Basic Facility Information for
Toxics Reduction Act (TRA) 455/09
ArcelorMittal Dofasco

July 10, 2013
# Version Control

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<th>Version</th>
<th>Date</th>
<th>Revision Description</th>
<th>Prepared By</th>
<th>Reviewed By</th>
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<td>Version 1.0</td>
<td>June 17, 2011</td>
<td>Original Submission to Public</td>
<td>ArcelorMittal Dofasco</td>
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<td>Version 3.0</td>
<td>July 10, 2013</td>
<td>TRA Report for 2012 Operating Year to Public</td>
<td>ArcelorMittal Dofasco</td>
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Executive Summary

ArcelorMittal Dofasco (Dofasco) operates an integrated steel mill located at 1330 Burlington Street East in Hamilton, Ontario (the Facility). The Facility takes coal, iron ore, scrap steel, and fluxes to produce more than 5.0 million tons of flat rolled and tubular steel products per year. Major customers include the automotive, construction, energy, manufacturing, pipe and tube, appliance, container and steel distribution industries. The Facility includes three coke plants, three blast furnaces, a KOBM basic oxygen furnace and an electric arc furnace in the steelmaking plant, two slab casters, a hot strip rolling mill, cold mills, galvanizing lines and two tube mills.
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1.0 INTRODUCTION AND FACILITY INFORMATION

ArcelorMittal Dofasco prepared a Toxic Reduction Report in accordance with s. 18(2) of O. Reg. 455/09, for the Hamilton, Ontario production facility. The details on the facility are as follows:

**Parent Company Name:** ArcelorMittal Canada Holdings  
4000 Route des Acieries  
Contrecœur, Quebec  
Canada  
J0L 1C0  
Business Number – 873449979

**Facility Name:** ArcelorMittal Dofasco Inc.

**Address of Facility:** P.O. Box 2460  
1330 Burlington Street East  
Hamilton, Ontario  
Canada  
L8N 3J5

**Number of employees (FTE):** 5,050

**UTM coordinates:** Zone - 17, East - 596441, West - 4790641

**NPRI Identification Number:** 3713

**NAICS Codes:**  
2 digit – 33 (Primary Metal Industries)  
4 digit – 3311 (Iron and Steel Mills and Ferroalloy Manufacturing)  
6 digit – 331110 (Iron and Steel Mills and Ferro-Alloy Manufacturing Canada)

**Company Contact:** Tony Valeri  
Vice President, Corporate Communications and Public Affairs  
(905) 548-7200 extension 6452
1.1 Facility Background

In 1912, Clifton W. Sherman founded Dominion Steel Castings, the small steel foundry that was to grow into today's ArcelorMittal Dofasco. The young company, which at that time, had an 80-ton daily capacity and employed about 150 people, supplied steel castings to locomotive and freight-car builders.

The current Facility was constructed prior to November 30, 2005 and is located in an industrially zoned area.

1.2 Description of the Process

ArcelorMittal Dofasco (ArcelorMittal) has the capacity to produce more than 5.0 million tons of steel products per year. ArcelorMittal Dofasco is 100% owned by ArcelorMittal NV. of Luxembourg. The facility is the largest steel-making plant in Canada and employs approximately 5,000 people. ArcelorMittal Dofasco's facility is located on a 730-acre site on the south shore of Burlington Bay in Hamilton.

ArcelorMittal Dofasco produces hot rolled, cold rolled, galvanized, Extragal™, Galvalume™, tinplate, chromium-coated and pre-painted flat rolled steels, as well as tubular products. The facility's quality system is registered under ISO/TS16949:2002 and the environmental management system is registered under ISO 14001:2004. Steel products from ArcelorMittal Dofasco are sold to customers in the automotive, construction, energy, manufacturing, pipe and tube, appliance, packaging and steel distribution industries.

The plant includes three coke plants, three blast furnaces, a KOBM basic oxygen furnace and an Electric Arc furnace in the steelmaking plant, two slab casters, a hot strip rolling mill, cold mills, galvanizing lines, an electrolytic coating line and two tube mills.

