



2017
20th Anniversary Edition
Report to the Community

Message from the Chair



I had the wonderful opportunity to continue in my role as chair of the Board of Directors for the Hamilton Industrial Environmental Association (HIEA) through 2017. I have been involved with HIEA for over 16 years in various capacities and as the current Manager, Environment for Stelco Canada I have been able to see the continuing positive impact our HIEA members make on our community.

HIEA is a strong, dedicated group of member companies who continue to work closely with their neighbours, community initiative and not-for-profit environmental sector groups and many local representatives from the City of Hamilton and the Ministry of the Environment and Climate Change.

2017 was a significant year for HIEA as it marked our 20th year of continuous reporting and support to the Hamilton community. Our HIEA member

companies continue to participate in, and support, a number of local environmental initiatives including: Bay Area Restoration Council (BARC), Children's Water Festival, Royal Botanical Gardens (RBG) Green Angels Program and the McQuesten Urban Farm.

Besides supporting local environmental initiatives, HIEA member companies continue to improve their own facilities. 2017 was no exception as many members continued work on major environmental upgrade projects that will have a positive and lasting impact on the Hamilton community. Work also continued on the Hamilton Air Shed Modeling Study and we all look forward to presenting the results at the 2018 Upwind Downwind Conference.

These and many other improvements over the years have had a very favourable impact on local air quality – drastically reducing Total Particulate Matter (TPM), Green House Gas and other emissions. HIEA members continue to report their aggregate environmental performance against key parameters in their annual survey and the 2016 results continue to show an overall improving trend for the years 1997 through 2016. This year's statistics are a concrete example of the continued success that HIEA member companies are achieving to improve the environment in the Hamilton community.

HIEA's survey results are presented in this publication, at the association's Annual General Meeting and to the Community Advisory Panel. They are also available to the public both in print and on the association's website - www.hiea.org.

The Community Advisory Panel (CAP) continues to provide opportunities to exchange information and discuss issues of concern to the community between industry and representatives from local neighbourhood associations, community advocacy groups and other caring citizens. Through this ongoing dialogue, CAP helps to set the directions and priorities for HIEA's activities, and individual member companies' programs.


Our members are actively making efforts to increase our corporate membership and CAP participation, bringing more local industries and community members to the table.

You're invited to Join Us ...

As a local business or a neighbour to industry, your input is integral to HIEA's continued success and we welcome your involvement. For more information about how to get involved as a member, with CAP meetings and other current initiatives, visit www.hiea.org or contact us at 905-662-2131 or communications@hiea.org.

A handwritten signature in dark ink that reads "A. Sebestyen".

Andrew Sebestyen
Chair of the Board - Hamilton Industrial
Environmental Association

A close-up photograph of several pink coneflowers (Echinacea) with bright orange-brown centers. A small bee is visible on the left, hovering near one of the flowers. The background is filled with green foliage.

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2017 HIEA members—working together for a better Hamilton community.

Accounting for almost 11 percent of Canada's GDP, manufacturing is a high-skill, high-tech sector. In Hamilton, HIEA members directly provide 7,000 manufacturing jobs—almost all of them full-time and well-paying. These jobs support approximately 56,000 more jobs through indirect and induced effects playing a critical role in Hamilton's economy.

HIEA member companies have developed a unique and complete ecosystem—working closely with one another to supply the raw materials needed to manufacture their products. This network allows them to meet customer requirements in a timely and economical manner. This in turn generates employment, fulfills environmental improvements, meets legislation, sustains businesses and, grows the overall local and regional economy.



Air Liquide is a global provider of industrial and medical gases and related services. Founded in 1902, Air Liquide has 125 subsidiaries in 75 countries and has 40,000 employees, including 2,000 in Canada.

Air Liquide supplies many of the key industries in Hamilton including steelmaking, health care and other manufacturing

industries and are a critical component to the success of these businesses.

www.airliquide.com



ArcelorMittal

ArcelorMittal Hamilton East is a major North American steel wire producer servicing the automotive, OEM, and construction markets.

www.arcelormittal.com



ArcelorMittal
DOFASCO | HAMILTON

ArcelorMittal Dofasco is Canada's largest flat roll steel producer and part of the world's largest steel and mining company. ArcelorMittal Dofasco's approximately 5,000 employees make more than 100 grades of steel in Hamilton, Ontario which is used in the automotive, distribution, construction and manufacturing, tubular and consumer and industrial packaging sectors. Ingenuity and creativity have been the driving force of ArcelorMittal Dofasco throughout its history and have pushed the company to design and develop steels that are transforming the design, performance and sustainability of autos, creating stronger, safer and more sustainable buildings, innovative new packaging as well as supporting emerging technologies in the tubular energy market.

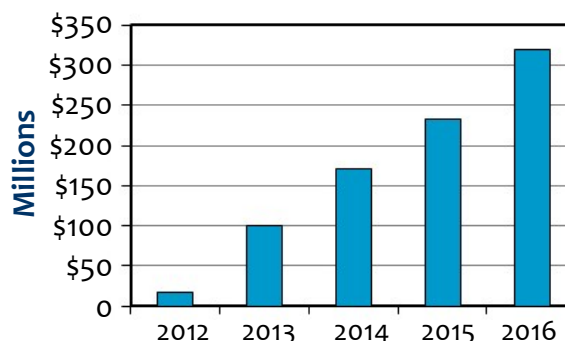
In 2014, ArcelorMittal identified 10 sustainable development

5 Year Cumulative Environmental Capital Spending

HIEA member companies continue to make major financial contributions to the economic well being and environmental protection of the City of Hamilton and its residents.

