Emergency Management BC

Dangerous Goods Incident Report (DGIR)

DGIR 162948 - UPDATE # 7

Type : INLAND UPDATE
Subject : COAL (CODE 2)
Task # : 175307
Assigned To : RHONDA BRETT
Incident Area : ASHCROFT

Original Entry Logged : 2017-01-12 16:48
Amount : $500
ASE Number :
EMBC Region : CTL
MOE Region : Thompson Region
MCTS# :

Location : MILE 50.7 OF THE THOMPSON SUBDIVISION (3 MILES WEST OF ASHCROFT)

Caller : DENNIS REDFORD
Organization : MOE RO
Primary No :
Alt No :

This Update Logged : 2017-01-16 12:36
EMBC Operations Officer : PERRY

Details :

- Underwater survey of derailment site is completed - approx. 1 carload of coal was found on ledges below river surface.
- CPR has reported that there was no coal dust inhibitor added to coal cars - temperatures much too low.
- CPR is constructing road to access the spill area to assist in spilled coal recovery.
- Conference call between Ministry of Environment and CP Railway occurred this morning - discussion of MoE requirements for Environmental Impact Assessment as well as cleanup.
- Initial water quality sample analysis indicated no drinking water issues.
- Incident has been degraded to Code 1 as emergency stage has ended.

Notification :

12:54 briefed PDM
12:54 emailed MOE Kamloops, CCG/ROC, EPC Jason Tomlin, Canutec, Code 2 dist list.

Midweek Progress Report – January 16 & 17, 2017
Coal Train Derailment
MP 50.4 Thompson Subdivision, British Columbia
Spill/Release Date: January 12, 2017

TO:	Kevin Houle, Chris Dane	REF. NO.:	11131967
		DATE:	January 18, 2017
CC:	Robert Fewchuk, GHD Kristjana Zoras, GHD Thomas Elliot, GHD		

Summary of Work Activities

- CP, GHD, Inland Divers, and Ram reviewed the findings of the underwater coal survey.
- CP assessed potential routes to construct a site access road.
- CP retained the services of an archeologist to survey the proposed access route.
- Continued to develop a safe strategy for coal recovery.
- GHD consolidated and reviewed analytical data as it was received from Maxxam Analytical.
- CP is continuing to clear the wreckage.
- GHD is evaluating disposal options for the coal.
- CP consulted with DFO and the local First Nation bands with regards to potential remedial strategies, access road construction, and potential instream work.

Short Term Strategy

- Provide a summary of water quality results.
- Assess options for coal recovery, coal disposal, railcar removal, and instream cleanup as appropriate.

January 16, 2015 Reference No. 11131967

Kevin Houle M.Sc. P.Eng
Director of Environmental Programs & Operations
Building 9 – 1670 Lougheed Hwy. Port Coquitlam
British Columbia V3B 5C8

Dear Mr. Houle:

Re: Preliminary Review of Analytical Results for Water Quality
Ashcroft Coal Derailment – Mile Point 50.7 Thompson Subdivision
Canadian Pacific Railway

1. Background

GHD Limited (GHD) was retained by Canadian Pacific Railway (CP) to provide environmental emergency response services associated with a train derailment that occurred on January 12, 2017, at approximately Mile Point 50.7 of CP's Thompson Subdivision located near Ashcroft, British Columbia (Site). As part of this function, GHD at the request of CP, has implemented a surface water quality monitoring program to ensure appropriate assessment of the type and extent of potential adverse impacts on the drinking water from the Thompson River (River), as well as potential impacts on aquatic communities.

The derailment involved 29 railcars each carrying metallurgical coal. Five of the derailed railcars went over an embankment settling on the shoreline of the River. It's currently unknown how much coal has entered the River as a result of the derailment. A Site location map including surface water sampling locations is provided on the attached Figure.

Metallurgic coal is used to produce coke, a fuel source for the integrated steel mill process. It consists of approximately 90-91% coal, 9-10% ash, and a small amount of metals. If released into the environment, solid metallurgic coal is unlikely to be an ecological hazard. Some constituents found in metallurgic coal, such as polycyclic aromatic hydrocarbons (PAH), can be toxic to aquatic organisms and humans; however, PAHs are relatively water-insoluble and bind to sediment, rendering it less likely to remain in the water column. Metals in the coal may dissolve into the water column; thus, metals may pose a potential risk. A product safety data sheet is provided in Attachment A.

This letter describes GHD's water quality monitoring/sampling program, the type of chemical constituents tested, and the preliminary analytical results from the January 13, 2017 sampling event.

2. Surface Water Quality Monitoring Program

The objective of the surface water monitoring plan is to evaluate potential surface water impacts in the area of the release and downstream of affected areas within the River. The following tasks have been or are being completed to achieve this objective:

- GHD is conducting real-time surface water quality field measurements at several sampling locations within the Thompson River. Sampling locations consist of shoreline sampling and cross sectional monitoring points along the River bank (i.e., SW-1A, SW-1B) to provide sampling coverage. Based on field observations, Site activities, and water quality results, additional monitoring locations may be recommended. Field monitoring at each sample location includes measuring standard water quality parameters such as temperature, turbidity, conductivity, oxidation-reduction potential (ORP), dissolved oxygen (DO) and pH. Additionally, visual observations of impact, if any, are recorded.
- GHD is collecting surface water samples at several sampling locations within the Thompson River, as described above. Samples are being analyzed for petroleum hydrocarbons (PHCs), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), as well as total and dissolved metals.