The major process units at Dofasco Hamilton are summarized in the following sections.

1.2.1 Coke Production

Coke making is the process of converting coal into a carbon mass called coke. The coking process consists of five main sub processes: coal preparation, charging, thermal destructive distillation, pushing/quenching and by-product recovery. Coke is used as a reductant within the blast furnaces during iron making. Its porous structure allows hot blast air to flow through the furnace while supporting the ore and added limestone.

In coke making, the volatile components of coal are removed in the coke ovens, collected and recovered in one of the three by-product plants that operate at the Facility. Coke making is a cyclic process and is carried out in coke oven batteries consisting of a series of adjacent ovens.

Blended coal is charged into ovens by the larry car. The coal is then heated by external combustion of recovered blast furnace gas enriched with coke oven gas, through flues located between ovens. Volatile compounds are driven from the coal, collected from each oven, and processed for recovery of combustible coke oven gas and other coal by-products in the By-Products Plants. Approximately 25% to 30% of the coal is the volatile fraction that is driven off and recovered as by-products. The solid carbon remaining in the oven is coke. Following the heating cycle, door machines remove the sides of the oven and coke is pushed from the oven into a rail quench car which takes the hot coke to the quench tower for cooling with a water spray. The coke is then screened and sent to the blast furnace or to storage. Each cycle can last 16 to over 20 hours.

The main coke oven emission points are depicted in the following figure from US EPA's Compilation of Emission Factors (AP-42 05/2008a) for Coke Production.
Most of the coke oven emissions sources are fugitive in nature. These include:

- Charge lid emissions
- Door emissions from the pusher side
- Door emission from the coke side not captured by collection systems
- Charging emissions
- Pushing emissions
- Offtake emissions

Emissions from these sources are assessed in accordance with the Environmental Best Practices Manual for Coke Producers (CSPA, 1998) and the US EPA Method 303. Pushing emissions are collected and controlled to remove particulate (and B(a)P) through use of an electrostatic precipitator at No. 1 Coke Plant, a baghouse at No. 2 Coke Plant and a venturi scrubber at No. 3 Coke Plant.

1.2.2 By-Products

Raw coke oven gas (COG) evolved during coke production is collected and transferred to one of three By Product Plants for processing. The By Product Plants include a gas handling system, a tar liquor system, an ammonia recovery plant and light oil recovery. The By Product Plants are the primary sources of benzene emissions from the Facility. The COG that is sent to the by-product recovery plants contains a mixture of hydrogen, methane, carbon monoxide (CO), carbon dioxide (CO2), water vapour, oxygen, nitrogen, hydrogen
sulphide (H2S), ammonia, benzene, light oils, tar vapour, naphthalene, other hydrocarbons and suspended particulate. The By-Product Plants recover benzene, toluene, xylene, sulphur, ammonia and tar for sale.

When the COG first enters the by-product plant it is indirectly cooled, and most of the water and high boiling point hydrocarbons are condensed. These products are then separated in a decanter and processed to yield tar. Ammonia is then removed by a NH3/H2S scrubbing circuit. The COG then moves to a final cooler and then a light oil (benzol) scrubber. The light oil primarily consists of benzene, toluene and xylene and is commonly referred to as BTX. The scrubber uses wash oil as the scrubbing medium to absorb approximately 95% of the BTX from the COG (AP-42, May 2008). The cleaned COG is rich in hydrogen and methane, having a nominal heating value of 500 Btu/scf, and is used throughout the facility as a fuel primarily for firing the hot strip mill reheating furnaces, enriching blast furnace gas for coke oven and stove heating, and at boilerhouses No. 1 and 2. Any excess COG is flared.

The Facility operates a Stretford wet-oxidizer COG desulphurizer plant at #1 BPP. In the Stretford process, H2S is scrubbed from the sour COG by a sodium carbonate (Na2CO3) solution and then is converted to elemental sulphur using a vanadium catalyst. The regeneration of the carbonate scrubbing liquid takes place by aeration in a liquid phase. ArcelorMittal Dofasco is the only steel mill in Canada to have this COG desulphurization technology.