Collectively, HIEA member companies have invested over \$210.5 million on environmental capital improvements in the last 5 years.

In 2016 HIEA member companies employed over 7,100 people and paid over \$21 million in municipal taxes while occupying almost 740 hectares of land.



outcomes to help us achieve our goal of sustainability leadership — by defining the kind of company we want to be. We will create value as we progress against these outcomes. Our Sustainable Development framework also helps us secure the commercial success of our business in the medium term, while contributing to solving the world's sustainable development challenges in the long term. This is good for society, good for our stakeholders and good for us.

As part of our ongoing commitment to our 10 sustainable development outcomes, ArcelorMittal Dofasco in 2017 identified and implement numerous initiatives that continued to increase the sustainability of our operations, reduce greenhouse gas (GHG) emissions and protect the environment including the following:

In June 2017, ArcelorMittal Dofasco donated \$120,000 to the Hamilton Conservation Foundation to support the purchase of a 20-acre property on York Road in Dundas, which provides habitat for rare bird and plant species. The property will be part of the Cootes to Escarpment EcoPark System, one of the most biologically-rich areas of Canada which has vast expanse of natural land in all directions, as well as a bustling and productive working waterfront to the east. This property is the final property within the Cootes to Escarpment EcoPark that is located within the Hamilton

watershed and ArcelorMittal Dofasco's funding helped to make this purchase possible.

ArcelorMittal Dofasco broke ground on a new project to replaced three aged boilers with one modern, high-pressure boiler along with a 20-megawatt steam turbine and water treatment plant. The new boiler will use by-product fuel from the steel manufacturing process to produce steam and electricity while reducing NOx emissions. Slated to be in service in 2019, this project will reduce plant demand from the electrical grid by about 129,000 MWh/year. The project is being supported in part by the Independent Electricity System Operator (IESO) through the Industrial Accelerator program, which helps incent organizations to invest in large-scale electricity conservation programs. Engineering, construction and startup of the project will require of the skills and efforts of hundreds of specialized engineers, tradespeople, and other resources from ArcelorMittal Dofasco and the local contracting and manufacturing community to deliver this project successfully next year.

For more information about ArcelorMittal Dofasco and our sustainable development outcomes visit:

canada.arcelormittal.com.



Bunge Canada is the country's largest processor of oilseeds. At

its Hamilton facility, which employs more than 120 people, Bunge processes oilseeds into protein meal and edible oils.

www.bungecanada.com



Canadian Asphalt Industries Inc employs 30 employees at the Hamilton plant where they produce and blend many different grades of paving and roofing asphalt, respectful of the environment in the process.

www.canadianasphalt.com



Birla Carbon is one of the world's leading manufacturers and suppliers of high quality carbon black. As one of 16 manufacturing facilities operating in 12 countries, Birla Carbon Canada has been a proud leader in the Hamilton manufacturing community for over 55 years. The facility employs approximately 100 people and contributes close to US\$100 million annually to the local economy. Birla Carbon provides career opportunities for all its employees and promotes a culture of family, respect and care for the community.

Birla Carbon produces carbon black, a highly engineered and
...continued on page 6

essentially pure elemental carbon. Carbon black is used in countless different everyday products that play a key role in our lives. From vehicular tires to shoe soles, water pipes to power lines, clothing and make-up to computer hardware, printing inks, insulation material and coatings, carbon black is present in all. Birla Carbon makes everyday products safer, stronger and longer lasting.

As an ardent practitioner of sustainable development, Birla Carbon's Sustainable Operational Excellence (SOE) strategy focuses on employee safety, environmental stewardship, efficient use of carbon sources and a key focus on conducting operations in a socially and ethically responsible manner. Birla Carbon Canada is ISO14001:2015 certified on Environmental Management Systems.

The company's vision is to be the most respected, sustainable and dynamic global carbon black business. By embedding sustainable thinking and continuous improvement at every level of the organization, the company provides the highest quality carbon black, to customers around the globe, using responsible and sustainable manufacturing practices.

Birla carbon is part of the Aditya Birla Group, a US\$43 billion Fortune 500 global conglomerate. The core values of the Group - commitment, integrity, passion, seamlessness and speed is rooted in everything at Birla Carbon. The

unsurpassed talent, skill and experience of people and their commitment to SOE makes Birla Carbon a flagship business of the Aditya Birla Group.

www.adityabirla.com



Contanda Canada Inc. is a premier provider of bulk liquid storage and related services throughout Canada and the United States.

Contanda Terminal is committed to maintaining zero injuries, illnesses, and incidents within their organization.

We believe in providing the highest standard of performance and business excellence by continuously improving processes, practice, and products through management and employee commitment and accountability.

www.contanda.com



Lafarge "A member of LafargeHolcim" employs approximately 40 employees who process blast furnace slag for grinding into cementitious cement, Lightweight Aggregate use as well as Road Base and Rockwool Insulation markets.

www.lafarge.com



Ruetgers Canada Inc.

Ruetgers employs 72 people involved in the distillation of coal tar.



