

**Breathing Easy:  
A Report on the Potential for Community  
Cooperation in Air Quality Issues in the  
Bayview Area of Sault Ste. Marie**

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## Table of Contents

### **Acknowledgments**

### **1.0 Introduction**

### **2.0 Purpose**

### **3.0 Problem Identification**

#### **3.1 Area of Study**

#### **3.2 First Community Meeting – Bayview Residents**

##### **3.2.1 Immediate Health Effects Due to Exposure To Air Pollution**

##### **3.2.2 Health Effects Due to Long Term Exposure**

##### **3.2.3 Deterioration of Property and Property Values**

##### **3.2.4 Deterioration of Quality of Life**

#### **3.3 Second Community Meeting - Bayview Residents and Local Government Agencies**

##### **3.3.1 Monitoring Station Placement**

##### **3.3.2 Information Dissemination**

##### **3.3.2 a. Inter-Agency Information Sharing**

##### **3.3.2 b. Information Shared with the Public**

##### **3.3.3 Inaccurate Statistical Data Collection at the Hospital**

### **4.0 Local Industrial Sources of Pollution**

#### **4.1 Record of Violations**

#### **4.2 Health Affects**

### **5.0 Examples of Cooperation**

#### **5.1 Voluntary Agreements**

##### **5.1.1 Algoma Steel Inc. Environmental Management Agreement**

##### **5.1.2 St. Mary's Paper and G-P Flakeboard**

#### **5.2 Community Education, Awareness, and Involvement**

##### **5.2.1 Good Neighbour Agreements**

##### **5.2.2 Community Advisory Panels**

##### **5.2.3 Community Report Cards - The Huntsman Example**

##### **5.2.4 Community Monitoring – Stack Watch, Hamilton**

### **6.0 Conclusions**

## **7.0 Bibliography**

## **8.0 Resource List**

### **List of Tables**

Table 1	Major Air Polluters in Sault Ste. Marie, Their Annual Releases and National Ranking According to the National Pollutant Release Inventory (NPRI)
Table 2:	Algoma Steel Incorporated Summary of Air Emissions, 1998-2002
Table 3:	St. Mary's Paper Limited Summary of Air Emissions, 1998-2002
Table 4:	G-P Flakeboard Limited Summary of Air Emissions, 1998-2002
Table 5:	Relevant Air Emissions Reduction Targets in ASI Environmental Management Agreement

### **List of Appendices**

Appendix A:	Cloth Used to Wipe Deck of Bayview Resident's Home
Appendix B:	Canada Ontario Agreement Respecting Great Lakes Basin Ecosystem – Tier I and Tier II Substances
Appendix C:	Health Effects of Specific Toxicants
Appendix D:	Voluntary Agreements – Definition, Advantages and Disadvantages
Appendix E:	Example of Good Neighbour Agreement and the Minimum Standards for a Good Neighbour Agreement
Appendix F:	Huntsman Community Report Card
Appendix G:	StackWatch Community Monitoring Fact Sheet

### **List of Maps**

Map A:	Street Map of Bayview Area in Sault Ste. Marie, Ontario
Map B:	Location of William Merrifield and Bonnie Street Monitoring Stations

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## **1.0 Introduction**

*"Discover fresh air, first class in this naturally gifted modern city"* reads a glossy pamphlet put together by the City of Sault Ste. Marie in order to promote tourism in our community (Sault Ste. Marie Naturally Gifted in Algoma Country, promotional pamphlet). Yes, a romantic brush paints the image of this northern Ontario town. The land of fresh cold running water, crisp pine-scented air and noble, time-aged rock faces makes it difficult to imagine that anything up here could deviate from the image of our honoured wilderness past. Even with roads cutting through forests, heavy industry located on the shores of lakes, and mine pits dotting our landscape, it is hard to believe that nature, in all its abundance here, isn't being affected by the harmful effects of human created pollution.

Even for those northerners that will admit that the landscape is changing rapidly, northern Ontarians would find it extremely difficult to believe that this part of the province could experience extreme poor air quality events. Smog advisories are thought to be restricted to the high temperature, grid-locked land pockets of southern Ontario; afterall, don't they come up here to breathe our clean air?

Unfortunately, not all northern Ontarians experience 'fresh air'; in fact, there are many who experience poor air quality on a daily basis. Discharges from local industrial sources are only one problem on the long list of concerns of residents who live near heavy industry. The smells, sights, and sounds are painfully obvious in many areas of our City but cannot be easily ignored by those residents who live right beside industry.

On April 7, 2004 a reporter from the Sault Star noticed a haze in the west end of the City and called the local Ministry of Environment (MOE). The Ministry told him that the Air Quality Reading (AQI)<sup>1</sup> for that time of the day was 99. This number nearly exceeded the 50-99 range

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<sup>1</sup>Air Quality Index (AQI) is an indicator of air quality, based on hourly pollutant measurements of some or all of the six most common air pollutants being: sulfur dioxide (SO<sub>2</sub>), ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), total reduced sulphur compounds, carbon monoxide (CO) and fine particulate matter (PM<sub>10</sub> or PM<sub>2.5</sub>)

on the AQI scale indicating 'poor' air quality (Sault Star, April 8/2004). Communication about this particular AQI reading began between the reporter and a Smog and Climate Change Campaigner from Toronto Environmental Alliance who declared that Sault Ste. Marie beat the provincial record previously held by Simcoe who recorded an 87 reading on July 17, 2002. Word re-circulated back to Sault Ste. Marie and local people began to ask questions about the incident.

What happened on April 7, 2004 and on subsequent 'poor' air quality days focused concerns regarding the recurrence of 'poor' air quality incidents in the community and reframed questions around what was being done about them. The April 7, 2004 recording of 99 resulted in maximum PM<sub>2.5</sub> concentrations being recorded in both a localized area of the city (William Merrifield station) as well as the broader community (Sault College station). MOE-Toronto issued a local poor air quality notification on that day and notified the Algoma Health Unit in Sault Ste. Marie and the MOE District Office. This matter was incredibly serious to Mayor Rowswell, who fearing that the reading would taint the City's "Naturally Gifted" slogan, attempted to strike the recording from the City's record (Sault Star, April 12, 2004).

A second 'poor' air quality reading of 150 was recorded on July 28, 2004 which was dismissed by MOE officials as 'just raw data' (Sault Star, July 29, 2004) while a third on October 12, 2004 measured in at 92 (Sault Star, October 13, 2004).

These three significant incidences did not only bring attention to record exceedences in local air quality conditions in Sault Ste. Marie, they also re-opened historical concern of how long term localized poor air quality conditions affected the health of citizens within affected areas of the city.

These concerns did not escape the attention of Sault Ste. Marie Member of Parliament Tony Martin, who understanding the delicate balance between economic interests and community health and well-being, initiated a series of open community meetings with community members and government representatives to sort out these numerous and complex air quality issues.

## **2.0 Purpose**

This report compiles research regarding the connection between industrial sources of pollution and health in our community with specific attention to air pollution and air quality. The information gathered for the report includes evidence heard at two Bayview area community meetings, information from local Ministry of Environment (MOE) staff, and internet research.

