

# Appendix K

## Summary of Effluents and Discharges for Other Projects



## Summary of Effluents and Discharges for Other Projects

### **IOC, Labrador City**

#### *Summary of Effluents and Discharges*

The Iron Ore Company of Canada has five approved discharge points (C of A Approval #: AA08-015498): FDP-MD5, FDP-TIA (Julienne Narrows), FDP-Hakim Culvert, PD-19 and PD-28. The effluent monitoring program for the FDP locations has several parameters that are measured for compliance; eight of these have environmental limits. PD-19 monitors only for Total Petroleum Hydrocarbons (TPH) and PD-28 monitors for five parameters, two of which have environmental limits.

The following is a summary of monitoring results for 2010 (DOEC 2011):

- FDP-MD5: There was no discharge at this location between January and April. During the remainder of the year, 33 samples were collected; there were no exceedences. A total of eight Acute Lethality Tests (ALTs) were conducted at this location; all passed.
- FDP-TIA (Julienne Narrows): 53 samples were collected at this location with no exceedences, and 11 ALTs were conducted; all passed.
- FDP-Hakim Culvert: 53 samples were collected at this location; there were four exceedences of Total Suspended Solids (TSS). A total of 13 ALTs were conducted; one failed in November. IOC is currently evaluating options to improve water quality in the Hakim Culvert area.
- PD-19: There was no discharge at this location in July. During the remainder of the year, 12 TPH samples were collected and all were below detection limits.
- PD-28: There was no discharge at this location from January to March, August, or December. During the remainder of the year, seven samples were collected and there were no exceedences.

A tabular summary of effluent discharge criteria can be found at [http://www.env.gov.nl.ca/env/publications/env\\_protection/2010\\_annual\\_report.pdf](http://www.env.gov.nl.ca/env/publications/env_protection/2010_annual_report.pdf)

The Wabush-Julienne-Shabogamo Lake system regulates inflows from all surrounding watersheds and is part of the larger Churchill River Watershed. A portion of Wabush Lake has been designated as a tailings impoundment area. The general flow direction in Wabush Lake is South-North with outflow at the Julienne Narrows (Jacques Whitford 2006). Additional information on Wabush Lake is available at <http://www.gazette.gc.ca/rp-pr/p2/2009/2009-02-18/html/sor-dors27-eng.html>.

#### *Air Quality*

GHG Emissions as reported to Environment Canada's National Pollutant Release Inventory (NPRI), Greenhouse Gas Emissions Reporting Program are presented in Table K.1. This

program applies to all facilities that emit the equivalent of 50,000 tonnes (50 kilotonnes) or more of greenhouse gases in carbon dioxide equivalent units (CO<sub>2</sub> eq) per year.

**Table K.1 GHG Emissions (2009), IOC**

Gases	Sum (tonnes)	Sum (tonnes CO <sub>2</sub> e)
CO <sub>2</sub>	792,711.40	792, 711
CH <sub>4</sub>	18.57	390
N <sub>2</sub> O	12.01	3,723
HFCs		
PFCs		
SF <sub>6</sub>		
<b>Total</b>		<b>796,824</b>
(EC 2009a)		

The NPRI Substance Report is a list of all substances reported by a facility for a given year, except for Criteria Air Contaminants (CAC), which is provided in a separate report. The NPRI Substance Report provides release, disposal, and recycling information for each substance (Table K.2).

An interactive table can be found at [http://www.ec.gc.ca/pdb/websol/queriesite/facility\\_substance\\_summary\\_e.cfm?opt\\_npri\\_id=0000005013&opt\\_report\\_year=2009](http://www.ec.gc.ca/pdb/websol/queriesite/facility_substance_summary_e.cfm?opt_npri_id=0000005013&opt_report_year=2009). This interactive table provides a detailed breakdown of each release. Additional information on a specific substance can be viewed by clicking on the substance name in the first column or the CAS Number in the second column of the table.