Sanimax/ABP employs over 1,000 people across North America and is a values-driven organization which transforms by products from the food and meat industries into useful materials for other services.

www.sanimax.com



Stelco's operations consist of Lake Erie Works, a fully integrated steelmaking facility that has the capability of producing approximately 2.6 million tons of steel annually and Hamilton Works, home to coke making and steel finishing facilities including the Z-Line, one of North America's premier zinc-coating lines. Together these facilities employ approximately 2,000 people. Stelco produces high quality steel that is used primarily in the North American automotive, construction, infrastructure, appliance, manufacturing and pipe and tube industries.

www.stelco.com



TRIPLE M METAL LP

Due to its innovative approach in the sourcing and sale of ferrous scrap, **Triple M Metal LP** employs more than 150 people who are responsible for handling more than 1.5 million tons of material annually.

www.triplemmetal.com

HIEA in the Hamilton Community...

HIEA maintains an active role within the Hamilton community through membership and participation in several community based associations and groups. HIEA is represented on the Clean Air Hamilton Committee and has been involved in a number of its sub committees including the Upwind Downwind Conference organizing committee, Climate Change Steering group and business task group.

HIEA is also a very active supporter of the Hamilton Harbour Remedial Action Plan (RAP) and participated not only in the Watershed Nutrient and Sediment Management Advisory Group and both the Sediment Control on Active Construction Sites Task Group and the Urban Runoff Task Group but is also a participant of the Randle Reef Community Liaison Committee.

HIEA and its members recognize the importance of community involvement and formed the Community Advisory Panel (CAP) to help further develop the association by expanding our dialogue between industry and the community.

Representatives from local neighbourhood associations, community advocacy groups and caring citizens are invited to meet with HIEA member company representatives to exchange information and discuss issues of concern to the community. Through this ongoing dialogue, CAP helps to set the directions and priorities for HIEA's activities, and individual member companies' programs.

These informal meetings provide an opportunity to meet other individuals who are

interested in improving the environmental quality of life in Hamilton and provide an update or insight into projects or initiatives that are being developed. Attendees at the meetings are then encouraged to share this information with their neighbours and Neighbourhood Associations.

These meetings are open to everyone. People are welcome to attend as often and whenever they wish without obligation. For information about upcoming meeting topics please check our website at www.hiea.org. If you are interested in attending our meetings please contact us at communications@hiea.org.

Supporting local community programs...

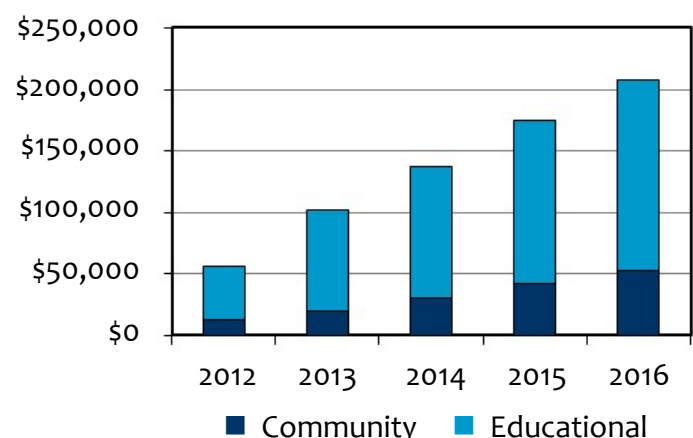
Through direct financial sponsorship and volunteer efforts of its member companies, HIEA continues to provide support to environmental and education programs within the Hamilton community.

"We have developed strong relationships with many local environmental organizations and we are proud to lend our support to these very worthwhile projects." - Andy Sebestyen, Chair of the HIEA Board of Directors.

The submission deadline for applications is September 30th. Funding decisions are released by January 31st and funds distributed at the HIEA annual meeting in April.

For information about eligibility for funding, our application forms, and the process, please check our website www.hiea.org for more details.

5 Year Cumulative Support



HIEA's Scholarship Programs

Preparing today's students for tomorrow's world...

HIEA members believe that it is the students of today that will make a difference in the future. To ensure these students reach their goals we have chosen to support hands on, educational programming for elementary age students but our support doesn't stop there.

In 2006 HIEA established a bursary fund at Mohawk College with matching funds from the Ontario Trust for Student Support (OTSS) program. In 2009 HIEA provided additional money and doubled the fund.

These funds provide financial support to students enrolled in various environmental programs at Mohawk College.

CONGRATULATIONS to our 2017/18 student winners



Breanne Lalon: "This scholarship helps me out immensely. Due to my heavy work load I had decided not to work this term. This had been a financial stress since I live on my own without any support from my parents, but academically has been the best decision I've made. This funding will help keep me afloat so I can focus on my academics and achieve honours."

Cody Fisher: "Because of this bursary I will be able to continue

In 2014 HIEA supported the establishment of The Brian McCarry Graduate Chemistry Scholarship with friends, family, colleagues, and industry partners in memory of Dr. McCarry, the founder and initial chairperson of Clean Air Hamilton.

This scholarship is to be awarded by the School of Graduate Studies to a graduate student currently enrolled in the Chemistry graduate program. Preference will be given to students pursuing industry-related research.

Each year the interest earned within these funds will be distributed to students who meet the criteria set out by

focusing on my education uninhibited. I am planning to use this money to purchase text books, and school supplies, as well as reduce my O.S.A.P. loans. I hope that with the help of your generosity I will be able to continue my education and achieve a GPA consistent with or above the level I have achieved so far."

Mohammad Abu-Dhair: "I tried to work while attending school in the first year. When the second year starts I found that it will be really hard to work while attending because my goal is to graduate with a high average. This scholarship will help to focus

Mohawk College and McMaster University.

For information and/or to apply for the bursaries at Mohawk College please check their website at:

www.mohawkcollege.ca or contact: Mohawk Student Awards at The Square - Student Services Room C102 or by calling 905-575-2066.