The intent of this report is to:

- a. record the air quality concerns raised by the Bayview community members
- b. to gather the documents that identified pollutants and their effects on human health
- c. to outline the ways that all the parties can work together to inform the public and improve human health in Sault Ste. Marie

### **3.0 Problem Identification**

#### **3.1 Area of Study**

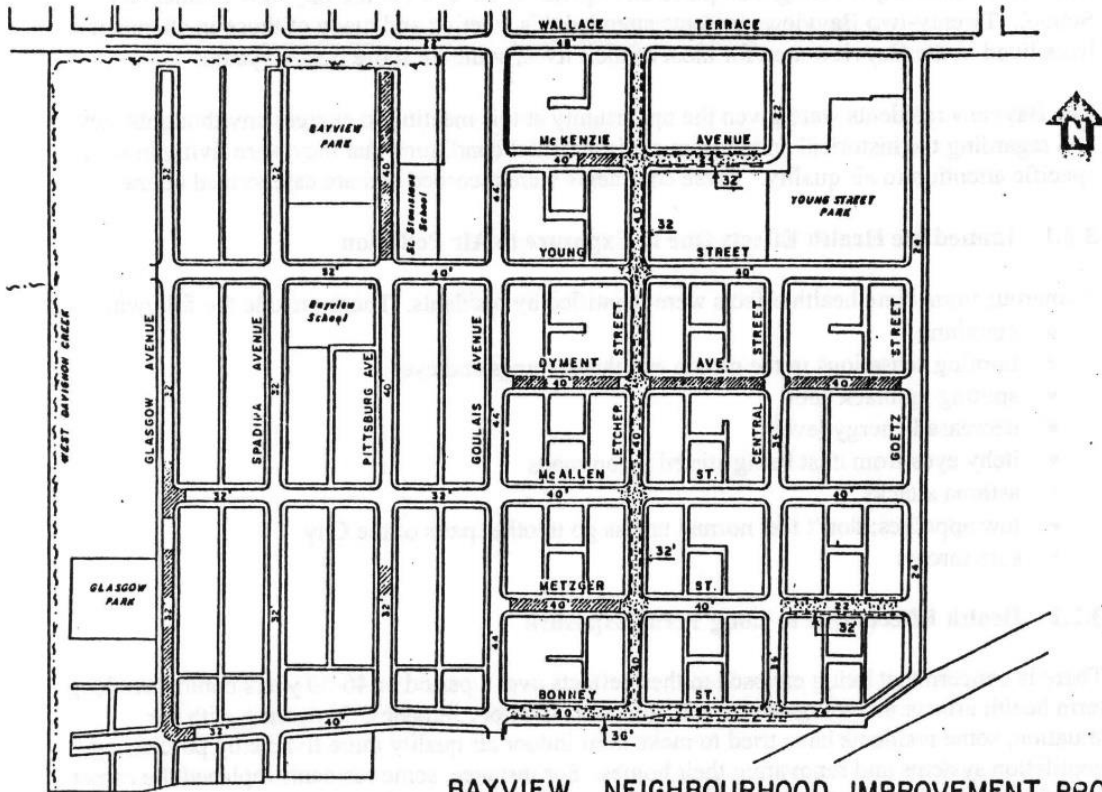
As was mentioned previously, after the second significant 'poor' air quality reading was recorded city-wide, the office of Tony Martin, MP Sault Ste. Marie responded by holding its first community meeting in the Bayview area of the city. The Bayview area of the city was selected as an area of study because an air monitoring station is located within the neighbourhood which could provide evidence of localized effects on the residents of the neighbourhood. The Bayview residents have also been historically involved in this issue with regular interaction with local government agencies and with local industry. The level of knowledge of the residents and their interest in the issue was of importance in pursuing resolution on the topic.

The Bayview neighbourhood is located in the west end of the city and is bounded on the north side by Wallace Terrace, on the south side by Bonney Street, on the east side by Goetz Street and on the west by the West Davignon (Dayton) Creek. The area covers approximately 60 hectares (or 146 acres) (City of Sault Ste. Marie, 1978).

In the past, the bay of "Bayview" was described as being fed by tree-lined creeks that meandered out into the pristine shoreline of the St. Mary's River. The marsh-like area with its incoming streams provided habitat for herons and fish and was a popular swimming hole for local children in the early 1900's (Fletcher, 2004).

Bayview, while an actual part of the City of Sault Ste. Marie, was separated from the main city core by the Algoma Steel Corporation. To this day, the neighbourhood is surrounded by industry on three of its boundaries. As a result, the neighbourhood has historically experienced the concentrated effects of local industrial sources of air pollution due to its proximity to these sources. In addition, in terms of topography, the lands abutting the Bayview neighbourhood have a higher elevation resulting "in the land form taking a basin like structure" (City of Sault Ste. Marie, 1978) which could be a contributing factor to the neighbourhood trapping and retaining air pollutants.

Map A: Street Map of Bayview Area in Sault Ste. Marie, Ontario



# BAYVIEW NEIGHBOURHOOD IMPROVEMENT PROGRAM

SCALE: 1" = 400' DRAFTSMAN: R. J. BENNETT DATE: NOV. 78

## STREETS

- Existing Curbs & Gutters (Class 'A' Pavement Including Road Width From Back-to-Back Of Curbs)
- Existing Edge Of Pavement (Class 'B' Pavement Or Surface Treatment Including Road Width)
- Proposed New Curbs & Gutters
- Proposed Complete Reconstruction (Including Proposed Road Width From Back-To-Back Of Curbs)
- Proposed Miscellaneous Corrective Work (Ls. Permanent Patching, Curb Repairing, Etc.)

NOTE: ALL INFORMATION ON THIS PLAN IS SHOWN DIAGRAMMATIC ONLY.

### **3.2 First Community Meeting - Bayview Residents**

The first community meeting took place on September 20, 2004 at the Bayview Elementary School. Twenty-two Bayview residents attended this meeting and many of those in attendance have lived in the Bayview area for most of their lives; some for more than 40 years.

The Bayview residents were given the opportunity at this meeting to express any thoughts they had regarding the historical and present environmental conditions that they were living in with specific attention to air quality. These comments were recorded and are categorized below.

#### **3.2.1 Immediate Health Effects Due to Exposure to Air Pollution**

Numerous immediate health effects were identified by residents. These include the following:

- coughing
- burning sensations in the mouth and throat, lungs and eyes
- spitting up black soot
- decreased energy levels
- itchy eyes from dust being stirred up on roads
- asthma attacks
- low appetites; don't feel normal unless go to other parts of the City
- sore throats

#### **3.2.2 Health Effects Due to Long Term Exposure**

There is concern that being exposed to these effects over a period of 40-50 years could have long term health effects including cancer and chronic respiratory illnesses. In dealing with the situation, some residents have tried to make their indoor air quality more livable by purchasing ventilation systems and renovating their homes. For instance, some residents replaced the carpet in their homes with flooring that would not trap or release dust particles and which also proved easier to clean, however, cleaning the external environment may have little effect on personal health; as one resident commented, *"I can clean my carpets but I can't clean my lungs."*

Other residents recounted the following:

- had to install air filtering system in home and could not open windows
- had to obtain puffers and later on, breathing machines
- chronic low energy levels
- children often are ill and have colds; children crawling on soot laden floors
- fear of lung cancer



### 3.2.3 Deterioration of Property and Property Values

Keeping your home and property in good shape is a matter of personal pride. Bayview residents have been persistent in the upkeep of their property however, the corrosive effects from industrial air emissions and equally persistent graphite dust has frustrated some residents to the point where they believe that *“(R)enovations are worthless because of the corrosion”*.

Other residents recounted the following deterioration of their property and property values:

- layer of dust on car if left overnight
- black stuff on windows
- if window is open over night, kitchen counter is black
- replacement of kitchen floors because too difficult to clean soot out of carpets
- black dust on indoor and outdoor furniture
- corrosive substances eating through plastic outdoor lawn furniture
- had to renovate house - pull out all the carpet and replace with non-carpet flooring
- have to wash house regularly
- blowing dust - graphite soot
- dogs water covered in black soot in the morning
- snow turns black
- house sold in area for \$42,000 but started out at \$79,000
- expense for cleaning agents and water costs to hose down house and cars
- can't keep up with the cleaning
- get up every morning and see footprints on the floor
- dust collects everywhere no matter how tight the windows are

One resident brought a cloth which they used to wipe their deck after just cleaning it. This sample is included in this report in Appendix A.