The following flow diagram shows a typical by-product recovery plant from US EPA’s Compilation of Emission Factors (AP-42 05/2008) for Coke Ovens.

Figure 2: A Generic By-Products Plant
To control benzene emissions from sources in the By-Products Plants, the Facility has implemented a Benzene Emission Capture (BEC) system in accordance with the Benzene Environmental Best Practice Manual (BEBPM) for Coke Producers in Ontario - Controlling and Reducing Fugitive Benzene Emissions from the Coke Production By-Product Process (CSPA 1999). The vent gases from equipment connected to the BEC system are captured and ducted to a gas collection system for processing through the by-product plant.

ArcelorMittal Dofasco closely monitors the operation of the BEC system and tracks maintenance activities when equipment is isolated. Since installation of the BEC system, new sources have been added to continually reduce benzene emissions.

1.2.3 Ironmaking

Molten iron is produced in a blast furnace. The raw materials used in the iron making process include iron ore pellets, coke, and fluxes such as limestone added to achieve desired slag properties. The Facility operates three (3) blast furnaces.

At regular intervals, the raw materials are introduced through the top of the blast furnace. As they slowly descend down the furnace shaft, these materials (known as the burden) are heated by hot air, produced in the refractory lined stoves, that is blown into the lower section of the furnace. The carbon monoxide in these gases reacts with the iron oxides in the ore to form metallic iron and carbon dioxide. The newly formed iron melts and as it percolates through the coke column, it dissolves the carbon. By the time it reaches the hearth (blast furnace bottom), it is saturated with carbon, and it also contains traces of silicon, phosphorus, manganese and sulphur.

The limestone and ore form a low melting-point, free-running liquid slag, which absorbs most of the sulphur entering the furnace (coke is the main sulphur source). Liquid slag; composed of gangue minerals and oxide components of stone, floats on the liquid iron. The coke does not melt; it burns on contact with the pressurized, preheated air (blast) entering through the tuyères located just above the hearth. Pulverized coal is injected through the tuyères to provide a reductant and this replaces oil injection that was used previously.

The gas, which exits the Blast Furnace top, contains a large percentage of carbon monoxide and thus, has a serviceable calorific value (although much lower than natural gas or coke oven gas). It is used as fuel at the coke ovens, in the boilers and blast furnace stoves. Any excess blast furnace gas is flared.

The term "tapping" refers to draining the hearth of liquid iron and slag. A hydraulic drill and clay gun is used to drill and plug the taphole to remove the hot metal and slag. Once the furnace taphole is opened, the iron flows down a refractory lined trough and runner system, and the molten iron is collected in a torpedo car (a refractory lined rail car). The slag flows down a slag runner to the slag pit where it is pelletized. At the completion of the tapping, the taphole is plugged by forcing a refractory clay material into the taphole using a clay gun. Casthouse emissions are controlled through use of a dedicated fume capture system and baghouse. The full torpedo car is then transported to a dedicated Torpedo Car Desulphurizing Station.

In the event that there is excess hot metal which cannot be used at the steelmaking facility, hot metal is cast to ground ("beached", or "coffined") to avoid solidification in the torpedo car.

The dedicated Torpedo Car Desulphurizing Station processes torpedo cars of liquid iron. Reagents (Magnesium Oxide and Calcium Carbide) are injected to reduce the sulphur level of the liquid iron. This process is controlled with a fume capture system and dedicated baghouse. The desulphurized torpedo cars of liquid iron are sent to the steelmaking process.
1.2.4 Steelmaking

Steel is an alloy of iron and carbon in which the carbon content varies from about 0.002% (e.g., deep-drawing sheet metal) to 1.5% (e.g., tool steels). Modern steelmaking can be carried out using the basic oxygen process (BOP) for hot metal-based steel production or the electric arc furnace (EAF) for scrap-based steel production. Alloy steels contain traces of additional elements (e.g., manganese, nickel, chromium, vanadium, molybdenum) that give them different customer-required specific properties. In addition to carbon; hot metal, scrap steel and pig iron contain unwanted elements such as silicon, phosphorus, and sulphur, which would make steel brittle. During the steelmaking process, these elements must be removed.