For information about the McMaster University award please contact Megan McLeod at 905-525-9140 ext 27172 or macleomh@mcmaster.ca.

Please check our website www.hiea.org to learn about our past Mohawk College winners.

more on school and achieving a higher average."



Congratulations to **Stephanie Rathmann**, a McMaster PhD student who is developing a new method of harnessing radioactivity to more precisely target cancers and other diseases. Stephanie is the inaugural recipient of the Brian McCarry Graduate Chemistry Scholarship.

HIEA's support in Hamilton...

Bay Area Restoration Council (BARC)—Yellow Fish Road Program



dispose of hazardous materials, and BARC contact information.

The flyer and other material provides residents with the tools and information they need to make more conscientious decisions. BARC has been using this program since 2005 to encourage members of the community to make behavioral changes to protect Hamilton Harbour and its watershed.

Trout Unlimited Canada's Yellow Fish Road™ Program is a national conservation education initiative. Since 1991, thousands of Canadians have become leaders in their community by raising awareness about pollution entering local water bodies through storm drains.

HIEA has provided financial support to BARC for over 10 years. This funding has helped to support delivery of the Yellow Fish Road™ program.

This program helps to increase youth understanding and appreciation of Hamilton Harbour, its watershed, and the negative impacts of runoff pollution through storm drains.

In 2017 BARC staff delivered 5 Yellow Fish Road events to 113 youth and 29 adult volunteers. After learning about the program these individuals painted a total of 117 storm drains with bright yellow fish.

The students also delivered flyers to 350 nearby mailboxes with the message “Only Rain Down the Drain!”.

These flyers provide information about the Yellow Fish Road™ program, ways to properly



City of Hamilton—Children's Water Festival



In 2016 the City of Hamilton Water and Wastewater division staff organized the 9th annual Children's Water Festival. The festival continues to be extremely popular with local schools and registration fills up within minutes.

Activities are geared to water conservation, water science and technology, water awareness and water protection and it not only educates our youth but provides them with the knowledge to educate others.

In 2016 the organizing committee continued it's efforts to expand the number of students and classes that could attend the festival; to create more interactive activities to engage the students; to improve the knowledge and interest in the future of our water; to empower the students to initiate change within their homes, schools and communities and to increase the

amount of community involvement in the festival.

By combining classes the organizers were able to maximize the attendance allowing 3,002 teachers and students to participate in 102 classes. Many of the partners were able to update their programs based on survey feedback enabling students to participate in 30 hands on, interactive water activities

topics that were lead by community partners who are experts in the field. The coordinating group was also able to bring on another new partner in 2016.

Student satisfaction is a key indicator of the success of this event. Over 71% of the students indicated that they learned a lot of new things about water. 96% of the teachers rated the educational value of the Festival as excellent.



Green Venture—Fresh Air for Kids Program & Depave Paradise



Green Venture and Corr Research have been conducting a mobile air monitoring program with Hamilton schools since 2012. Green Venture has also offered anti-idling programs since 2007. For 2017, elements of both the mobile monitoring program and the anti-idling program were combined for the first time to create “Enhanced Fresh Air for Kids”.

The project focuses on educating students, teachers, and the public about air quality around schools, particularly from engine idling. Five schools have completed the first portion of the project from September 2017 to December 2017, with three afternoons of in-class work, in-the-field air monitoring, and at-school anti-idling awareness campaigns. The

schools have also begun their winter work- creating anti-idling messaging to be used during the spring campaign.

During the fall of 2017 Green Venture staff and Dr. Corr engaged 375 students over the 15 in-class sessions at St Martin of Tours, Lawfield, Cathy Wever, Hillcrest and Adelaide Hoodless.

Students participated in step-by-step graphing exercises using the PM data collected; worked in class using colour coded map of the data collected by Dr. Corr and MOECC vehicle; were tasked with pinpointing where they live and determining the cleanest air route to school and; carried out an initial anti-idling blitz to determine a baseline for idling numbers by counting cars and distributing information to parents and the general public.



Depave Paradise is a project of Green Communities

Canada and Green Venture that engages volunteers and neighbourhoods in Canadian communities to remove pavement (by hand!) and plant gardens filled with native species or install permeable surfaces in its place.

Through partnerships with local schools, organizations and community groups, Green Venture removes asphalt and

concrete to renew and beautify community spaces by adding natural playgrounds, community vegetable gardens, trees, rain gardens, permeable pavers and other permeable surfaces. In addition to building a strong sense of community, this program also increases usable public space and frequently improves a community’s water quality.

Hamilton’s 4th Depave Paradise event at St. Brigid Catholic Elementary School transformed part of the school’s asphalt playground into a green space

created through student-driven design. The garden replaced 50 sq metres of asphalt and was split into four quadrants to represent the student’ vision including a peace garden, butterfly garden, rain garden and sensory garden.



McQuesten Urban Farm



HIEA provided financial support for the McQuesten Urban Farm in 2017 to extend the planting of the native plant walk & meadow at the McQuesten Urban Farm.

These plantings were done to enhance the natural environment at the site which previously had no other vegetation besides turf grass. The plantings improve the ecological function of the property and also enhance the overall aesthetics of the site and make it a more welcoming and enjoyable place for the community. Some of the native plants and trees also provide food, medicinal and agricultural

products that are useful for the urban farm. When completed the native plant walk at the McQuesten Urban Farm will be the largest urban pollinator garden in the city.