### 3.2.4 Deterioration of Quality of Life

*“It's good that our youth are leaving the community so that they can go  
someplace with better air”*

*“Blowing noise in our house makes our grandchildren ask  
if the terrorists are coming to bomb us.”*

These are clear statements that the quality of life of the residents of Bayview is being affected. Simple pleasures such as going for a walk around the neighbourhood or eating your supper out on the deck become unpleasant in this area. Some other comments from residents include:

- smells make you want to go back inside
- nauseating smell

- acidic smells
- sulphur smells
- black and orange smoke going to air
- poor visibility of landscape - no ability to appreciate city scapes
- sitting in your backyard and having a barbeque is one of the great pleasures of summer however, we can't stay outside for that long
- nauseating smells when we go outside
- cannot walk around our neighbourhood because your eyes water and your throat burns
- hearing small explosions
- noise from pipes dropping
- noise from heavy equipment
- cannot sit on patio
- cannot leave windows open overnight if it is a hot night because of dust coming in and what you will be breathing in your sleep
- embarrassed to invite people over for dinner

### **3.3 Second Community Meeting – Bayview Residents and Local Government Agencies**

After hearing the concerns of residents, a follow-up meeting was held to engage other parties in dialogue with the Bayview residents.

A second meeting of Bayview residents was held on November 8, 2004 at the Sault Community Youth Theatre with invited members from the local Ministry of Environment (MOE) and the Algoma Health Unit (AHU). Eighteen people attended this meeting which also included a number of students from Algoma University College School of Social Work and Social Welfare and Community Economic and Social Development classes.

At this meeting, residents recounted evidence of their observations and their health concerns to MOE and AHU representatives (see Section 3.2 of this report). There was information exchanged between the residents and the local government agencies regarding the actions taken in monitoring and informing the general public with regards to poor air quality events.

For instance, the MOE clarified the process through which data for air quality is currently monitored. MOE reported that there are three monitoring stations in Sault Ste. Marie and that each station monitors different parameters. They are as follows:

1. William Merrifield School station monitors local conditions in the neighbourhood.
2. Bonney Street station monitors local conditions in the neighbourhood.
3. Sault College station monitors local and long range conditions for whole city. This includes air pollutants transported by air currents outside of the city ie. the Chicago/Detroit area. The Sault College station is the only station which sends its data for reporting to the province's Air Quality Index (AQI) network which measures the

levels of six of the most common air pollutants. The AQI gives us some idea of how good or bad the air quality conditions are on a hourly basis.

The William Merrified School station and the Bonnie Street station collect data that is accessed by the MOE. The MOE looks at this data on a periodic basis. However, Algoma Steel Incorporated (ASI) currently pays for the operation of and collects the data from these two stations. ASI uses a protocol to identify which air incidences it needs to report to the MOE. MOE admitted that there were not enough inspectors to do all the work that needs to be done in terms of monitoring and this is why the monitoring and the responsibility for reporting is being done by ASI.

A map showing the location of the William Merrifield School and Bonnie Street stations is included on the following page

**Map B: Location of William Merrifield and Bonnie Street Monitoring Stations**



**Air quality monitoring sites, Sault Ste. Marie.**

### **3.3.1 Monitoring Station Placement**

The MOE and the AHU discussed their desire to place more monitoring stations in different areas of the city in order to monitor local conditions more accurately. They agreed with residents that it was **not the number** of stations that was important but rather **where** those stations were located. They also agreed that the public should have access to that information. The MOE also have mobile monitoring units which could be made available.

### **3.3.2 Information Dissemination**

A number of issues were discussed regarding how information is disseminated between agencies and also between agencies and the general public.

#### ***3.3.2a. Inter-Agency Information Sharing***

The MOE and AHU clarified how they receive their information regarding air quality.

AQI readings from the Sault College station are sent electronically to the MOE in Toronto which then calculates whether or not the AQI exceeds 50. An index value of 50 to 99 falls within the 'poor' category and therefore is considered "to have some short-term adverse effects on human or animal population or may cause significant damage to vegetation and property." (<http://www.airqualityontario.com>, retrieved January 24, 2005)

If the result exceeds 50, MOE Toronto advises the Sault Ste. Marie's MOE office and the Algoma Health Unit (AHU). The MOE posts this information on their website [www.airqualityontario.com](http://www.airqualityontario.com) or the information can be accessed by calling an answering service 1-800-387-7768.

The AHU issues a press release which contains the information on the notification from the MOE and advises how to reduce potential health effects during the event. When the AHU is advised of poor air quality index readings or other air quality events, they contact the Sault Area Hospital (SAH) and inquire as to if SAH are seeing patients experiencing respiratory problems. Currently, AHU is setting up a notification system to include the hospital.<sup>2</sup>

#### ***3.3.2b. Information Shared With the Public***

Bayview residents discussed that even though information was being collected by the monitoring stations, that they were not able to access the data. It was suggested to them that they check the MOE website to see the information recorded by the Sault College monitoring station however, few residents are able to check the website because many residents do not have internet access. Some residents suggested radio announcements using some of the hourly data that is being collected by the stations while others suggested using a neighbourhood alarm bell that would alert all residents in the area of an adverse air event.

<sup>2</sup>Personal correspondence from Bill O'Donnell, Algoma Health Unit, March 21, 2005

AHU commented that within their organization, they make decisions whether to report an "adverse air event". In some instances, adverse air conditions may be short-lived and could have already passed before a report to the public can be issued.

### **3.3.3 Inaccurate Statistical Data Collection at the Hospital**

After hearing that the AHU collects data from the Sault Area Hospital to record incidences of illnesses related to air quality events, one resident raised the issue that collecting data around hospital admittances or emergency cases regarding adverse air quality events could be inaccurate. It is very common for people who have mild to moderate breathing difficulty, stinging eyes, or those experiencing burning in the lungs **NOT** to go to the hospital because they know what the cause of their illness is and because they do not want to wait in the hospital.<sup>3</sup>

This is an important point regarding data collection of reported incidences as obtaining those incidences from the hospital may not be representative of what is being experienced at the community level.

## **4.0 Local Industrial Sources of Pollution**

Local industry has existed in Sault Ste. Marie since the time of Francis H. Clergue with the harvesting of electricity for the industrial development of the city in the early 1900's. (Collins Hinsperger, 1967).

This section focuses on known local heavy industrial sources of pollutants, and specifically **Algoma Steel Incorporated, G-P Flakeboard Company and St. Mary's Pulp Limited**. Although it is acknowledged that there are other point and non-point sources of air pollution within and outside the city limits which contribute to overall air quality, these three sources have

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<sup>3</sup>A recent report released April 20, 2004 titled "Emergency Department Use in Sault Ste. Marie: A Review of Patterns of Utilization at the Sault Area Hospital's Emergency Department" compiled by the Ministry of Health and Long Term Care stated that Soo residents use the emergency services at a rate of 718 per 1000 whereas the provincial average is 390 per 1000. This report demonstrates the high demand on emergency services and subsequently the high wait times from non-critical cases which could deter some residents from going to the hospital if they are experiencing a mild symptoms.

consistently appeared in the National Pollutant Release Inventory or NPRI as the top three air polluters in Sault Ste. Marie for the years 1998 to 2002.<sup>4</sup>

Table 1 reports the air releases of all reporting industries in Sault Ste. Marie. 2003 and 2004 data were not available for the publication of this report

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<sup>4</sup> The NPRI is a database established by Environment Canada in 1993 which requires business to estimate their annual emissions of toxic substances and to make that information public.

Table 1: Major Air Polluters in Sault Ste. Marie, Their Annual Releases and National Ranking According to NPRI

Company Name	Reported Releases (kg)/year excluding hexachlorobenzene (g) and dioxins/fuans (grams TEQ) and their National Ranking				
	2002	2001	2000	1999	1998
Algoma Steel Inc.	12,974,318	196,538	279,545	263,844	240,735
	58	219	168	166	158
G-P Flakeboard Company	571,776	129,060	133,480	131,770	120,930
	240	173	166	194	193
St. Mary's Paper Ltd.	76,113	229,328			
	663	150	N/A	N/A	
Towland-Hewitson Construction (1-312 Portable HMA Plant)	37,824				
Towland-Hewitson Construction (1-308 Portable HMA Plant)	34,573				

Michigan Maple Limited	31,246				
Cooper-Standard Automotive Canada Ltd.	11,390	17,820			
Sault Ste. Marie Terminal (Imperial Oil)	1543				
Sault Ste. Marie Terminal (Shell Canada Ltd.)	385				
Sault Ste. Marie Airport (Air Canada Jazz)		12,400			



The reported data from polluters were then more closely examined and research on what health impacts are associated with each pollutant was conducted.

