125 domestic wells along lower reaches of the Cheakamus River, Squamish preparing a contact list for those residents</li> </ul>

<b>11:00</b>	<ul style="list-style-type: none"> <li>• HAZMAT response team from Vancouver (CEDA) on scene</li> <li>• Two helicopters are now monitoring the river. Noted sludge in the river downstream of the accident site</li> </ul>
<b>11:30</b>	<ul style="list-style-type: none"> <li>• As soon as dead fish were confirmed RCMP put notice on local radio (Mountain FM Radio) to broadcast "there has been a train derailment and stay clear of the river"</li> <li>• Contact made with the rafting company to advise of the situation</li> <li>• District of Squamish gathering information for public fan out</li> </ul>
<b>12:00</b>	RCMP in helicopter surveying the derailment scene and river downstream
<b>12:12</b>	Caller reports to PEP - dead fish in the Cheakamus River
<b>12:30</b>	<ul style="list-style-type: none"> <li>• CN, Department of Fisheries and Oceans (DFO) and Ministry of Environment (MoE) on scene</li> <li>• CN confirms the concentration of sodium hydroxide</li> </ul>
<b>12:52</b>	<ul style="list-style-type: none"> <li>• Quantum (Environmental Consultant for CN) reports inspection findings of derailed cars and assessment of spill situation.</li> <li>• Material is sodium hydroxide. Most of the car load (estimated 40,000 litres of 53,140 litres) has spilled.</li> </ul>
<b>13:30</b>	<ul style="list-style-type: none"> <li>• Report to Squamish Nation that fish are jumping out of the water and the water bubbling <ul style="list-style-type: none"> <li>▪ Reports of dead fish in nets, odour observed from the river</li> </ul> </li> <li>• Squamish Nation representative was advised that a band member was taking water from the river; advised person not to take water</li> </ul>
<b>14:00 – 15:00</b>	<ul style="list-style-type: none"> <li>• Meeting of CN, Department of Environment (DOE), VCHA, MoE, RCMP, Quantum, Nexen (supplier of product)</li> <li>• sharing of information and reporting of findings of Quantum <ul style="list-style-type: none"> <li>▪ 51000L lost to river, some solution remaining in the car</li> <li>▪ concentration of caustic soda</li> </ul> </li> <li>• Notification to Squamish Hospital (SGH) and physicians. No cases related to the spill reported at the SGH.</li> </ul>
<b>14:15</b>	District of Squamish contacted BC Hydro to find out if increased flows had been discharged from Daisy Lake Dam
<b>15:30</b>	MoE – Transfer of Provincial Command. Establishment of Unified Command with CN.
<b>16:00</b>	Flight surveillance of the river noting fish kill locations
<b>16:15</b>	Public Advisory Notice issued by VCHA communications and RCMP
<b>17:00</b>	Fisheries and water licence information provided to Emergency Operation Center (EOC)

<b>17:20 to 18:00</b>	CN and Quantum staff conducted sampling of river at selected locations – pH was normal at those locations
<b>19:30-21:30</b>	Door-to-door notifications commence – completed by 21:30
<b>20:00</b>	EOC set up at the Squamish Emergency Program office. CN and MoE unified command; PEP Regional Manager is the Deputy Incident Commander.

## Appendix B: Activities Conducted Post-spill

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- **August 6<sup>th</sup> and 7<sup>th</sup>:** On-site well water testing for all wells located within 100m of the river was conducted. Samples of well water were brought to the Squamish EOC for immediate analysis and a duplicate sample was sent to a Vancouver lab for analysis. Bottled water for 150 households was obtained and distributed until the well water sample results confirmed the well water was safe.
- **August 6<sup>th</sup>:** The outer shell of the caustic tank car was removed to inspect the integrity of the car and to lower the temperature of the caustic soda solution remaining in the car.
- **August 6<sup>th</sup>:** BC Hydro (Daisy Lake Dam) confirmed they would maintain current flows unless the Incident Commander requested otherwise.
- **August 7<sup>th</sup>:** Neutralization of the spill area was started in accordance with a plan approved by the Incident Commanders:
  - i. Acetic acid was used to neutralize the spilled caustic soda that was under the railcar and in the rail track bed.
  - ii. The pH of the run-off from the site was tested to confirm that it was neutral.
  - iii. pH monitors were installed in the river downstream of the spill site to monitor the river's pH. The pH of the river remained neutral.
- **August 7<sup>th</sup>:** Interim assessment of fish survival in the watershed and quantifying the immediate affects to resident and migratory fish populations was initiated.
- **August 8<sup>th</sup>:** Solidification of the 73% solution of sodium hydroxide in railcar was started:
  - i. The railcar was packed with dry ice to reduce the temperature of the caustic soda to less than 62 ° C; caustic soda will solidify once it cools to 62 ° C.
  - ii. The sodium hydroxide solution was loaded at a temperature of 90 ° C and the temperature, at this point, was registering at 80°C.
- **August 8<sup>th</sup>:** 10:30 hrs, all well results were found to be within normal range. The health advisory for well water consumption is lifted by the Vancouver Coastal Health Authority.
- **August 12<sup>th</sup>:** The railcar was removed from the canyon by cabling it up from the creek bed to the rail line.
- **Following Weeks:** Monitoring and clean-up of the site continued until declared "clean" by Environment Canada and the Ministry of Environment.
- **August 19<sup>th</sup>:** BC Hydro was advised to return to normal operations regarding flows from Daisy Lake Dam.