A variety of planting events were organized with the local community and volunteer groups. As part of their annual day of service McMaster University staff volunteered on the urban farm for a day in September and planted approximately 500 native plants that extended our native plant

walk approximately 250 feet. Also, for our annual youth summer camp we acquired additional plants that were planted around the farm by staff and campers. In fall 2017 the urban farm launched its school trip program and hosted over 1500 students and a key component of the trip curriculum was utilizing the native plant walk to educate participants around the biology of seeds and the importance of biodiversity.

Through our 2017 planting activities we were able to plant a significant portion of the native plant walk. In total over 150 volunteers and local residents and youth took part in the events with thousands of volunteer hours given to the project. In total 5,600 native plants were planted on the urban farm site in 2017. We will continue to plant the native plant walk with additional native plants in 2018 and engage with the local community and schools to complete this work.



Royal Botanical Gardens—Green Angel Program



The Royal Botanical Gardens (RBG) Green Angels program began in July 2013. It supports children and families in our local communities by giving them access to natural spaces and free outdoor education at the Royal Botanical Gardens.

The program provides disadvantaged, special needs and new Canadian children in the Hamilton area with free access to week-long summer camps, school and other outdoor nature education programs.

Funding from HIEA allowed RBG to expand their educational outdoor programming to children and youth that previously could not benefit from a trip to RBG purely due to financial constraints, and in particular focused on a new partnership with Reach for the Rainbow to subsidize summer camp experiences for 10 children with disabilities. The program also delivered environmental educational programming to 166 children through school field trips.

The Green Angels fund provides for children and families in

financial need by offering free school programs and bussing, free admission passes and free family memberships. Subsidies are offered to individuals, school boards and local not-for-profit organizations.

The RBG 2016 Donor Accountability Report indicates that the Green Angels subsidized 92 educational programs, 29 school groups, 41 Camp Program days and a total of 2,532 children and youth benefited from this program in that year.



The RBG staff are committed to the program with over 70% participation in the Staff Fundraising Campaign. RBG Green Angels program has also continued their partnership with all HWCDSB schools.



Recycling and our “Industrial Ecosystem”

By: **Jay Creen** and **Josh Parkinson** from Mohawk College and **Ratna Timsina** from Niagara College

This annual report summarizes the results of the environmental survey of HIEA companies for the years 2012 through 2016. The data in this report represents information provided by HIEA member companies through an electronic survey and was written based on the compiled data using 1997 as a base year to evaluate environmental trends.

In 2017 HIEA was fortunate to participate in both a Co-op program at Mohawk College and an Internship program at Niagara College. These programs provided different opportunities to engage with students who were enrolled in environmental studies at their perspective colleges. **Jay Creen** and **Josh Parkinson** from Mohawk College and **Ratna Timsina** from Niagara College took on the task of learning about the HIEA member companies, their environmental improvement initiatives and most specifically how their performance and interdependence impacts the community. The following piece is taken from the work they did so I would like to thank these three young men for their interpretations and insights.

HIEA’s member companies play a crucial role in the Hamilton community by generating revenue, paying property taxes, providing employment, and creating new business

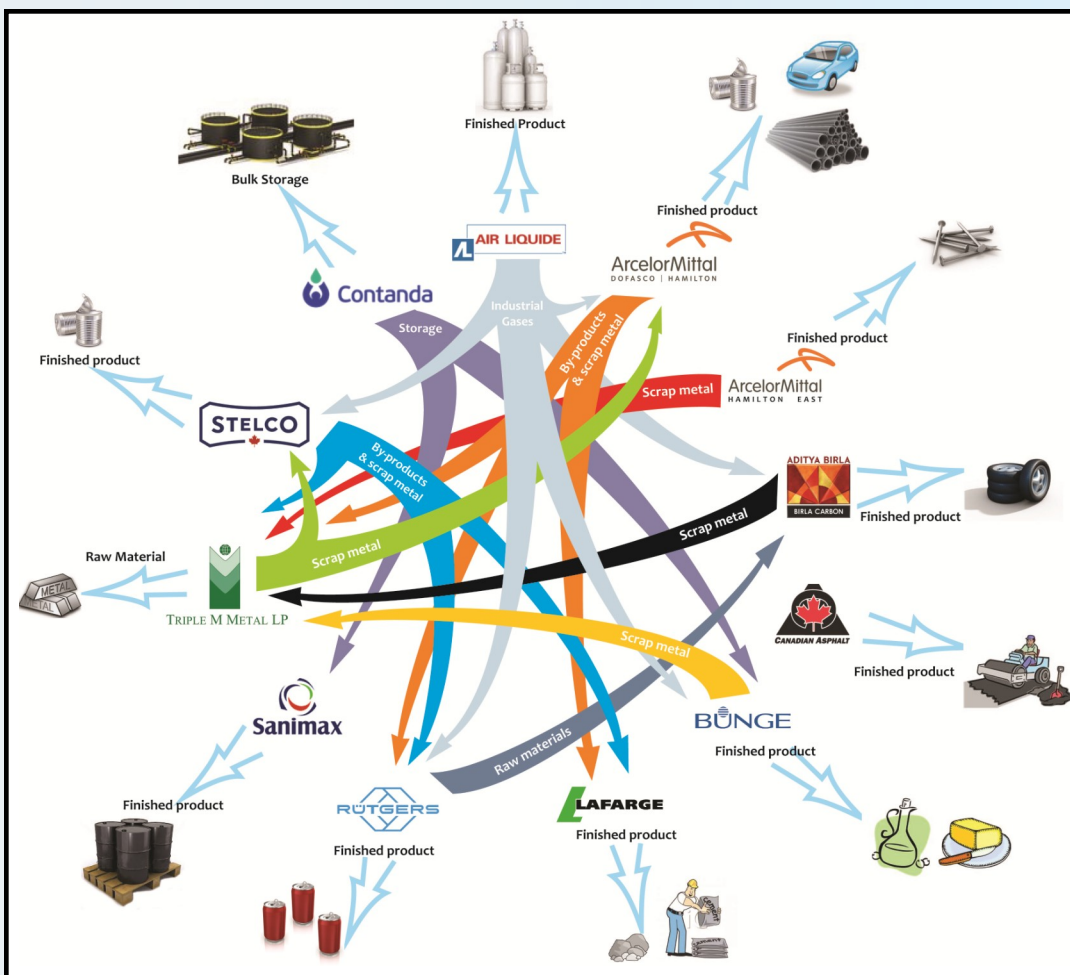
opportunities through innovation and technology. In 2016 the 12 member companies employed over 7,100 people. Besides the direct employment provided by these 12 companies