The Facility employs two different types of steelmaking, namely a basic oxygen process Klockner Oxygen Blown Maxhutte (KOBM) basic oxygen furnace and an Electric-Arc Furnace (EAF).

The KOBM Furnace is a large, refractory lined, pear shaped furnace vessel with a unique design in which oxygen is also blown, 70% through a top lance and 30% through tuyeres or holes in the base of the converter vessel. A typical KOBM cycle consists of the scrap charge, hot metal charge, oxygen blow (refining) period, testing for temperature and chemical composition of the steel, alloy additions and reblow (if necessary), tapping, and deslagging. The full furnace cycle typically ranges from 30 to 45 minutes.

In the KOBM process, molten iron from a blast furnace, cold iron and steel are refined in a furnace by lancing (or injecting) high-purity oxygen. The input material is typically 70% molten metal and 30% scrap metal. The basic oxygen furnace is fed with fluxes to remove impurities. Alloy materials may be added to enhance the characteristics of the steel. The oxygen reacts with carbon and other impurities to remove them from the metal. The reactions are exothermic; therefore no external heat source is necessary to melt the scrap and to raise the temperature of the metal to the desired range for tapping. The large quantities of carbon monoxide produced by the reactions in the KOBM are controlled by a hood and skirt system to reduce air infiltration and suppress combustion at the furnace mouth. The gases are cleaned with a venturi scrubber system and flared. At the Ladle Metallurgy Facility (LMF), the desired steel composition is reached. To obtain ultra low and very low carbon contents, molten steel is further processed to the Vacuum Degasser. From the LMF, the liquid steel is transferred to a Continuous Casting process where it is cast into slabs.

In the Electric Arc Furnace (EAF), the input material is typically 100% scrap steel although the ability to charge approximately 25% liquid iron to the EAF also exists. Scrap steel is charged into the furnace vessel and three graphite electrodes descend through the furnace roof. As the electrodes approach the scrap, an arc forms. Due to its higher electrical resistance and the intense heat radiated by this arc, the scrap quickly heats to melting temperatures.

Once the steel has reached the desired carbon content and temperature, the steel is tapped from the furnace into a ladle and transferred to the ladle metallurgy facility (LMF) for fine tuning of chemistry and temperature. Emissions from the LMF and EAF are controlled by a baghouse. The liquid steel is then transferred to a Continuous Casting process, where it is cast into slabs.

1.2.5 Slab Casting

There are two (2) slab casters at the Facility, No.1 for KOBM Furnace produced steel and No.2 for Electric Arc Furnace produced steel. No.1 Slab Caster is a two-strand continuous caster that produces up to 3.1 million tonnes of steel slabs per year. No.2 Slab Caster is a single-strand continuous caster that produces up to 1.6 million tonnes of steel slabs per year which are then rolled in the Hot Strip Rolling Mill.
1.2.6 Hot Rolling

Steel slabs that are to be further processed into desired products require reheating in one of two (2) slab reheat furnaces; #1 & #2 RHF. Slabs are reheated to 1200 degrees Celsius and then sent through the Hot Strip Rolling Mill. The Hot Strip Rolling Mill consists of a Rougher Mill, a Finishing Mill and Recoilers. The Rougher Mill is where the slab thickness is reduced from 8.5 inches to less than 2 inches and the slab length is increased from 30 feet to 120 feet. Slabs are then sent to the 7-stand Finishing Mill where the thickness is further reduced to a range between 0.059 to 0.5 inches. The steel strips are then rolled into a coil on one of 3 Recoilers. The hot rolled coils can be either sold as a finished product or sent for further processing at the Facility, including: pickling, cold rolling, annealing, tube making, tin coating, and galvanizing.

The production capacity of the hot rolling mill is 5.5 million tonnes of steel per year. Fuels used in the reheat furnaces are coke oven gas and natural gas.