This information has been obtained from the National <sup>Pollutant</sup> Public Release Inventory (NPRI). The NPRI was established by Environment Canada in 1993 and requires approximately 2500 businesses to estimate their annual emissions of toxic substances, and to make that information public.

At the time that this report was compiled, the most recent data available was data from 2002. In 2002, facilities were required to report on 274 chemicals. NPRI covers the emissions of 178 toxic substances from acetaldehyde to zinc, and companies must report if they make, process or use at least 10 tonnes of the prescribed substance per year. It should be noted that one limitation to NPRI is that it allows corporations to claim exemptions for proprietary reasons or 'trade secrets' in their reporting to NPRI.

Before 2002, facilities did not have to report on what are known as Criteria Air Contaminants (CAC). There are seven CAC which include: carbon monoxide, oxides of nitrogen, sulphur dioxide, total particulate matter less than 100 microns, particulate matter less than or equal to 10 microns (PM10), particulate matter less than or equal to 2.5 microns (PM 2.5), and volatile organic compounds (VOCs). The addition of these chemicals is important as they interact to create smog and acid rain and have been associated with respiratory problems (Pollution Watch, [http://www.pollutionwatch.org/tools/understandData\\_c.jsp](http://www.pollutionwatch.org/tools/understandData_c.jsp), retrieved April 19, 2005).

The proceeding tables – Table 2, Table 3, and Table 4 have been compiled using data from the NPRI specific to local industrial sources.

**Table 2: Algoma Steel  
Summary of Air Releases, 1998-2002**

Pollutant (kg/year)	Year				
	2002	2001	2000	1999	1998
Combined Total	12,955,070	169543	261126	237114	205300
Toxics Total	161,070	169543	261126	237114	205300
Benzene	95070	116621	162886	164436	163783
Hydrogen sulphide	27198	17575	22875	14499	
Ammonia (Total)	12722	16022	21370	21572	21486
Naphthalene	7848	1996	2616	2641	2630
Toluene	4670	5658	7945	8020	7988
Ethylene	4610	8709	8183	8260	8225
Phenanthrene	1853	443			
Anthracene	1283	110	1156		
Fluoranthene	1188	146			
Pyrene	990	195			
Dibenzo(a,h)anthracene	631	9	90		
Benzo(a)anthracene	589	87	914		
Benzo(a)pyrene	566	73	762		
Benzo(b)fluoranthene	556	65			
Benzo(k)fluoranthene	357	58	610		
Styrene	325	577			
Manganese (and its compounds)	250	240	240	1219	1133
Indeno(1,2,3-CD)pyrene	214	36			
Xylene (mixed isomers)	60	281			
Zinc (and its compounds)	50	98	98	39	51
Benzo(e)pyrene	23	76			
Benzo(g,h,i)perylene	15	36	377		
Lead (and its compounds)	2				
Dibenz(a,j)acridine	1	4	43		
Ethylbenzene		428			

Isopropyl Alcohol			30960	16420	
Chromium (and its compounds)			1	6	
Copper (and its compounds)				2	2
Nickel (and its compounds)					2
CACs Total	12,907,000				
Sulphur dioxide	5922000				
Oxides of nitrogen	3305000				
PM - Total Particulate Matter	2000000				
Carbon monoxide	1567000				
PM10 - Particulate Matter <= 10 Microns	740000				
PM2.5 - Particulate Matter <= 2.5 Microns	460000				
Volatile Organic Compounds (VOCs)	113000				

#### 4.1 Record of Violations

According to the Ministry of Environment<sup>5</sup>, Algoma Steel Corporation has only been charged three times in its corporate history:

- June 1996, fined for \$13,000 in violation of MISA Regulation 214 (water-related)
- November 1989, fined for \$40,000 in violation of the Ontario Water Resources Act for PCB's
- November 1989, fined for \$40,000 in violation of the Environmental Protection Act

<sup>5</sup> Personal correspondence with Rod Stewart, Ministry of Environment, October 7, 2005

**Table 3: St. Mary's Pulp and Paper  
Summary of Air Releases, 1998-2002**

Pollutant (kg/year)	Year				
	2002	2001	2000	1999	1998
<b>Combined Total</b>	73,917	3,328	0	0	not reported
<b>Toxics Total</b>	21,398	3,328	0	0	not reported
Phenol (and its salts)	21,392				
Hexavalent chromium compounds	5				
Methanol		3328			
<b>CACs Total</b>	52,519	0			
PM - Total Particulate Matter	26,754				
PM10	26,197				
Carbon Monoxide	25,765				
PM 2.5	24,079				

**Table 4: GP Flakeboard  
Summary of Air Releases, 1998-2002**

Pollutant (kg/year)	Year				
	2002	2001	2000	1999	1998
<b>Combined Total</b>	1,029,476	173,840	188,080	131,770	120,930
<b>Toxics Total</b>	189,398	173,840	188,080	131,770	120,930
Methanol	146,398	133,100	146,190	90,370	82,930
Formaldehyde	43,109	40,740	41,890	41,400	38,000
<b>CACs Total</b>	1,600,241	Not Available	Not Available	Not Available	Not Available
Volatile Organic Compounds (VOCs)	760,163				
PM - Total Particulate Matter	563,978				
PM10	383,076				
Carbon Monoxide	276,100				
PM 2.5	325,426				

## **4.2 Health Effects**

Exposure to toxic chemicals can cause any number of several negative effects on human health, such as cancer or birth defects.

In June 2005, the Ontario Medical Association (OMA) predicted that due to air pollution alone, the Algoma Region will incur \$4 million in health care costs and \$3 million in lost productivity costs this year alone. More alarming is their prediction of 46 premature deaths, 99 hospital admissions, 402 emergency visits and 252, 000 minor illness days due to the effects of air pollution.

Listed below are some general categories of health effects. The tables of the air emissions from local industry list specific pollutants which have been discharged into the environment.

Appendix C of this report identifies what toxicants have been classified as carcinogens or of developmental toxicants etc. Using the tables above of the quantities of pollutants emitted from local industrial sources and the detailed information in Appendix C makes the connection between what Bayview residents have been experiencing as health impacts and what 'science' has identified as effects. One can easily see the match.

The classifications are:

### **a. Carcinogens**

Hundreds of chemicals are capable of inducing cancer in humans or animals after prolonged or excessive exposure. There are many well-known examples of chemicals that can cause cancer in humans. The fumes of the metals cadmium, nickel, and chromium are known to cause lung cancer. Vinyl chloride causes liver sarcomas. Exposure to arsenic increases the risk of skin and lung cancer. Leukemia can result from chemically induced changes in bone marrow from exposure to benzene and cyclophosphamide, among other toxicants. Other chemicals, including benzo[a]pyrene and ethylene dibromide, are considered by authoritative scientific organizations to be probably carcinogenic in humans because they are potent carcinogens in animals.

Chemically-induced cancer generally develops many years after exposure to a toxic agent. A latency period of as much as *thirty years* has been observed between exposure to asbestos, for example, and incidence of lung cancer.

### **b. Developmental Toxicants**

Developmental toxicants are agents that cause adverse effects on the developing child. Effects can include birth defects, low birth weight, biological dysfunctions, or psychological or behavioral deficits that become intensified as the child grows.

Maternal exposure to toxic chemicals during pregnancy can disrupt the development or even cause the death of the fetus. Exposure of pregnant women to mercury, for example, lowers birth weight and can cause severe brain damage in children. While developmental toxicity usually results from prenatal exposures to toxicants by the mother, it can also result from paternal exposures. For example, the occupational exposure of men to vinyl chloride has been associated with increased rates of spontaneous abortion in their wives. Early postnatal contact with toxicants can also affect normal development. Exposure to secondhand tobacco smoke, for example, increases an infant's risk of contracting respiratory infections or succumbing to sudden infant death syndrome.