there are many other individuals and industries operating their businesses in different sectors including transportation, consulting, construction, manufacturing, service provider,

food industry, etc. as a result of their existence.

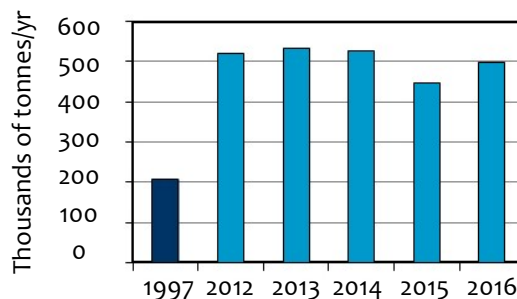
The two steel making industries, ArcelorMittal Dofasco and Stelco, jointly produce nearly 60% of all high quality steel in Canada. These member companies have provided a solid foundation for many other businesses and entrepreneurships.

The Conference Board of Canada has been consistently ranked Hamilton as the most diverse economy in the country, and the city has repeatedly been a top investment choice for real estate experts and corporate site selectors. Statistics also show that



Total Off-Site Disposal

Hamilton is an important recycling centre and HIEA companies are major participants. Waste is sent to landfill and for treatment/destruction. These include subject waste, commercial/domestic waste and non-hazardous industrial waste. Total off-site



disposal levels fluctuate as a result of changes in year-to-year production.

for every one quality manufacturing position it will result in approximately 8 spin off jobs.

Since its establishment in 1997, HIEA has been actively engaged in consultation with local communities, research organizations, academic institutions, governmental agencies and the public to find the issues, concerns and suggestions from the wider stakeholders.

HIEA has also played an important role in facilitating interaction among its member companies to develop a long-term strategy for pollution management and secondary material reduction. Through rigorous consultation, research and experience; industries jointly started to track and document the flow of material and energy and, their transformation into products, by-products, and wastes throughout their operational systems.

A basic step in the operation of an industry is to extract raw materials from the Earth, undergo processing and

produce commodities to provide to the customers. This transformation can have a large environmental impact creating pollution and waste into our environment. However, any environmental impacts are significantly reduced with careful planning and recycling of by-products and secondary materials. HIEA's member companies have demonstrated this model as they share information on best management practices and technology improvements and; exchange secondary materials and byproducts to minimize their carbon footprint in the environment.

They also have Environmental Management Programs (EMP) in place to continually reduce their pollution emission, and secondary materials generation. HIEA member industries have made a strong connection with each other. They are not only competitors; however, they are each also an essential member of the ecosystem. For example, in the beginning, all steel slag (a by-product from the processing of iron) was sent out for landfill. Now this by-product is being

completely used by the cement and other industries as a primary raw material.

HIEA's member companies have developed into a complete ecosystem as they are essential to one another for the raw materials needed to manufacture their products and allowing them to meet customer requirements, generate employments, fulfill environmental improvements, meet legislations, sustain businesses and, grow overall local and regional economy.

HIEA's member industry has formally adopted a zero waste programme in their system and is a milestone towards the circular economy. A circular economy aims to maximize the value of the product or services and eliminate waste by improving the design of materials, products and business models. Thus, the circular economy protects the environment as it recognizes that our natural resources are finite and their efficient use is inevitable for the sustainable management of the environment and economic growth. Recognizing this fact the Government of Ontario launched the *Waste Free Ontario Act*, comprising the *Resource Recovery and Circular Economy Act* along with *Waste Diversion Transition Act* in 2016. The main objective of the legislation is to make responsible to the producer for the end-of-life management of their products and packaging.

...continued on page 16

our “Industrial Ecosystem” *continued*

HIEA’s member companies have recognized the waste as the value in materials and are committed to producing the products that are long lasting, reusable and recyclable. Shifting towards a circular economy requires collective efforts among different agencies including producers, consumers, governmental agencies, and non governmental sectors. Member companies are working towards a zero waste program with the redesign of products that result in the use of fewer raw materials and produce long-lasting and reusable goods.

HIEA’s member companies have an environmental management program in place and are also working collectively to reduce, reuse and recycle their by-products and secondary materials.

The idea of HIEA is to connect each of its members through their industry to reduce their ecological footprint, and create more sustainable operations. All of the members of HIEA benefit from each other in some way resulting in a reduction in disposal and waste, resource use, production costs etc.

To illustrate the value of HIEA and its members to the Hamilton community we looked at what would happen if we removed the steel companies entirely.