1.2.7 Pickling and Cold Rolling

The pickling lines operate to remove scale, oxide, and other foreign materials from the surface of hot-rolled steel coils using hydrochloric acid to create a clean-surfaced product. Cold Rolling reduces the thickness of hot-rolled steel by up to 80%. The cold rolling changes the product characteristics of the steel strip such as the tensile strength (increased), surface hardness (increased), surface finish (smoother) and dimensional tolerances (reduced). The hydrochloric acid fumes are contained by lidded tanks in the process and the spent acid is regenerated and re-used by the facilities.

The Facility operates one stand alone continuous pickling line (#4 CPL) and two (2) continuous pickling lines integrated with cold mills (#1 CPCM and #2 CPCM). The annual production rates of these lines are approximately 1.6 million tonnes/yr, 2.0 million tonnes/yr and 2.1 million tonnes/yr, respectively. Cold rolled steel may be sold to customers or further processed to meet customers’ needs.

1.2.8 Annealing

Annealing of steel increases the ductility of the product and allows for easier formability to meet customer specifications. Batch annealing is used to anneal coils. A batch anneal furnace consists of a bell-like furnace that is lowered over coils stacked on a base. The coils are radiantly heated in a controlled environment, fired with natural gas. Three (3) batch annealing facilities are in operation with 7, 12, and 34 furnaces respectively. An open coil batch annealing facility (5 furnaces) was in operation in the early part of 2012 (shutdown permanently in April 2012).

1.2.9 Galvanizing Lines

Steel is galvanized or coated for corrosion resistance by adding zinc to the product. The zinc is added by dipping the strip in a bath of molten zinc (hot dip galvanize). Some of the product is passivated by adding a coating of chromium. The Facility currently operates four (4) galvanizing lines and one (1) galvalume line, including:

- #1 Galv - galvalume line;
- #2, #3, #4 Galv - galvanizing lines; and
- DoSol Galvanizing line (DSG)
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1.2.10 Tin Mill

The Tin Mill plates cold rolled steel with tin using an electrolytic process for use in specific industries such as the food packaging industry. The Facility operates an electrolytic cleaning line integrated with an electrolytic tin line (#3 E-Line) with an annual capacity of approximately 290,000 tonnes/yr.

No. 3 E-Line is capable of clean pickling and plating tin coating steel and tin free steel (electrolytic chromium) coated steel. A fan draws vapour from the cleaning,pickling and tin plating section through a fluidized bed with a one stage mist eliminator. The tin-free process uses a separate plating section and scrubber located within the process line. The process results in some chromic acid fumes from the chrome plating section, mixing and storage tanks. A fan draws vapour from these areas and directs the fume to a three-stage separator/scrubber.

1.2.11 Tube Mill

The Hamilton facility’s Tubular Products business unit consists of two (2) slitters, No. 1 and No. 2 Tube Mills, No. 1 and No. 2 Fabrication cells, tube recutting (contained in the F Building), and the Tube Warehouse. No.1 and No. 2 Tube Mills were commissioned in 1997 and 2000, respectively.

The slitters cut the steel strip into the specific widths required to create customers’ ordered tube circumference dimensions. In each of the tube mills; coils of specific width are processed by roll forming, welding, scarfing, saw cutting and de-burring. Straight tubes may be packaged, sent to the warehouse and sold to customers or further processed at the fabrication cells to create customer parts. Completed parts are packaged and sent to the warehouse for storage.

The No. 1 and No. 2 Tube Mills have a total rated capacity of 120,000 tons per year and 140,000 tons per year, respectively.

1.2.12 Wastewater Treatment

The Facility operates one (1) primary wastewater treatment plant that treats water from primary steel processes (PWWTP) which includes the hot mill filtration plant (HMFP), two (2) cold mill wastewater treatment plants (#1, #2 CMWWTP) and one (1) coke effluent treatment plant that treats process water from the coke-making process (CETP).