#### **c. Gastrointestinal or Liver Toxicants**

Exposure to chemical substances can cause adverse effects on the gastrointestinal tract, liver, or gall bladder (gastrointestinal and liver toxicity). The gastrointestinal tract is the site of entry for chemicals that are ingested. Exposure to halogenated aromatic hydrocarbons, including chlorobenzene and hexachlorobenzene, and metals such as lead, mercury, arsenic, and cadmium can cause anorexia, nausea, vomiting, abdominal cramps, and diarrhea. The liver is frequently subject to injury by chemicals because of it is the main site of the body's metabolism. Necrosis, or liver cell death, is a common effect of acute exposure to chemicals. Carbon tetrachloride and related chemicals, such as chloroform, are linked to cirrhosis of the liver. Cancer of the liver has been associated with occupational exposures to arsenic, copper, and vinyl chloride.

#### **d. Kidney Toxicants**

Exposure to chemical substances can cause adverse effects on the kidney, ureter, or bladder. The kidney is unusually susceptible because of its role in filtering harmful substances from the blood. Toxic injury to the kidney is known to occur as a result of exposures to halogenated hydrocarbons, such as carbon tetrachloride and trichloroethylene, and the heavy metals cadmium and lead. Some of these toxicants cause acute injury to the kidney, while others produce chronic changes that can lead to end-stage renal failure or cancer.

#### **e. Neurotoxicants**

Exposure to chemical substances can cause adverse effects on the nervous system. Chemicals toxic to the central nervous system can induce confusion, fatigue, irritability, and other behavioral changes. Exposure to methyl mercury and lead cause central nervous system toxicity, and can also cause degenerative diseases of the brain (encephalopathy). Chemicals toxic to the peripheral nervous system affect how nerves carry sensory information and motor impulses from the brain to the rest of the body. The organic solvents carbon disulfide, n-hexane, and trichloroethylene can harm the peripheral nervous system, resulting in weakness in the lower limbs, tingling in the limbs (paresthesia), and loss of coordination.

#### **f. Respiratory Toxicants**

Exposure to chemical substances can cause adverse effects on the respiratory system, which consists of the nasal passages, pharynx, trachea, bronchi, and lungs. Respiratory toxicity can include a variety of acute and chronic pulmonary conditions, including local irritation, bronchitis, pulmonary edema, emphysema, and cancer. It is well known that exposure to environmental and industrial chemicals can impair respiratory function.

Ground-level ozone, the main component in smog, causes breathing problems, aggravates asthma, and increases the severity and incidence of respiratory infections. Acute exposure to respiratory toxicants can trigger effects ranging from mild irritation to death by asphyxiation. Prolonged exposure to respiratory toxicants can cause structural damage to the lungs, resulting in chronic diseases such as pulmonary fibrosis, emphysema, and cancer. Pulmonary fibrosis is a serious lung disease in which airways become restricted or inflamed, leading to difficulty in breathing. It can be caused by exposure to coal dust, aluminum, beryllium, and carbides of tungsten. Emphysema, a degenerative and potentially fatal disease, is characterized by the inability of the lungs to fully expand and contract. The most common cause of emphysema is heavy cigarette smoking, but the disease can also be induced by exposure to aluminum, cadmium oxide, ozone, and nitrogen oxides. In addition, several toxicants are known to cause respiratory cancer. Examples of well-established human lung carcinogens are cigarette smoke, asbestos, arsenic, and nickel.

#### **g. Skin or Sense Organ Toxicants**

Exposure to chemical substances can cause adverse effects on skin or the sense organs. The sense of smell is impaired by exposure to cadmium and nickel. Hearing loss occurs after occupational exposure to lead. Exposure to gases like ammonia, chlorine, and formaldehyde causes eye irritation; organic solvents can damage vision. Contact with toxic agents can also cause acute and chronic skin diseases, including dermatitis and photosensitization. Chloracne is a severe and unusual form of acne that can be triggered by exposure to certain halogenated aromatic compounds, such as polychlorinated dibenzo-furans and dioxins.

#### **h. Reproductive Toxicants**

Exposure to chemical substances can cause adverse effects on the male and female reproductive systems. Reproductive toxicity may be expressed as alterations in sexual behavior, decreases in fertility, or loss of the fetus during pregnancy. A reproductive toxicant may interfere with the sexual functioning or reproductive ability of exposed individuals from puberty throughout adulthood. Toxicants that target the female reproductive system can cause a wide variety of adverse effects. Changes in sexual behavior, onset of puberty, cyclicity, fertility, gestation time, pregnancy outcome, and lactation as well as premature menopause are among the potential manifestations of female reproductive toxicity: all can disrupt a woman's ability to successfully reproduce. Exposure to lead, for example, can result in menstrual disorders and infertility. The toxicants carbon disulfide, mercury, and polychlorinated biphenyls (PBCs) have been shown to

cause irregularities in the menstrual cycle. Toxicants that target the male reproductive system can affect sperm count or shape, alter sexual behavior, and/or increase infertility. Carbon disulfide and the pesticides chlordane (kepone), ethylene dibromide (EDB), and dibromochloropropane (DBCP) are examples of chemicals known to disrupt male reproductive health.



## **5.0 Examples of Cooperation**

How are governments and industry dealing with the toxic pollution being produced? What attempts have been made to decrease the amount of air pollution in our community? This section outlines various examples of agreements between government bodies and industry to ensure a measure of environmental accountability.

### **5.1 Voluntary Agreements**

#### **5.1.1 Algoma Steel Incorporated Environmental Management Agreement**

The Algoma Steel Incorporated Environmental Management Agreement (EMA) is a three party agreement between Environment Canada's Environmental Protection Branch-Ontario Region, the Ontario Ministry of Environment and Algoma Steel Incorporated in Sault Ste. Marie. The objective of this agreement is to clearly define a list of environmental initiatives with negotiated time lines for activities which Algoma Steel Inc. agrees to undertake.

This is a 'voluntary' agreement which means that any items agreed to are not enforceable by law should they not be achieved. Voluntary agreements are becoming more common between the government and industry because they are perceived as less heavy handed than legal requirements of pollution reduction targets. There are advantages and disadvantages to voluntary agreements which are outlined in a fact sheet in Appendix D of this report.

**The Environmental Management Agreement was signed in 2000 and ends on December 31, 2005. This year is the end of its implementation. A new Agreement will be negotiated between the three parties.**

In terms of relevance to air quality, some of the Goals and Objectives of the EMA are:

- the reduction or elimination of specific substances which are found to be persistent, bioaccumulative and toxic in the environment and appear in Appendix B in this report. These identified substances make up the 1994 Canada-Ontario Agreement as Tier 1 and Tier II substances
- the reduction or elimination of air discharges in the form of visible and gaseous emissions which exceed or are inconsistent with existing or proposed limits or guidelines or are the subject of pollution reports to MOE
- continued discussions on developing an air quality monitoring partnership with the MOE
- participation in the discussion and resolution of local trans-boundary air issues between Sault Ste. Marie, Ontario and Sault Ste. Marie, Michigan



- enhancement of pollution prevention initiatives, such as raw products substitution, new technology applications and energy or water use reduction programs, and,
- continued participation in other steel sector initiatives and other voluntary programs such as:
  - ✓ Strategic Options process for the Steel Sector (SOP)
  - ✓ Accelerated Reduction/Elimination of Toxics Program (ARET)
  - ✓ Voluntary Challenge Registry for Climate Change (VCR)
  - ✓ Anti-Smog Action Plan (ASAP)
  - ✓ Canadian Steel Producers Association Best Practices Manual

With specific reference to air quality initiatives, the following schedule was agreed to by ASI in order to achieve its above stated goals.