Determining how each company interacted within the association and by covering each company’s

purpose, production, consumer targets, raw material acquisition and waste products we realised that every company within the association had some tie with the steel industry. Upon further research, we could determine that most, if not all companies were present in the city because of the steel companies.

Understanding these interdependencies one could truly determine HIEA’s value in the city.

By removing the steel companies from HIEA’s environmental ecosystem, and doing some research we learned:

- Many companies came to Hamilton targeting the steel industry for their readily available raw materials and secondary products;
- The cities investment in the steel industry is very well developed;
- Many companies rely on the operation of the steel industry, so they too can thrive economically

Also:

- Hamilton has over 100 years invested in the steel industry
- Getting rid of the steel industry would affect the whole city of Hamilton (economically, environmentally, and educationally).

Our conclusions were:

- The steel industry is crucial to the function of Hamilton

- HIEA and its members help to create a more environmentally sustainable city, utilizing the most out of the industrial resources it uses and creates
- HIEA and its members are taking the initiative to promote environmental education and is active in many environmental projects
- Without HIEA and its members there would be many more issues within Hamilton and the industrial sector.

Effects to consider:

- Impact on unemployment (loss of jobs)
- Impact on local businesses
- Less funding for local environmental programs
- Potential rise in taxes to compensate for losing the steel companies
- Activities that promote environmental awareness and sustainability wouldn’t be funded

The visual below represents the impact the Steel companies have in Hamilton, and successes of HIEA—It is what’s known as **“THE RIPPLE EFFECT”**



Commitment to the Hamilton Community through Ongoing Improvements...

HIEA Member companies remain dedicated to reducing their environmental footprint and have made a commitment to protect Hamilton's air, water, and land by:

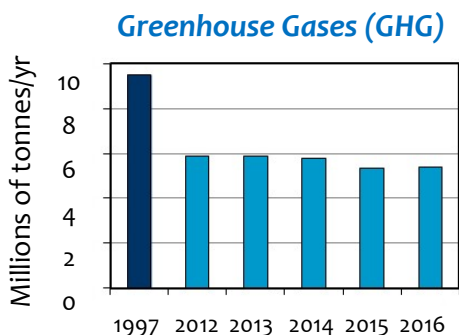
- Operating their facilities in a safe and responsible manner;
- Monitoring environmental performance;
- Conserving and protecting the natural environment;
- Responding to community enquiries and concerns;
- Working together to promote environmental awareness;
- Communicating their environmental performance and improvements in a transparent and open manner.

HIEA and its members not only work together to support each other but also work with other local environmental groups to encourage improvement in the Hamilton community. An active member at Clean Air Hamilton (CAH), HIEA participated in several committees including: the Air Quality Task Force; the CAH Structure and Planning Committee; the Committee established to review the CAH Annual Report and the Upwind/Downwind organizing committee.

HIEA member companies also continue to make major financial contributions to the economic

well being and environmental protection of Hamilton. Collectively, HIEA member companies have invested over

\$243 million on environmental capital improvement projects in the last 5 years.

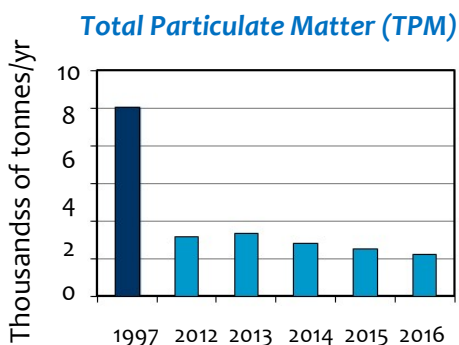


Greenhouse Gases (GHG) emitted by HIEA member companies are primarily carbon dioxide, with small quantities of methane and nitrous oxide.

Although there has been an increase in production

in the last few years, the total Greenhouse Gas emissions in 2015 are almost 43% below the 1997 levels with almost a 9% decrease since 2012.

GHG emission reductions are the result of energy conservation, increased waste energy recovery, increased process yields, and efficiencies and operational changes.



Total Particulate Matter (TPM) emissions are 78% below those reported in 1997, and are almost 29% lower than those in 2012.

Particulate emissions control is a priority for HIEA's member companies who have

numerous programs in place to reduce these emissions including point source controls, improved operating practices, paving of roads and yards, greenbelting, and shutdown of obsolete equipment.

HIEA has also contributed almost \$167,000 to local tree and native planting programs since 1999 to also assist in managing particulate emissions, increasing biodiversity and improving air quality.

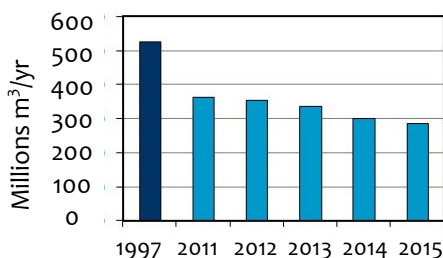
Commitment to the Hamilton Community through Ongoing Improvements continued...

Many HIEA members operate their own waste water treatment facilities.

Ongoing improvements and updates to these treatment facilities ensure that their discharges are in compliance with the current requirements of the City of Hamilton's Sanitary Sewer By-Laws.

Some HIEA members discharge treated water to the municipal sanitary sewer system while others discharge treated water to Hamilton Harbour. Some sites also discharge untreated rain water into the system. Water entering the sewer system is directed to a Hamilton Wastewater Treatment Plant where it undergoes further treatment before being discharged to the Harbour.