**Table K.2 Substance Reports (Excluding Criteria Air Contaminants), IOC**

Substance	CAS Number	On-Site Releases				Units
		Air	Water	Land	Total	
Acenaphthene - PAH	83-32-9	6.4	-	-	6.4	kg
Arsenic (and its compounds)	NA - 02	319	738	-	1,057	kg
Cadmium (and its compounds)	NA - 03	17	-	-	17	kg
Chromium (and its compounds)	NA - 04	0.990	-	-	0.990	tonnes
Cobalt (and its compounds)	NA - 05	-	-	-	-	tonnes
Copper (and its compounds)	NA - 06	-	-	-	-	tonnes
Fluoranthene - PAH	206-44-0	24	-	-	24	kg
Fluorene - PAH	86-73-7	7.7	-	-	7.7	kg
Hydrochloric acid	7647-01-0	55	-	-	55	tonnes
Lead (and its compounds)	NA - 08	981	214	-	1,195	kg

Substance	CAS Number	On-Site Releases				Units
		Air	Water	Land	Total	
Manganese (and its compounds)	NA - 09	17	-	-	17	tonnes
Mercury (and its compounds)	NA - 10	59	-	-	59	kg
Nickel (and its compounds)	NA - 11	0.654	-	-	0.654	tonnes
Phenanthrene - PAH	85-01-8	66	-	-	66	kg
Phosphorus (total)	NA - 22	-	-	-	-	tonnes
Pyrene - PAH	129-00-0	8.5	-	-	8.5	kg
Sulphuric acid	7664-93-9	36	-	-	36	tonnes
Vanadium d(except when in an alloy) and its compounds	7440-62-2	-	-	-	-	tonnes
Zinc (and its compounds)	NA - 14	0.697	5.9	-	6.6	tonnes

Table K.3 (NRPI 2012) outlines Critical Air Contaminants (CACs) for IOC's Carol Lake Project.

**Table K.3 Substance Report (Critical Air Contaminants), IOC**

Substance	CAS Number	Releases to Air (Emissions) in Tonnes	
		This Facility	ALL Facilities Reporting to the NPRI
		Year – 2009	Year - 2009
Sulphur dioxide	7446-09-5	3,989	1,308,230
Carbon monoxide	630-08-0	4,298	866,724
Nitrogen oxides (expressed as NO <sub>2</sub> )	11104-93-1	3,519	698,015
PM - Total Particulate Matter	NA - M08	7,801	284,916
Volatile Organic Compounds (VOCs)	NA - M16	20	243,923
PM <sub>10</sub> - Particulate Matter <= 10 Microns	NA - M09	2,485	123,809
PM <sub>2.5</sub> - Particulate Matter <= 2.5 Microns	NA - M10	680	51,481
Source: EC 2009b			

### Cliffs Natural Resources, Wabush Mines

#### *Summary of Effluents and Discharges*

Wabush Mines has five approved discharge points (Current C of A Approval #: AA06-055481B): Flora Lake, East Pit Dewatering East, Deep Wells, Knoll Lake, and West Pit Settling Pond. The effluent monitoring program consists of several parameters, eight of which have environmental limits. There are ALT requirements at all of these locations, with the exception of Deep Wells.

The following is a summary of monitoring results for 2010 (DOEC 2011):

- Flora Lake: 51 samples were taken at this location with no exceedences and 10 ALTs were conducted; all passed.
- East Pit Dewatering East: There was no discharge from this site between May and December. During the remainder of the year, 12 samples were taken with no exceedences and two ALTs were conducted; both passed.
- Deep Wells: 46 samples were taken at this location with no exceedences.
- Knoll Lake: 51 samples were taken at this location. There were 16 TSS exceedences and five ALTs were conducted; all passed.
- West Pit Settling Pond: 49 samples were taken at this location; there were 4 exceedences of TSS during the year. There were four ALTs conducted; all passed.

A tabular summary of effluent discharge criteria can be found at [http://www.env.gov.nl.ca/env/publications/env\\_protection/2010\\_annual\\_report.pdf](http://www.env.gov.nl.ca/env/publications/env_protection/2010_annual_report.pdf).

