



Lake Erie Works
2011 Annual Toxics Reduction Report
(O. Reg. 455/09)

Issued June 28, 2012

Basic Facility Information

Section 1 – Facility Information	
Owner	US Steel Canada
Facility name	Lake Erie Works
Address	General Delivery
City	Nanticoke
Province	Ontario
Postal Code	N0A 1L0
Section 2 – Owner’s Mailing Address	
Same as above (Y / N)	Yes
Address	
City	
Province	
Postal code	
Section 3 – Owner’s Technical Contact Person	
Same as above (Y / N)	Petar Kolundzija
Title	Environmental Coordinator
Phone	(519) 587 – 4541 ext 5403
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Basic Facility Information (Cont.)

Lake Erie Works was commissioned in 1980 making it the most modern integrated steel mill in North America. The plant is located on 1660 hectares of land on the north shore of Lake Erie. Lake Erie Works is an integrated steel plant and produces approximately 2.5 million tonnes of steel per year. Process operations at the plant include Cokemaking, Ironmaking, Basic Oxygen Furnace Steelmaking, Continuous Casting, Hot Strip Rolling and Pickling. There are no finishing operations at the plant.

Raw materials (coal and iron ore) are brought to the area by self-unloading ships. Coal is heated in the Coke Ovens, where volatile components of coal are vapourized and the remaining carbon is transformed into coke. The coke is then used as a reductant in the Blast Furnace. The gas generated during coking fuels the coking battery and is used in the reheat furnaces in the Hot Strip Mill. The liquid components generated during coking are separated in an adjacent By-Products Plant and are sold.

Coke, iron ore pellets, and dolomite are conveyed to the Blast Furnace, which has a capacity to produce 7,000 tonne/day of molten pig iron. From the Blast Furnace, molten iron is carried to the steelmaking shop in specialized railway cars where it is charged into two Basic Oxygen Furnaces. After mixing the molten iron with scrap steel, fluxes and additives, oxygen is blown into the melt to remove carbon and impurities. The molten steel is treated to adjust its composition to meet the requirements of the final product then transferred to the Continuous Casting process.

The casting complex consists of two casting strands in which the molten steel is solidified into steel slabs. Most slabs cast at Lake Erie Works are rolled in the Hot Strip Mill although some are shipped to other U. S. Steel facilities or sold.

The hot strip rolling facility reheats the slabs to the desired rolling temperature for converting them into strip. The slab is rolled to a finished thickness of 2-16 millimetres. The strip is then cooled and coiled for sale or further processing off-site. A portion of the hot-rolled strip is processed at the Lake Erie Works Pickle Lines where hydrochloric acid is used to remove iron oxide from the steel surface to produce Pickled & Oiled hot-rolled sheet.

The plant has extensive environmental control measures. Water is recycled extensively and treated before exiting the plant. Air cleaning equipment is used at the Coke Ovens, Blast Furnace and Basic Oxygen Furnaces to minimize emissions. In addition, a detailed landscaping plan was implemented during construction. This includes earthen berms up to 10 meters high surrounding the plant, water filled lagoons and extensive tree planting.

List of Toxic Substances at the Facility

Substance	Chemical Abstracts Service
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	Number
Arsenic	**
Benzene	71-43-2
Cadmium	**
Chlorine	7782-50-5
Chromium	**
Copper	**
Lead	**
Manganese	**
Mercury	**
Methanol	67-56-1
Toluene	108-88-3
Acenaphthylene	208-96-8
Benzo(a)anthracene	56-55-3
Benzo(a)phenanthrene	218-01-9
Benzo(a)pyrene	50-32-8
Benzo(b)fluoranthene	205-99-2
Benzo(g,h,i)perylene	191-24-2
Benzo(j)fluoranthene	205-82-3
Benzo(k)fluoranthene	207-08-9
Dibenzo(a,h)anthracene	53-70-3
Dibenzo(a,i)pyrene	189-55-9
Fluoranthene	206-44-0
Indeno(1,2,3-c,d)pyrene	193-39-5
Naphthalene	91-20-3
Perylene	198-55-0
Phenanthrene	85-01-8
Pyrene	129-00-0
Xylene	1330-20-7
Zinc	**