Hamilton Harbour Water Use



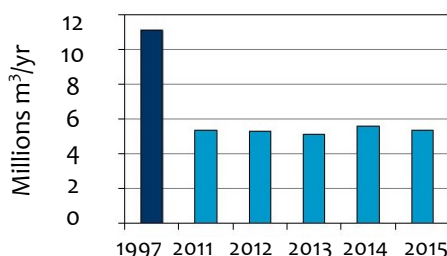
Hamilton Harbour water use has decreased by 46% since 1997. This represents a declining trend over the past five years.

A large portion of this water is used for non-contact cooling and circulates within

equipment without contacting any processes and therefore does not pick up contaminants.

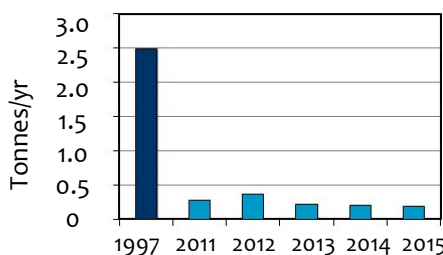
Hamilton Harbour water is also used by some HIEA members for dust control.

City Water Use



HIEA member companies have reduced their consumption of city water by 52% since 1997. Although the use of city water has fluctuated over the past five years it continues to remain at these lower levels.

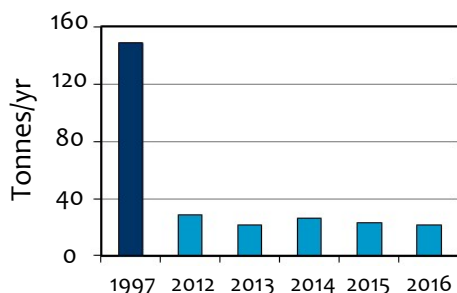
Total Suspended Solids



Overall Total Suspended Solids discharges have been reduced by 93% since 1997, with 55% of these discharges going to a city wastewater treatment plant for further treatment.

Over the past five years discharges continue to show an overall reducing trend through the implementation of improved water recycle systems and shutdown of obsolete facilities. New water treatment capabilities added in 2011 and 2012 by HIEA member companies continue to reduce these discharges significantly.

Polycyclic Aromatic Hydrocarbons

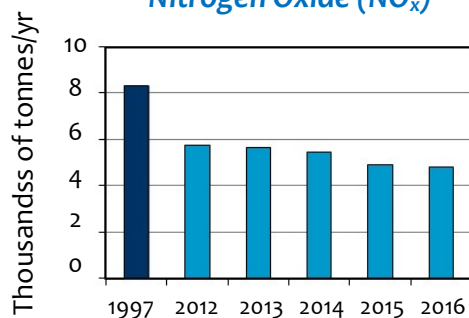


Polycyclic Aromatic Hydrocarbons (PAH's) are a group of chemicals formed during incomplete burning of coal, oil, gas, garbage or other organic substances. PAHs are usually found as a mixture containing two or more of these compounds.

PAH emissions have been reduced by 84% since 1997, are 28% lower than 2011 levels and continue to show a downward improvement.

These reductions have been achieved primarily by improving coke oven operations.

Nitrogen Oxide (NO_x)



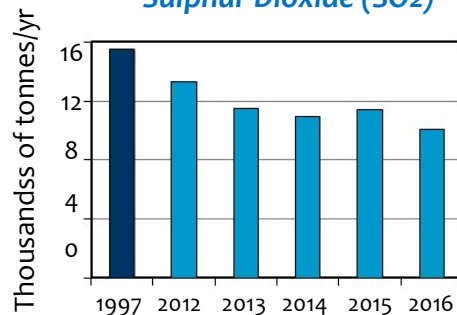
Nitrogen Oxides (NO_x) are precursors to ground level ozone. The main source of NO_x is the combustion of fuels.

HIEA member companies have reduced their NO_x emissions by almost 43% since 1997. Although

production levels have generally increased over the last 4 years these emissions continue to show a reducing trend.

Improvements have primarily been achieved by the installation of advanced combustion technology (low-NO_x burners) and the shutdown of obsolete equipment.

Sulphur Dioxide (SO₂)



Although Sulphur Dioxide (SO₂) emissions have fluctuated over the past five years they are 24% lower than those reported in 2012 while the total emissions remain 35% lower than 1997 levels.

Changes or slowdowns in production requiring different fuel sources results in higher sulphur oxides emissions. Several options are being implemented to reduce these emissions including switching to lower sulphur fuels and feedstocks and shutting down obsolete equipment.

HIEA member companies are committed to improving their environmental performance and the maintenance of their facilities. Many member companies are ISO 14001 certified and all members follow a prepared environmental management improvement program. These programs have been developed to assist organizations to minimize how their operations (processes etc.) affect the environment; to comply with applicable laws, regulations, and other environmentally oriented requirements, and to improve continually.

These management programs pertain to the process of how a product is produced, rather than to the product itself. Companies regularly perform audits using third-party organizations to ensure they are meeting the requirements set out in their improvement programs. HIEA members work closely with provincial and city regulators to ensure all reasonable steps are taken to both improve their processes and to remain in compliance.

We are HIEA...

... a non-profit association of local industries. HIEA provides an open forum for community members and local associations to discuss their environmental concerns through our Community Advisory Panel (CAP).

HIEA has a strong history of connecting with local neighbourhood associations and working with the community to fulfill HIEA's mandate:

"to improve the local environment – air, land and water – through joint and individual activities, and by partnering with the community to enhance future understanding of environmental issues and help establish priorities for action."

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Member Companies