*Air Quality*

GHG Emissions as reported to Environment Canada's National Pollutant Release Inventory (NPRI), Greenhouse Gas Emissions Reporting Program for Scully Mine are presented in Table K.4.

**Table K.4 Scully Mine GHG Emissions, Wabush Mines**

Gases	Sum (tonnes)	Sum (tonnes CO <sub>2</sub> e)
CO <sub>2</sub>	64,359.50	64,360
CH <sub>4</sub>	1.26	26
N <sub>2</sub> O	1.68	521
HFCs		
PFCs		
SF <sub>6</sub>		
<b>Total</b>		<b>64,907</b>
Source: EC 2009a		

The NPRI Substance Report (excluding CACs) for Wabush Mines is provided in Table K.5.

An interactive table can be found at [http://www.ec.gc.ca/pdb/websol/querysite/facility\\_substance\\_summary\\_e.cfm?opt\\_npri\\_id=0000005460&opt\\_report\\_year=2010](http://www.ec.gc.ca/pdb/websol/querysite/facility_substance_summary_e.cfm?opt_npri_id=0000005460&opt_report_year=2010). This interactive table provides a detailed breakdown of each release.

**Table K.5 Substance Report (Excluding Critical Air Contaminants), Wabush Mines**

Substance	CAS Number	On-Site Releases				Units
		Air	Water	Land	Total	
Ammonia (total)	NA - 16	-	6.1	-	6.1	tonnes
Arsenic (and its compounds)	NA - 02	14	82	-	96	kg
Cadmium (and its compounds)	NA - 03	1.0	-	-	1.0	kg
Ethylene glycol	107-21-1	-	-	-	-	tonnes
Lead (and its compounds)	NA - 08	14	141	-	155	kg
Manganese (and its compounds)	NA - 09	18	4.9	-	23	tonnes
Nitrate ion in solution at pH >= 6.0	NA - 17	-	21	-	21	tonnes

Table K.6 outlines CACs for Wabush Mines.

**Table K.6 Substance Report (Critical Air Contaminants), Wabush Mines**

Substance	CAS Number	This Facility
		Year – 2010
		<u>Detail</u>
Nitrogen oxides (expressed as NO <sub>2</sub> )	11104-93-1	234
Carbon monoxide	630-08-0	215
Sulphur dioxide	7446-09-5	197
PM - Total Particulate Matter	NA - M08	1,946
PM10 - Particulate Matter <= 10 Microns	NA - M09	848

**ArcelorMittal, Mont Wright Mine**

*Summary of Effluents and Discharges*

The NPRI Substance Report (excluding CACs) for Mount Wright Mine is provided in Table K.7.

An interactive table can be found at: [http://www.ec.gc.ca/pdb/websol/queriesite/facility\\_substance\\_summary\\_e.cfm?opt\\_npri\\_id=0000006217&opt\\_report\\_year=2010](http://www.ec.gc.ca/pdb/websol/queriesite/facility_substance_summary_e.cfm?opt_npri_id=0000006217&opt_report_year=2010). This interactive table provides a detailed breakdown of each release.

**Table K.7 Substance Reports (Excluding Criteria Air Contaminants), MontWright Mine**

Substance	CAS Number	On-Site Releases				Units
		Air	Water	Land	Total	
Ammonia (total)	NA - 16	-	64	-	64	tonnes
Arsenic (and its compounds)	NA - 02	2.7	28	-	31	kg
Cadmium (and its compounds)	NA - 03	0.825	28	-	29	kg
Chromium (and its compounds)	NA - 04	0.002	-	-	0.002	tonnes

Substance	CAS Number	On-Site Releases				Units
		Air	Water	Land	Total	
Cobalt (and its compounds)	NA - 05	0.012	-	-	0.012	tonnes
Copper (and its compounds)	NA - 06	0.004	0.154	-	0.158	tonnes
Lead (and its compounds)	NA - 08	4.9	28	-	33	kg
Manganese (and its compounds)	NA - 09	-	-	-	-	tonnes
Mercury (and its compounds)	NA - 10	0.234	0.633	-	0.866	kg
Source: EC 2010a						

Table K.8 outlines Critical Air Contaminants (CACs) for Mont Wright Mines.