1.2.13 Acid Regeneration

The Facility operates an acid regeneration plant (with #2 CMWWTP) containing 2 fluidized bed reactors. An acid regeneration plant (ARP) is a recycling process for hydrochloric acid which is used in the pickling process. During the production of carbon steel, an iron oxide scale is formed. This scale is removed by pickling with hydrochloric acid (HCl) prior to further processing of the steel. This scale removed is primarily iron oxide, but may contain trace amounts of other metal components.

The Hydrochloric acid reacts with the scale, producing iron chlorides. To recover the Hydrogen Chloride for reuse in the pickling process, the waste pickle liquor (spent hydrochloric acid) is decomposed by pyrohydrolysis in the reactor.

The fluidized bed process uses an oxide pellet bed, which is formed by the chemical reaction of waste acid with the reactor gas. The chemical reaction takes place at 850°C and all the oxide produced forms new layers on the oxide product. Removing the oxide from the reactor and adding fines into the reactor can control the pellet size.
1.2.14 Steam Generation

There are two main high-pressure boiler plants: #1 and #2 Boilerhouses. The total burner rating of the five large high pressure boilers is 1,775 million BTU/h (MMBTU/h).

The large boilers are multi fuel-fired using by product fuels (Blast Furnace and Coke Oven Gases), #6 fuel oil (Bunker C), and synthetic COG made from natural gas (the latter two are purchased.) High pressure steam produced is used in many diverse applications including; mechanical drive turbines, process applications and building heat throughout the Facility.

1.2.15 Material Handling and Roads

Material Handling and Logistics (formerly Primary Services) is responsible for the storage and delivery of raw materials, steel slabs, hot band coils, in-process coils and by-products to and from other processes in the manufacturing cycle.

The raw materials handled by Material Handling and Logistics are iron ore, coal, coke, limestone, dolomite, ilmenite and bauxite. Secondary materials such as scrap steel and slags are also handled by Material Handling and Logistics. These materials are unloaded to site, stored and transported to or from processing facilities. Transportation is accomplished through a series of conveyors and material transport vehicles. Coal and coke conveyors are covered, and in most cases conveyor transfer points have capture and control provided with hood and/or enclosures.

Material Handling and Logistics also serve to maintain the coal storage yards and ensure that the fugitive emission reduction strategies such as coal pile and unpaved road spraying/sweeping are utilized. ArcelorMittal Dofasco both monitors the weather and activates plans to cease material handling activities at high wind speeds. Water sprays and wetting of the material are used for coal storage and unloading activities. Dust mitigation techniques include pile rolling and compression, as well as waste oil/water and tall oil pitch (TOP) sealants.

1.2.16 Ancillary Processes

There are other processes at the Facility that indirectly support production processes, and have not been described in this report. This includes processes such as central warehouses and shipping, central trades and services and maintenance activities. Sources of emissions from these ancillary processes have been considered, as applicable.

1.3 Description of Product and Raw Material

The raw materials used in the iron making process include iron ore pellets with a specific iron content, coke or pulverized coal produced from raw coal used as a reductant, and fluxes such as limestone added to achieve desired slag properties. Raw materials are transferred to the blast furnace with coke produced on site and converted into molten iron and slag. The Facility operates three (3) blast furnaces with an annual production of 3.3 million tonnes of molten iron.

During the steelmaking process, molten iron is transported via rail, in special “torpedo cars”, to the steelmaking furnace process area. The Facility operates two different steelmaking processes, namely: the Basic Oxygen Process (BOP) carried out using the Klockner Oxygen Blown Maxhutte (KOBM), and the Electric-Arc Furnace process.

The molten material from the furnaces (KOBM and Electric-Arc) is transferred to one of the Facility’s two (2) ladle metallurgy stations, where the chemistry and temperature are adjusted to refine the mixture, ahead of
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casting. Adjustment of the chemistry is done via the addition of alloys and fluxes. Once the molten material has met specifications, it is transferred to the casting lines where it is cast into slabs. Additional finishing processing takes the form of hot rolling, pickling, cold rolling, tempering and annealing, tin plating and galvanizing.

