STACKWATCH
REPORTING AIR EMISSIONS IN OUR COMMUNITY

Do you see visible pollution emissions?
Do you smell an offensive odour coming from the industrial area?

TAKE ACTION! REPORT IT!

Ministry of the Environment, Conservation and Parks (MoE)
Hamilton District Office (Mon-Fri, 9am-4:30pm)
905-521-7650
24/7 Spills Action Centre
1-866-663-8477
Email your photos
moe.tips@ene.gov.on.ca

You can contact industry directly or copy them on your reports to the MoE

ArcelorMittal Dofasco
905-548-7200 x0
environment.dofasco@arcelormittal.com

Stelco
905-528-2511 x2268
environment@stelco.com

Need more info on how to effectively report a pollution problem? Visit environmenthamilton.org/air_quality
Local Air Quality Regulation Compliance Approaches

There are currently three compliance approaches for industrial facilities:

1. Demonstrate compliance with the air standards by the phase-in period.
   Assessed using approved air dispersion models or through modelling and monitoring.

2. Request and meet a site-specific standard.
   Available to eligible facilities affected by new or existing requirements.
   Assessed using approved air dispersion models or through modelling and monitoring.

3. Register under and meet a technical standard for specified contaminants.
   Available if the Ministry has developed a technical standard that applies to the sector and those contaminants.
Producing Iron from Iron Ore

- The Blast Furnace converts iron ore into molten iron metal at 1450°C for Steelmaking.
- Blast Furnace gas is used for steam & electricity.

Fe₂O₃ + 3CO → 2Fe + 3CO₂

Source - Stelco Inc. CLC Presentation
Canada’s Steel Sector & Climate Change

The ‘Climate Elephant In The Room’

Hamilton’s Main GHG Emissions by Sector 2016-2018

Source - City of Hamilton
Climate + Energy

Energy consumption has dropped 12% in 2018 from 1990 levels.

Absolute greenhouse gas emissions are down over 17%.

Canada’s steel producers have the ambition to achieve net-zero CO2 emissions by 2050.

Greenhouse Gas Performance

Canadian steel producers are committed to the reduction of greenhouse gases. The industry has a proven track record for reducing carbon emissions achieved through improving its overall operational performance; adopting strong energy practices, such as heat recovery and cogeneration; improving energy efficiency throughout its operations; and optimizing raw material selection and use.
Blast Furnaces & ‘Novel Reductants’

- The iron-making process requires a reductant - coke (pure carbon) + the injection of ‘pulverized coal’ (PCI) into tuyere + oxygen.

- The need to realize greater gHg emission reductions has motivated exploration of the use of ‘novel reductants’ including plastic waste and ‘high carbon materials’ like bio-char. (Wang et al, 2013)

- Bio-Char vs Plastic Waste - research points to greater gHg emission reduction potential with bio-char (Feliciano- Bruzual 2014, Ahmed et al 2020)

- Use of plastic pellets increases heavy metal levels - including increased mercury emissions to air and increased levels of heavy metals mercury, cadmium, lead and zinc in blast furnace waste materials going to landfill. (Trinkel et al 2015)
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Source - Stelco Inc.
Stelco - A Recent History of Climate Innovation

First Commercial Carbon Abatement Algae Plant to be built at Stelco

Dec, 11, 2017

OCE Project #27602: Utilization of Bio-Carbon to Reduce Fossil Carbon Input Requirements for Coke Production

Solution Provider: Walker Environmental - Thorold, Ontario
CCRA Corporate Members in 2019-2020:

- ArcelorMittal Dofasco Inc
- CanmetENERGY
- Teck Resources
- Stelco Inc.
- Algoma Steel Inc.
- SunCoke Energy

Improve the energy efficiency of metallurgical processes for the advancement of Canadian Industry

Celebrating 50 years of providing research support to the Coal and Steel industries.

Research Target: Short Term Goals (2020)

- Integrated Ironmaking
  - 5 - 10% substitution metallurgical coal in cokemaking by renewable bio-carbon in slot ovens
  - 100% replacement of injection coal in blast furnace ironmaking by renewable bio-carbon
    - Corresponds to ~25% reduction in GHG emission associated with both cokemaking and ironmaking

- Integrated Steelmaking
  - Small impact and what is developed for EAF could translate for the BOF

- EAF Steelmaking
  - 100% replacement of injection carbon (for slag foaming) and charge carbon (for supplementary energy) in EAF steelmaking by renewable bio-carbon
    - Corresponds to >50% reduction in direct GHG emission associated with EAF steelmaking
Sweden

Three Swedish companies, steel manufacturer SSAB, mining company LKAB, and energy company Vattenfall are exploring the use of hydrogen in steel production processes. This joint endeavor is known as HYBRIT, short for Hydrogen Breakthrough Ironmaking Technology. To make the process fully fossil-free, the hydrogen used will be generated from renewable electricity.
Thank You!

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