A product sample was obtained to provide compositional (i.e., fingerprint) information for comparisons to other collected samples found in the potentially contaminated areas to differentiate from background materials. Product samples may also be used to evaluate the fate and transport of the contaminant, if necessary. All surface water sampling is being conducted according to the British Columbia Field Sampling Manual.

The surface water monitoring program will determine upstream and downstream surface water quality in the vicinity of the spill location. The initial monitoring program will consist of collecting grab surface water samples from sampling locations once daily during the initial response phase of the project. Similarly, surface water monitoring consisting of collecting real-time surface water quality field measurements from all locations will be conducted on a daily basis. The frequency of the surface water sampling and the number of sampling locations will be adjusted, as required, based on the work being conducted and results of the initial sampling events.

3. Analytical Results

Analytical results for Day 1 post-event (i.e., collected on January 13, 2017) are presented in Table 1. Sampling locations are listed on top of each column and the chemical constituent names tested at each location are presented in rows. Chemical constituents are grouped by chemical classes. Numerical results are presented for each sample and chemical combination with full detects shown as unaccompanied numbers. Non-detects are marked with a special designator explained in the table notes.

The data in the analytical table were compared against screening benchmarks for drinking water quality standards and for protection of aquatic wildlife.

For drinking water standards, the primary standards used for comparison is the *British Columbia Ministry of Environment Water Quality Guidelines for Drinking Water Sources* (http://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/wqgs-wqos/approved-wqgs/bcenv_drinkingwaterguidelines_summarytable.pdf). The water quality guidelines are science-based levels of physical, biological, and chemical parameters for the protection of water uses. Of these

standards, the Maximum Acceptable Concentration (MAC) is the primary standard, followed by the standard for Aesthetic Objective (AO). The metal guidelines are based on the total concentrations of the constituents. If guidelines are not provided by British Columbia, the secondary standard used for comparison is the Guidelines for Canadian Drinking Water Quality (October 2014), developed by the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment (http://www.hc-sc.gc.ca/ewh-semt/alt_formats/pdf/pubs/water-eau/sum_guide-res_recom/sum_guide-res_recom_2014-10_eng.pdf). Of these standards, the health based Maximum Acceptable Concentration (MAC) is the primary standard, followed by aesthetic considerations under Aesthetic Objectives (AO) and operational considerations under Operational Guideline Values (OG).

For the protection of aquatic wildlife, the primary standard used for comparison was the *British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife, and Agriculture Summary Report* (January 2017) (http://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/wqgs-wqos/approved-wqgs/final_approved_wqg_summary_march_2016.pdf). These standards focus on the short-term protection of aquatic wildlife. The secondary standard use for comparison was the Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Aquatic Life (http://st-ts.ccme.ca/en/index.html). These standards focus on the protection of freshwater aquatic life.

4. Interpretation of the Analytical Results

Table 1 lists the concentrations of chemical constituents analyzed from the collected environmental samples: SW-1A (upstream of the derailment), SW-2A (downstream of the derailment), and SW-3 (near the derailment). All of the analyzed VOCs were below the detection limits. Of the metals, only aluminum, arsenic, barium, calcium, copper, iron, magnesium, manganese, potassium, selenium, silicon, sodium, strontium, sulfur, and uranium were detected. Most of these metals are of natural sources and are at or below background concentrations.

A preliminary analysis and interpretation of the analytical data indicates that none of the chemical constituents analyzed exceed the drinking water standards for both British Columbia and Health Canada. For ecological health, the preliminary analytical data also indicates that of all the chemical constituents analyzed, only aluminum exceed the water quality standards for aquatic life for both British Columbia and CCME. However, the upstream sample (SW-1A) is also higher than screening levels, indicating that the elevated levels are likely due to natural background concentrations of aluminum and not due to the derailment. Thus, the current concentrations of chemical constituents in the Thompson River are protective of human health and most likely aquatic wildlife.

One chemical class without British Columbia or Health Canada standards is total petroleum hydrocarbons. By using the drinking water criteria (GW1) for petroleum hydrocarbons (F1 (less BTEX) from Ontario (820 µg/L) as a surrogate standard, it is demonstrated that petroleum hydrocarbon levels, even if at the detection limit of 300 µg/L, is below the drinking water criteria in a different Canadian province.

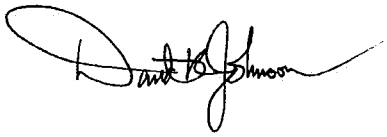
Polycyclic aromatic hydrocarbons are chemical constituents normally found in petroleum products and coals. The data provided in this letter is considered preliminary until future laboratory analyses including polycyclic aromatic hydrocarbons data are available.

Should you have any questions on the above analysis, please do not hesitate to contact us.

Sincerely,

GHD

Robert Fewchuk, P.Eng.



David Johnson, Ph.D.
Senior Toxicologist

RF/aj/1

Encl.

cc: Chris Dane, CP
Bonni Campbell, CP