**Table K.8 Critical Air Contaminants, Mont Wright Mines**

Substance	CAS Number	This Facility
		Year – 2010
Nitrogen oxides (expressed as NO <sub>2</sub> )	11104-93-1	310
Carbon monoxide	630-08-0	901
Sulphur dioxide	7446-09-5	439
PM - Total Particulate Matter	NA - M08	2,116
PM <sub>10</sub> - Particulate Matter <= 10 Microns	NA - M09	600
PM <sub>2.5</sub> - Particulate Matter <= 2.5 Microns	NA - M10	93

**Cliffs Natural Resources, Bloom Lake Mine and Rail Spur**

*Summary of Effluents and Discharges*

The NPRI Substance Report (excluding CACs) for Bloom Lake Mine is provided in Table K.9.

An interactive table can be found at [http://www.ec.gc.ca/pdb/websol/querysite/facility\\_substance\\_summary\\_e.cfm?opt\\_npri\\_id=0000008783&opt\\_report\\_year=2010](http://www.ec.gc.ca/pdb/websol/querysite/facility_substance_summary_e.cfm?opt_npri_id=0000008783&opt_report_year=2010). This interactive table provides a detailed breakdown of each release.

**Table K.9 Substance Reports (Excluding Critical Air Contaminants), Bloom Lake Mine**

Substance	CAS Number	On-Site Releases				Units
		Air	Water	Land	Total	
Arsenic (and its compounds)	NA - 02	-	-	-	-	kg
Cadmium (and its compounds)	NA - 03	-	-	-	-	kg
Chromium (and its compounds)	NA - 04	-	-	-	-	tonnes
Cobalt (and its compounds)	NA - 05	-	-	-	-	tonnes
Copper (and its compounds)	NA - 06	-	0.001	-	0.001	tonnes
Lead (and its compounds)	NA - 08	-	0.080	-	0.080	kg
Manganese (and its compounds)	NA - 09	-	-	-	-	tonnes



Substance	CAS Number	On-Site Releases				Units
		Air	Water	Land	Total	
Nickel (and its compounds)	NA - 11	-	0.002	-	0.002	tonnes
Zinc (and its compounds)	NA - 14	-	-	-	-	tonnes
Source: EC 2010b						

Table K.10 outlines Critical Air Contaminants (CACs) for Bloom Lake.

**Table K.1 Critical Air Contaminants, Billoom Lake Mine**

Substance	CAS Number	This Facility
		Year – 2010
		<u>Detail</u>
Nitrogen oxides (expressed as NO <sub>2</sub> )	11104-93-1	<b>90</b>
Carbon monoxide	630-08-0	<b>358</b>
Sulphur dioxide	7446-09-5	<b>21</b>
PM - Total Particulate Matter	NA - M08	<b>654</b>
PM <sub>10</sub> - Particulate Matter <= 10 Microns	NA - M09	<b>188</b>
PM <sub>2.5</sub> - Particulate Matter <= 2.5 Microns	NA - M10	<b>24</b>

### Labrador Iron Mines, Schefferville Iron Ore Mine

#### *Summary of Effluents and Discharges*

Labrador Iron Mines began construction for its mining operation in September 2010. There will be three discharge locations at this site: Ruth Pit Outlet, JPS-Out-1 and JPS-Out-2. JPS-Out-1 and JPS-Out-2 have not yet been constructed; however, background samples were taken at these areas in November 2010 and showed no exceedences of the environmental limits. Ruth Pit Outlet has been monitored since September 2010: 15 samples were collected with no exceedences and three ALTs were collected; all passed. The current area of development is approximately 9.17 km<sup>2</sup>.

Detailed effluent tables can be found at [http://www.env.gov.nl.ca/env/publications/env\\_protection/2010\\_annual\\_report.pdf](http://www.env.gov.nl.ca/env/publications/env_protection/2010_annual_report.pdf).