** No single CAS number applies to this substance

Summary: Tracking and Quantification

Substances	Usage	Creation	Destruction	Releases to Water
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	tonnes	tonnes	tonnes	tonnes
Arsenic	> 10 to 100	0	0	0
Benzene	0	> 1,000 to 10,000	0	> 0 to 1
Cadmium	> 1 to 10	0	0	> 0 to 1
Chlorine	> 100 to 1000	0	> 100 to 1000	> 1 to 10
Chromium	> 100 to 1000	0	0	> 0 to 1
Copper	> 100 to 1000	0	0	> 0 to 1
Lead	> 10 to 100	0	0	> 0 to 1
Manganese	> 10,000 to 100,000	0	0	0
Mercury	> 0 to 1	0	0	0
Methanol	0	> 1 to 10	0	0
Toluene	0	> 100 to 1000	0	0
Acenaphthylene	0	> 100 to 1000	0	0
Benzo(a)anthracene	0	> 100 to 1000	0	> 0 to 1
Benzo(a)phenanthrene	0	> 100 to 1000	0	> 0 to 1
Benzo(a)pyrene	0	> 100 to 1000	0	> 0 to 1
Benzo(b)fluoranthene	0	> 100 to 1000	0	> 0 to 1
Benzo(g,h,i)perylene	0	> 1 to 10	0	> 0 to 1
Benzo(j)fluoranthene	0	> 10 to 100	0	> 0 to 1
Benzo(k)fluoranthene	0	> 100 to 1000	0	> 0 to 1
Dibenzo(a,h)anthracene	0	> 100 to 1000	0	> 0 to 1
Dibenzo(a,i)pyrene	0	> 100 to 1000	0	> 0 to 1
Fluoranthene	0	> 100 to 1000	0	> 0 to 1
Indeno(1,2,3-c,d)pyrene	0	> 10 to 100	0	> 0 to 1
Naphthalene	0	> 1,000 to 10,000	0	> 0 to 1
Perylene	0	> 10 to 100	0	> 0 to 1
Phenanthrene	0	> 100 to 1000	0	> 0 to 1
Pyrene	0	> 100 to 1000	0	> 0 to 1
Xylene	0	> 100 to 1000	0	0
Zinc	> 1000 to 10,000	0	0	> 0 to 1

Summary: Tracking and Quantification (Cont.)

Substances	Releases to Air	Disposal	Recycling	Contained in Product
	tonnes	tonnes	Tonnes	tonnes
Arsenic	> 0 to 1	> 1 to 10	0	> 10 to 100
Benzene	> 10 to 100	0	0	> 1,000 to 10,000

Cadmium	> 0 to 1	> 1 to 10	0	> 0 to 1
Chlorine	0	0	0	0
Chromium	> 0 to 1	> 10 to 100	> 100 to 1000	> 100 to 1000
Copper	> 0 to 1	> 10 to 100	> 10 to 100	> 100 to 1000
Hydrochloric Acid	> 0 to 1	0	> 1,000 to 10,000	0
Lead	> 0 to 1	> 100 to 1000	> 1 to 10	> 1 to 10
Manganese	> 1 to 10	> 1000 to 10,000	> 1,000 to 10,000	> 1,000 to 10,000
Mercury	> 0 to 1	> 0 to 1	> 0 to 1	> 0 to 1
Methanol	> 1 to 10	0	0	0
Toluene	> 1 to 10	0	0	> 100 to 1000
Acenaphthene	> 0 to 1	0	0	> 0 to 1
Acenaphthylene	> 0 to 1	0	0	> 100 to 1000
Benzo(a)anthracene	> 0 to 1	0	0	> 100 to 1000
Benzo(a)phenanthrene	> 0 to 1	0	0	> 100 to 1000
Benzo(a)pyrene	> 0 to 1	0	0	> 100 to 1000
Benzo(b)fluoranthene	> 0 to 1	0	0	> 100 to 1000
Benzo(e)pyrene	> 0 to 1	0	0	> 1 to 10
Benzo(g,h,i)perylene	> 0 to 1	0	0	> 1 to 10
Benzo(j)fluoranthene	> 0 to 1	0	0	> 10 to 100
Benzo(k)fluoranthene	> 0 to 1	0	0	> 100 to 1000
Dibenzo(a,j)acridine	> 0 to 1	0	0	> 0 to 1
Dibenzo(a,h)anthracene	> 0 to 1	0	0	> 100 to 1000
Dibenzo(a,i)pyrene	> 0 to 1	0	0	> 100 to 1000
7H-Dibenzo(c,g)carbazole	> 0 to 1	0	0	> 0 to 1
Fluoranthene	> 0 to 1	0	0	> 100 to 1000
Fluorene	> 0 to 1	0	0	> 1 to 10
Indeno(1,2,3-c,d)pyrene	> 0 to 1	0	0	> 10 to 100
Naphthalene	> 0 to 1	0	0	> 1,000 to 10,000
Perylene	> 0 to 1	0	0	> 10 to 100
Phenanthrene	> 0 to 1	0	0	> 100 to 1000
Pyrene	> 0 to 1	0	0	> 100 to 1000
Vanadium	> 0 to 1	> 10 to 100	> 10 to 100	> 1 to 10
Xylene	> 0 to 1	0	0	> 100 to 1000
Zinc	> 0 to 1	> 1000 to 10,000	> 100 to 1000	> 1 to 10

Comparison of Tracking and Quantification to Previous Reporting Periods

The reported toxic substances quantities were notably higher in 2011 than 2010 as a result of increased steel production. In 2011 the plant operated throughout the whole year, unlike 2010 when it was shut down until June.

Toxic substances quantities are also impacted by the disposal and recycling of secondary materials. In 2011 considerably larger quantities of secondary materials were transported offsite than in the previous year.