**Table 5: Relevant Air Emissions Reduction Targets in ASI Environmental Management Agreement (2000-2005)**

Project	ASI Commitment/Terms	Status
1. Benzene Air Emissions Reduction (1993 base year emission rate of 432.6 grams/tonne of coke produced)	a. 50% reduction by December 31, 2000 (216 g/t) b. 75% reduction by December 31, 2003 (108 g/t) c. 85% reduction by December 31, 2005 (57.3 g/t)	Achieved
2. PAH Air Emissions Reduction (1993 base year emissions of 21.3 grams/tonne of coke produced)	a. 20% reduction by December 31, 2000 (17 g/t) b. 54% reduction by December 31, 2005 (9.8 g/t)	Achieved
3. Blast Furnace Visible Emissions	a. Study/experiment with flame system. b. Maximize the efficiency of flame suppression. c. Report the findings in the Feb. 1, 2001 Semi-Annual Report	Done
4. Annual Cokemaking Plans	a. develop annual Cokemaking Environmental Plans b. include the plan in the February 1, 2001 Semi-Annual Reports	Ongoing

### 5.1.2 St. Mary's Paper and G-P Flakeboard

There are currently no similar environmental management agreements with these two industries.

## 5.2 Community Education, Awareness, and Involvement

Even though there are differing levels and interests of cooperation between industry and government agencies in improving air quality, the level of direct public education, awareness and involvement among these initiatives varies. Public education and public participation in the determination of a community's future is imperative to the success of a development or the implementation of a company's plans. Long gone are the days when companies were able to pollute a community and leave their toxic legacy behind for someone else to clean it up. More and more, citizens are demanding to be informed of company environmental performance and government accountability in the "here and now", rather than in the "ever after".

It should be interesting to note that not all the information gathered for this report has been easily accessible. For the ordinary citizen who is interested in gathering quick information regarding the pollution sources in Sault Ste. Marie, no information about air pollution or air pollution data is available on company websites. In fact, all three websites were 'light' on the reporting of environmental data but 'heavy' on the rhetoric of commitment to community education projects also referred to as public relations efforts.

This absence of information illustrates an obvious disconnect between the 'commitment to community' and a 'community's right to know' especially when the community's right to know deals principally with the community's health. Unfortunately, Algoma Steel's *Quality and Environmental Policies and Objectives* has signed evidence of the CEO's interest in ASI's environmental performance affecting the 'global environment' saying nothing about its accountability to local conditions and local people.

If this is the case, where, then, do citizen's turn for information? Another source for citizens is to search government reports for information; however, before being able to do this, one must have some idea of what to look for. If you have not heard before of the National Pollutant Release Inventory or any of these key words that you could search online, you would have difficulty finding the information. Simply inputting "Algoma Steel" into a search engine would not lead you to these sources easily; and there are many sources that one must wade through to piece together the information. For instance, Algoma's Steel's quarterly reports are posted on the Environment Canada website called "Green Lane" while other reports are accessible through the MOE office and still other websites, like the NPRI, list ASI's pollutant reporting. This fragmented way of reporting information can leave the citizen wondering if any or all of the information they have is the most comprehensive and up-to-date.

Cutbacks in Ministry of Environment staff have also significantly reduced the ability of the civil service to respond to requests for information from the public. Clearly, it is no longer the

MOE's mandate educate the public as time must and should be spent on monitoring and enforcement activities. However, with cutbacks being the 'buzz word' of the day, even sound monitoring and enforcement activities are in jeopardy. For instance, the funding of monitoring stations by Algoma Steel because of a partnership agreement with MOE may preclude the information from those monitoring stations being made public. Further, if citizens really want to access reports from the MOE, they may have to do so through the Freedom of Information (FOI) Act and as such, must cover for themselves the costs of photocopying and for file searches.

The local media also does not focus on environmental and air quality issues in our community. From the period of 1990 to October 2005, only 20 articles were written in the local newspaper regarding air quality; yet many are suffering from its affects.

The big questions are "How do we start community dialogue about air quality issues when nobody wants to talk about them in our community" and "How do we ensure local accountability of local industry?"

The following sections of this report outline general but proven strategies directed towards company and government accountability while increasing the level of education, awareness, and involvement of communities affected by industrial pollution.

#### **5.2.1 Good Neighbour Agreements (GNAs)**

Whenever a factory or operation has the potential to cause a nuisance or danger to a local community, it is necessary to have in place ways of making the company accountable to the communities that they are located close to. One such mechanism that has been widely used in the USA and in Europe is the Good Neighbour Agreement (GNA). Unfortunately, a quick internet search did not reveal Canadian examples from which we could draw experience, however, included below is information about how GNAs are structured.

*GNAs are mechanisms for improving the environmental performance of a company or facility by giving the community who live beside it more say in the standards under which they operate.*

GNAs are formed by a group of citizens first meeting to discuss and define lineate the issues that they would like to resolve with a company. These citizens may also want to identify other groups or "stakeholders" who should be brought into the process ie. organized labour, health professionals, environmental groups. After identifying the community's issues, a meeting should take place with company management. After successive meetings, a set of principles and provisions are developed into a formal agreement that the parties sign and ratify as a contract. Then, the process of implementation of the agreement begins.

Although each GNA is tailored to a local situation, some typical key provisions of Good Neighbour Agreements include:

- a. community access to information eg. a company will place on reserve at the local library specific information such as results from environmental safety audits and inspections, requests for Certificates of Approval, annual reports, reporting data, charges against them etc.;
- b. right to inspect facility which may permit community members to inspect a plant and be accompanied by an expert or a plant worker of their choice;
- c. public review, input, and release of an accident preparedness report which outlines the procedures a company will undertake in case of an accident;
- d. pollution prevention plans which outline how a company plans to reduce the use of toxics or its toxic waste and emissions over a scheduled period of time
- e. the provision and support for good jobs, local jobs, union jobs;
- f. meeting local economic needs whereby the company will commit to establishing a special community benefits fund with discretionary spending to be determined and overseen by the affected stakeholders; for example, funds could be used to hire third party experts to monitor and evaluate progress in pollution reduction efforts

(taken from Lewis and Henkels, 1992)

Benefits from GNAs are realized by all parties involved. For instance, a community may benefit from higher than minimum legislated standards because these standards are voluntarily proposed by the company. GNAs also commit companies to openness and accountability, opening their monitoring data to scrutiny by the public. The company benefits by fostering better relations with the community which in future could lead to more cooperative ways of working.

GNAs, however, should not be viewed as a substitute for legal standards, rather, their use is to **enhance or stand in addition** to existing enforceable standards.

It should also be recognized the GNAs do not represent an agreement between equal parties – that is, in a dispute, the company is still the powerful partner. GNAs are simply a tool for increasing the accountability of the company to the community.

An example of a Good Neighbour Agreement and the “Minimum Standards for a Good Neighbour Agreement” are included in Appendix E of this report.

*GNAs, however, cannot remedy the intentions of a 'bad neighbour'. Some companies form GNAs with communities solely for public relations purposes with no negotiation with a community or with 'hand-picked' community members. Dishonest companies may also seek to conceal or ignore infringements of a GNA. Openness of procedures and the opportunities for*

*communities to expose information and impose penalties on the company should be available as actions of recourse in GNAs.*

### 5.2.2 Community Advisory Panels (CAPs)

In response to a deepening crises in public confidence after such industrial mishaps as Bhopal, India where a gas leak from a Union Carbide plant caused a terrible tragedy, numerous industrial associations have encouraged their members to establish Community Advisory Panels (CAPs) so that communities may be informed and involved in a companies' environmental plans and progress.

*The purpose of a community advisory panel (CAP) or committee is to broaden the scope of information that goes into a decision-making process. The committee/panel is sometimes set up by an organization (eg. a ministry, municipality, company) to assist it in addressing a series of issues that have an impact on a community.*

The members of the committee/panel come from the community and represent a cross-section of interests and perspectives which legitimizes their role as a voice for the community. Their role is to advise and make recommendations, but with limitations as they only serve an '**advisory function**' and not one that necessarily gives direction or has any legal power or authority.