## Appendix C: Issues Identified by Agency Participants

1. CN Rail emergency notifications come through Montreal. Does this slow things down or result in confused messages by not having a local or regional office?
2. Some participants did not know about any written policies for notifications for dangerous goods spills. PEP and Environment Canada have written notification procedures.
3. It is unclear who is responsible for notifying the public of a potential hazard.
4. Health should be consulted in public advisories for issues dealing with public health.
5. Stronger links are needed between Ministry of Environment and local governments.
6. An agency needs to be responsible for tracking/coordinating well information and domestic water uses within the community.
7. We should improve methods for pulling players together quickly to develop a game plan and review who is doing what. Normally, this is done at the Incident Command Post.
8. CN Rail has a trailer designated for use as an Incident Command Post, but it was in Alberta on another spill and not available.
9. The Squamish community callout list was found to be outdated in August 2005 although it was last verified in January 2005.
10. Everyone entering the ICP or EOC needs a quick briefing on roles and who they should report to. Agency representatives working in the EOC shared information with their agencies without approval of Incident Commander, and therefore passed along incorrect information.
11. Some members of the news media asked “Who is the lead agency?” This suggests some education of the media is needed on B.C.’s approach to “integrated response.”
12. The Ministry of Health and Health Authorities should be on contact list for notification for all dangerous goods spills.
13. Some agency representatives were not familiar with the term ‘Code 2’, the rail mile location reference system, and the location of forest service roads.
14. An initial call from a CN Rail representative indicated there were no public safety issues, but this did not come from the Incident Commander.
15. Health should have been at ICP / EOC earlier, but were informed it was a “leak.”
16. Even though early reports indicated it was a “small event,” resources should have been ramped up quickly until an assessment could verify potential impacts.
17. Squamish was informed it was a “small leak” and not dangerous – a “benign event” – throughout the day until 16:00.

## **Appendix C: Issues Identified by Agency Participants**

18. If Squamish had known the potential consequences, they would have set up the EOC earlier. EOC could have been activated early at a low level (one person). An early conference call among key agency representatives would have helped.
19. The RCMP was asked to remove the public advisory they issued around noon, but RCMP maintained it was a public safety concern.
20. Communications is an issue between local government and rail and regulatory agencies. Local government should have up-to-date CN Rail contacts.
21. Local government should be included in Unified Command. They need training in Unified Command to ensure they can meaningfully participate.
22. A quick assessment of the potential consequences of the spill was not performed. The assessment of a worse case scenario is best conducted by the spiller. This information should be then shared with the Incident Commander and communicated via conference call early in the event to other agencies, then revised as information arrives.
23. The Squamish First Nations member present did not receive information on the spill until 13:30. However, multiple notifications were reported through Environment Canada, INAC.
24. Pro-forma public messages should be available without requiring agreement on wording from all agencies. Example: A spill has occurred. Don't use the water until further notice.
25. There is a need for merging of agency call-down lists for all agencies. This will assist in assuring that all parties who need to be informed are informed in a timely manner.

## Appendix D: Glossary of Terms used in Report

BCERMS	British Columbia Emergency Response Management System	a comprehensive management system based upon the Incident Command System (ICS) that ensures a coordinated and organized response and recovery to all emergency incidents and disasters
CANUTEC	Canadian Transport Emergency Centre, Transport Canada	federal government
CEDA		a private company, specializing in HazMat responses
CN	Canadian National Railway	private company
CN Rail	Canadian National Railway	private company
DFO	Department of Fisheries and Oceans	federal government
EC	Environment Canada	federal government
EOC	Emergency Operation Center	a predesignated facility developed for coordinating emergency situations
EP	Environmental Protection Division	a Division within MoE
HazMat	hazardous materials and dangerous Goods, defined by regulations	
ICP	Incident Command Post.	central location where the Incident Commander (management) and supporting sections: Operation, Planning, Logistics and Finance and Administration are located
ICS	Incident Command System	a standardized at scene emergency management concept that allows for fully integrated organizational structure to meet the demands of the emergency event.
INAC	Indian Northern Affairs Canada	federal government
MoE	Ministry of Environment (B.C.)	provincial government

PEP	Provincial Emergency Program, Ministry of Public Safety and Solicitor General	provincial government
PREOC	Provincial Regional Emergency Operation Centre	
RCMP	Royal Canadian Mounted Police	local police detachment, part of national police
SGH	Squamish General Hospital	
VCHA	Vancouver Coastal Health Authority	local health authority established by provincial government
T.E.A.M.S.	Temporary Emergency Assignment Management System	
	<ul style="list-style-type: none"> <li>• CN and MoE unified command</li> </ul>	CN Rail and MoE working together to mitigate the environmental emergency
	<ul style="list-style-type: none"> <li>• Code 2</li> </ul>	A hazardous material spill that potentially threatens the environment and/or health and safety of the neighbouring residents
	<ul style="list-style-type: none"> <li>• Deputy Incident Commander.</li> </ul>	Supports the Incident Commander and acts for the Incident Commander as needed.
	<ul style="list-style-type: none"> <li>• Incident Commander</li> </ul>	responsible for over all direction the emergency site, responsible for the health and safety of the responders
	<ul style="list-style-type: none"> <li>• Unified Command</li> </ul>	brings together the "Incident Commanders" of all major organizations involved in the incident in order to coordinate an effective response while at the same time carrying out their own jurisdictional responsibilities.