1.4 Operating Schedule
The Facility typically operates 24 hours per day, 365 days per year.

2.0 TOXICS SUMMARY FOR 2011 REPORTING YEAR
The following table summarizes the substances that are reportable under O. Reg. 455/09 for ArcelorMittal Dofasco.

2.1 Toxics Summary Table
This table lists all the reportable substances (a total of 49). Also included is the Chemical Abstract Society (CAS) reference number and a brief description of the primary use / creation of each reportable substance.
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<th>Substance Name</th>
<th>CAS number</th>
<th>Description of Substance Use / Creation</th>
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<td>Antimony and its Compounds</td>
<td>N/A</td>
<td>Minor amounts in raw materials (steel scrap and coal).</td>
</tr>
<tr>
<td>Arsenic and its Compounds</td>
<td>N/A</td>
<td>Minor amounts in raw materials (coal).</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>Created from organic material (coal) in Primary operations.</td>
</tr>
<tr>
<td>Cadmium and its Compounds</td>
<td>N/A</td>
<td>Minor amounts in raw materials (coal and steel scrap).</td>
</tr>
<tr>
<td>Chromium and its Compounds (except hexavalent)</td>
<td>N/A</td>
<td>Minor amounts in raw materials (iron ore and steel scrap).</td>
</tr>
<tr>
<td>Copper and its Compounds</td>
<td>N/A</td>
<td>Minor amounts in raw materials (coal and steel scrap).</td>
</tr>
<tr>
<td>Dioxins/Furans (ITEQ)</td>
<td>N/A</td>
<td>Trace amount created in the Steelmaking process.</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td>Created from organic material (coal) in Primary operations.</td>
</tr>
<tr>
<td>Hexachlorobenzene</td>
<td>118-74-1</td>
<td>Trace amount created in the Steelmaking process.</td>
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<tr>
<td>Chromium (VI) and its Compounds</td>
<td>N/A</td>
<td>Used as a coating substance in the Finishing process.</td>
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<tr>
<td>Hydrochloric Acid</td>
<td>7647-01-0</td>
<td>Used as a surface preparation substance in the Finishing process.</td>
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<td>Lead and its compounds</td>
<td>N/A</td>
<td>Minor amounts in raw materials (coal, iron ore and steel scrap).</td>
</tr>
<tr>
<td>Manganese and its compounds</td>
<td>N/A</td>
<td>Minor amounts in raw materials (coal, iron ore and steel scrap).</td>
</tr>
<tr>
<td>Mercury and its compounds</td>
<td>N/A</td>
<td>Trace amount in raw materials (coal and steel scrap).</td>
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<tr>
<td>Nickel and its compounds</td>
<td>N/A</td>
<td>Minor amounts in raw materials (coal, iron ore and steel scrap).</td>
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<td>Phenol</td>
<td>108-95-2</td>
<td>Mainly created from organic material (coal) in Primary operations. Minor portion in substance used in Finishing process.</td>
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<td>Selenium and its compounds</td>
<td>N/A</td>
<td>Minor amounts in raw materials (coal, iron ore and steel scrap).</td>
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<td>Sulphuric Acid</td>
<td>7664-93-9</td>
<td>Used for neutralization of caustic liquids.</td>
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<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>Created from organic material (coal) in Primary operations.</td>
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<tr>
<td>Total PAHs (including Naphthalene)</td>
<td>N/A</td>
<td>Created from organic material (coal) in Primary operations.</td>
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<td>Vanadium (except when an alloy) and its compounds</td>