Although CAPs have been a long-standing and widely used public participation method, their success in making changes to a company's performance has been variable.

A recent survey of CAPs in the US dealing specifically with the American chemical industry has identified why some CAPs have been more influential than others. The reasons for success include:

- a well-defined mandate
- the clear support of senior decision-makers in the company
- adequate resources allocated for CAP activities (including learning activities)
- diverse representation (including community members, environmentalists, health professionals etc.)
- access to independent expertise (paid for by the company and selected by the CAP)
- neutral facilitation, and;
- a specified and mutually determined decision-making process

(Lynn *et al*, 2000).

Although CAPs have been recognized as groups that alert companies to community concerns and promote trust between community members and the company, CAPs still retain their critics.

Some CAP's have members that are handpicked by the company or its consultants and often

times, it is common to find that community members are outnumbered by company representatives on a CAP by four or more to one (some are ten to one!). Agendas for CAP meetings are often set by the company and community members are not supported in seeking independent technical support necessary to evaluate company performance. Thus, the role of panels serving as an accountability mechanism remains questionable and “(W)hile plenty of environmental concerns are discussed, there are few actual improvements, such as pollution prevention or waste reduction” (Baker cited in Lynn *et al*, 2000).

The only evidence that a CAP might have existed as a body with local industry in Sault Ste. Marie is in ASI’s Environmental Management Agreement which states that “*two members representing the broader public participated in an advisory committee which evaluated and commented on matters relating to the development of the draft EMA*”; although this was specific to the EMA and not a long standing committee.

### **5.2.3 Community Report Cards – The Huntsman Example**

In Guelph, Ontario the Huntsman Corporation produces a Community Report Card to inform Guelph citizens of its operations and emissions in the community. Huntsman is an international chemical company whose plants manufacture chemicals, plastics, paints, coatings, textiles, appliances and packaging etc.

The Report Card details the company’s impact on the environment by listing its solid and liquid plant emissions as well as its releases into the air. It also lists the number of injuries of employees of the plant.

The report card also lists contact information of the company’s Plant Manager, Environmental Health and Safety Coordinator and Purchasing Manager and Responsible Care Coordinator so that local citizens may contact them regarding any questions or concerns.

Community report cards can complement some of the other strategies discussed in this section such as reporting on the progress of a Good Neighbour Agreement or an update of meeting discussions of a Community Advisory Panel.

A copy of the Huntsman Community Report Card is included in Appendix F of this report. It has been suggested that a similar report be produced by the three local industries in Sault Ste. Marie and circulated as an insert in the Sault Star as well as being posted on the websites of local industry.

### **5.2.4 Community Based Environmental Monitoring – Stack Watch, Hamilton**

Community-based environmental monitoring programs are becoming more popularly used in Canada because they both increase the education and awareness of specific environmental concerns within a community and because they augment monitoring activities already being



conducted by governments, industry or other experts (Whitelaw *et al*, 2003).

*Community-based monitoring is a process where concerned citizens, government agencies, industry, academia, community groups and local institutions collaborate to monitor, track and respond to issues of common community concern.*

The information gathered in monitoring is used to inform decision-making. There are different approaches to community-based monitoring however, what will be discussed in this section is “advocacy monitoring”.

Advocacy monitoring usually focuses on local issues already of concern. Citizens use their local monitoring data to ‘push for appropriate action to be taken’. The objective of advocacy monitoring is to “achieve positive change in environmental quality and move beyond data collection and public education to action and advocacy”(Sharpe *et al*, 2000:31); in other words, to advocate for accountability.

A good example of advocacy monitoring as it relates to industrial processes is StackWatch. StackWatch is a project of Environment Hamilton, a non-profit, non-governmental citizens group who were concerned about the air emissions coming from the Hamilton steel industry. StackWatch members document sources of air pollutants coming from local industry in a organized and detailed way and report these emissions to the local Ministry of Environment. Key pieces of information include: the time of day an emission was seen, the wind direction, identification of the stack from which the discharge was sited etc.

This project has been very successful in Hamilton because it has organized residents to become more aware of the pollutants going into the air and subsequently, being absorbed into their bodies. StackWatch participants organized a one-day marathon monitoring activity with residents taking shifts to monitor emissions from both Dofasco and Stelco. This information was then presented to the local ministry and the two steel mills.

A copy of a Stack Watch fact sheet is included in Appendix G of this report.

One thing to keep in mind is that community-based monitoring, should never be used to “legitimize the dismantling of environmental monitoring and enforcement programmes ...”, rather they should be thought of as complementing the monitoring activities already being implemented.

## **6.0 Conclusions**

This past summer has seen a record in smog advisories. The MOE issued two smog alerts covering five days, June 3, 4, 11, 12 and 13 in 2005 with an additional poor air quality day in on September 12, 2005.

So, how do we start community dialogue about air quality issues when nobody wants to talk about them and how do we ensure local accountability of local industry?

Even if our community is not discussing air quality directly as an issue, we **are** discussing the impacts of poor air quality on our health. In 2003, the Algoma Health Unit released its report on Cancer in the Algoma District covering the years 1984-1998. The report cites that there has been an increase in rates of three types of cancer in our District – genital/urinary tract cancers, digestive tract and peritoneal cancers, and respiratory and intrathoracic cancers with most of the increase being attributed to a relatively high rate of lung cancer. The lung cancer rate for the Algoma District is 24% greater than the provincial rate for men and 16% greater than the provincial rate for women. Although the AHU maintains that the increase is most likely linked to 'lifestyle choices' ie. poor diet, poor exercise and smoking, it does acknowledge that residents should 'become aware of possible routes of exposure through their workplace, home and environment' (AHU, 2003:3). Could it be possible that this increase of cancer could be linked to the industry that exists here?

More recently, in June 2005, the Ontario Medical Association (OMA) predicted that due to air pollution alone, the Algoma Region will incur \$4 million in health care costs and \$3 million in lost productivity costs this year alone. More alarming is their prediction of 46 premature deaths, 99 hospital admissions, 402 emergency visits and 252, 000 minor illness days due to the effects of air pollution.<sup>6</sup>

The MOE has also invested time and resources into studying the problem of air quality and will soon be publishing two reports. One will deal with transboundary air pollution – that is, the incoming and outgoing air pollution that we share with our neighbours in Sault Ste. Marie, Michigan and other communities. This report is expected to be completed by December 2005 by the Ministry of Environment and Environment Canada. There is also a **Sault Ste. Marie Air Study** which is currently being conducted by the Ministry of Environment. This report will use data from an increased number of air quality monitors, seven in total, which have been placed near Algoma Steel.<sup>7</sup>

Bayview residents have voiced their concerns and have had their stories recorded and validated by other members of the Sault Ste. Marie community and by the pollutant data on the NPRI.

Perhaps there are ways to satisfy both the questions of starting community dialogue on air quality issues and making local industry more accountable to local people through the models presented in this report; Good Neighbour Agreements, StackWatch, Community Report Cards --- all of these tools can activate community dialogue while educating the broader community **and** forming cooperative relationships with local industry.

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<sup>6</sup> A copy of the full report is available at [www.oma.org](http://www.oma.org) and is titled "The Illness Costs of Air Pollution"

<sup>7</sup> Personal communication with Rod Steward, MOE, September 19, 2005



The upcoming re-negotiation of ASI's Environmental Management Agreement in January 2006 for implementation in June 2006 may be a good opportunity to bring all interested parties together to cooperate in making this community a healthier community.

We hope that this report is the first step of many steps to come in community cooperation.