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<td>Minor amounts in raw materials (coal and iron ore).</td>
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<td>Xylene (all isomers)</td>
<td>1330-20-7</td>
<td>Created from organic material (coal) in Primary operations.</td>
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<tr>
<td>Zinc and its compounds</td>
<td>N/A</td>
<td>Used as coating material in Finishing operations. Minor amounts in raw materials (coal, iron ore and steel scrap).</td>
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<tr>
<td>Ammonia</td>
<td>N/A</td>
<td>Created via a chemical reaction in Primary operations.</td>
</tr>
<tr>
<td>Ethylene (ethene)</td>
<td>74-85-1</td>
<td>Created from organic material (coal) in Primary operations.</td>
</tr>
<tr>
<td>Styrene</td>
<td>100-42-5</td>
<td>Created from organic material (coal) in Primary operations.</td>
</tr>
<tr>
<td>VOCs (Including EthylBenzene, Naphthalene and Phenol)</td>
<td>N/A</td>
<td>Created from organic material (coal) in Primary operations.</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>630-08-0</td>
<td>Created from the combustion of fossil fuels throughout the Facility.</td>
</tr>
<tr>
<td>Nitrogen Oxides (NOx as NO2)</td>
<td>11104-93-1</td>
<td>Created from the combustion of fossil fuels throughout the Facility.</td>
</tr>
<tr>
<td>PM</td>
<td>N/A</td>
<td>Created from the combustion of fossil fuels throughout the Facility.</td>
</tr>
<tr>
<td>PM10</td>
<td>N/A</td>
<td>Created from the combustion of fossil fuels throughout the Facility.</td>
</tr>
<tr>
<td>PM2.5</td>
<td>N/A</td>
<td>Created from the combustion of fossil fuels throughout the Facility.</td>
</tr>
<tr>
<td>Sulphur Dioxide</td>
<td>7446-09-5</td>
<td>Created from the combustion of fossil fuels throughout the Facility.</td>
</tr>
<tr>
<td>Hydrogen Sulphide</td>
<td>77830604</td>
<td>Created via a chemical reaction in Primary operations.</td>
</tr>
<tr>
<td>Sodium Nitrite</td>
<td>7632-00-0</td>
<td>Minor amounts in purchased products.</td>
</tr>
<tr>
<td>Total Reduced Sulphur (TRS)</td>
<td>N/A</td>
<td>Created via a chemical reaction in Primary operations.</td>
</tr>
<tr>
<td>Phosphorus and its Compounds</td>
<td>N/A</td>
<td>Minor amounts in raw materials (coal, iron ore and steel scrap).</td>
</tr>
<tr>
<td>Ethylene Glycol</td>
<td>107-21-1</td>
<td>Used to prevent freezing of materials in tanks.</td>
</tr>
<tr>
<td>Butane &amp; its Isomers</td>
<td>N/A</td>
<td>Created from the combustion of fossil fuels throughout the Facility.</td>
</tr>
<tr>
<td>Butene &amp; its Isomers</td>
<td>25167-67-3</td>
<td>Created from organic material (coal) in Primary operations.</td>
</tr>
<tr>
<td>Heavy Aromatic Solvent Naphtha</td>
<td>64742-94-5</td>
<td>Minor amounts in purchased products.</td>
</tr>
<tr>
<td>Hexane &amp; its Isomers</td>
<td>N/A</td>
<td>Created from the combustion of fossil fuels throughout the Facility.</td>
</tr>
<tr>
<td>Pentane &amp; its Isomers</td>
<td>N/A</td>
<td>Created from the combustion of fossil fuels throughout the Facility.</td>
</tr>
<tr>
<td>Propane</td>
<td>74-98-6</td>
<td>Created from the combustion of fossil fuels throughout the Facility.</td>
</tr>
<tr>
<td>Propylene (propene)</td>
<td>115-07-01</td>
<td>Created from organic material (coal) in Primary operations.</td>
</tr>
<tr>
<td>Stoddard Solvent</td>
<td>8052-41-3</td>
<td>Minor amounts in purchased products.</td>
</tr>
<tr>
<td>Hydrotreated Heavy Naphtha</td>
<td>64742-48-9</td>
<td>Minor amounts in purchased products.</td>
</tr>
<tr>
<td>1-methyl-4-(1-methyl ethenyl)-Cyclohexene (or D-Limonene)</td>
<td>5989-27-5</td>
<td>Minor amounts in purchased products.</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>Minor amounts in purchased products.</td>
</tr>
</tbody>
</table>