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Sault Star, "Rowswell rebuts MOE claim of poor air quality" page A1, April 12, 2004

Sault Star, "MOE downplays severity of pollution reading" page A1, July 29, 2004

Sault Star, "Pollution levels spike: Stagnant air likely causes smog to linger in Sault" page A1, October 13, 2004

Sault Star, "Sault under smog advisory: Poor air quality is expected for 24 hours" page A6, June 11, 2005

Sault Star, "City air worst in province in a.m. on Monday, drops during day;" page A1, September 13, 2005

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## **8.0 Resource List**

- MOE Air Quality Index: [www.airqualityontario.com](http://www.airqualityontario.com); website where you can access the AQI readings
- 1-800-387-7768 (Ministry of Environment automatic telephone answering device - English)
- 1-800-221-8852 (Ministry of Environment automatic telephone answering device - French)
- Algoma Health Unit: 759-5286 or 759-5287 (Environmental Health); 759-5287 (General)
- PollutionWatch: <http://www.pollutionwatch.org>; PollutionWatch is a source for information about pollutants that facilities release and transfer in your community. On the web site, you can: Search for facilities in your area using your postal code; Search for facilities releasing Criteria Air Contaminants, pollutants that cause smog and acid rain; Obtain information about the health effects associated with specific pollutants and groups of pollutants and find out if they are tracked by the federal government as part of the National Pollutant Release Inventory (NPRI); Take action by emailing directly facilities or the federal Minister of Environment to voice your concerns; Visit the Pollution Rankings page to get quick lists of the top facilities releasing and transferring pollutants in Canada; Create your own ranked or alphabetical lists of facilities, companies, sectors,

and provinces by a range of information on our Who is Polluting? Page; Download lesson plans and order posters for junior and senior high school; analyze trends from 1995 to 2003

- Scorecard: <http://www.scorecard.org/chemical-profiles/>; Lists chemicals and their associated health hazards and risks. Scorecard is linked to the Pollution Watch website so that if you look at a company's pollutants, you may directly link to associated health effects.
- Stackwatch (a project of Environment Hamilton): [www.environmenthamilton.org/projects/stackwatch](http://www.environmenthamilton.org/projects/stackwatch)
- National Pollutant Release Inventory (NPRI): [www.ec.gc.ca/pdb/npri/npri\\_home\\_e.cfm](http://www.ec.gc.ca/pdb/npri/npri_home_e.cfm)
- Tony Martin: [Martin.T@parl.gc.ca](mailto:Martin.T@parl.gc.ca) (email); 941-2900 (telephone)

## **Appendix A:**

### **Cloth Used to Wipe Deck of Bayview Resident's Home**

## **Appendix B:**

### **Canada Ontario Agreement Respecting Great Lakes Basin Ecosystem – Tier I and Tier II Substances**

## APPENDIX 2

### Canada Ontario Agreement respecting the Great Lakes Basin Ecosystem

#### Tier I substances:

The Tier I listing includes the 11 critical pollutants identified by the International Joint Commission, plus critical pollutants identified in the Niagara River and Lake Ontario Toxic Management Plans and the Lake Superior Binational Program. Tier I pollutants are targeted for virtual elimination by adopting the philosophy of zero discharge for local or direct sources, and by encouraging similar actions binationally and globally in order to eliminate distant sources or long-range transport as inputs to the Great Lakes Basin.

Aldrin/dieldrin  
Benzo(a)pyrene  
Chlordane  
DDT  
Hexachlorobenzene  
Alkyl-lead  
Mercury  
Mirex  
Octachlorostyrene  
PCBs  
PCCD (dioxins)  
PCDF (furans)  
Toxaphene

#### Tier II substances:

Tier II compounds include substances identified by science-based screening methodologies or Lakewide Management Plans. These substances have the potential for causing widespread impacts, or have already caused local adverse impacts on the Great Lakes environment.

Anthracene  
Cadmium  
1,4-dichlorobenzene  
3,3'-dichlorobenzidine  
Dinitropyrene  
Hexachlorocyclohexane  
4,4"-methylenebis(2-chloraniline)  
Pentachlorophenol  
Tributyl tin

Plus 17 PAH's as a group, including but not limited to:

Benz(a)anthracene  
Benzo(b)fluoranthene  
Benzo(g,h,i)perylene  
Perylene  
Phenanthrene

Tier II will be updated periodically, on the basis of sound science, to ensure emerging contaminant issues are addressed as information becomes available. Persistent, bioaccumulative and toxic substances may be elevated from the Tier II listing through a weight-of-evidence approach, and through a process of stakeholder consultation.

**Appendix C:**  
**Health Effects of Specific Toxicants**

## **Human Health Effects**

Exposure to toxic chemicals can cause any of several negative effects on human health, such as cancer or birth defects. Some chemicals are widely **recognized** as hazardous, while others are only **suspected** of being hazardous.

The following list of chemical toxicants are intended to be matched to information in Section 4.2 of this report titled "Health Effects" and to the listings of discharged pollutants from local industry which can be found on the tables also in Section 4.0 of this report. The relevant pages are

### **a. Benzene**

**Recognized:** Carcinogen, Developmental Toxicant, Reproductive Toxicant

**Suspected:** Cardiovascular or Blood Toxicant, Endocrine Toxicant, Gastrointestinal or Liver Toxicant, Immunotoxicant, Neurotoxicant, Respiratory Toxicant, Skin or Sense Organ Toxicant

### **b. Ammonia**

**Suspected:** Gastrointestinal or Liver Toxicant, Neurotoxicant, Reproductive Toxicant, Respiratory Toxicant, Skin or Sense Organ Toxicant

### **c. Ethylene**

**Suspected:** Neurotoxicant, Respiratory Toxicant

### **d. Toluene**

**Recognized:** Developmental Toxicant

**Suspected:** Cardiovascular or Blood Toxicant, Gastrointestinal or Liver Toxicant, Immunotoxicant, Kidney Toxicant, Neurotoxicant, Reproductive Toxicant, Respiratory Toxicant, Skin or Sense Organ Toxicant

### **e. Naphthalene**

**Recognized:** Carcinogen

**Suspected:** Cardiovascular or Blood Toxicant, Developmental Toxicant, Gastrointestinal or Liver Toxicant, Neurotoxicant, Respiratory Toxicant, Skin or Sense Organ Toxicant

### **f. Manganese (and its compounds)**

**Suspected:** Neurotoxicant, Reproductive Toxicant, Respiratory Toxicant



**g. Zinc and its compounds**

**Suspected:** Immunotoxicant, Respiratory Toxicant

**h. Copper (and its compounds)**

**Suspected:** Kidney Toxicant, Respiratory Toxicant

**i. Nickel and its compounds**

**Recognized:** Carcinogen

**Suspected:** Cardiovascular or Blood Toxicant, Developmental Toxicant, Immunotoxicant, Reproductive Toxicant, Respiratory Toxicant, Skin or Sense Organ Toxicant

**j. Isopropyl Alcohol**

**Suspected:** Cardiovascular or Blood Toxicant, Developmental Toxicant, Gastrointestinal or Liver Toxicant, Kidney Toxicant, Neurotoxicant, Respiratory Toxicant, Skin or Sense Organ Toxicant

**k. Hydrogen Sulfide**

**Suspected:** Cardiovascular or Blood Toxicant, Neurotoxicant, Reproductive Toxicant, Respiratory Toxicant

**l. Chromium and its compounds**

**Suspected:** Carcinogen, Immunotoxicant, Kidney Toxicant, Respiratory Toxicant, Skin or Sense Organ Toxicant

**m. Anthracene**

**Suspected:** Endocrine Toxicant, Gastrointestinal or Liver Toxicant, Skin or Sense Organ Toxicant

**n. Benz(a) anthracene**

**Recognized:** Carcinogen

**o. Benzo(a) pyrene**

**Recognized:** Carcinogen

**Suspected:** Developmental Toxicant, Endocrine Toxicant, Gastrointestinal or Liver Toxicant,

Immunotoxicant, Respiratory Toxicant, Skin or Sense Organ Toxicant

**p. Benzo(k)fluorantene**

**Recognized:** Carcinogen

**q. Dibenz(a,h) anthracene**

**Recognized:** Carcinogen

**Suspected:** Skin or Sense Organ Toxicant

**r. Dibenz(a,i) acridine**

**Recognized:** Carcinogen

**s. Styrene**

**Suspected:** Carcinogen, Cardiovascular or Blood Toxicant, Developmental Toxicant, Endocrine Toxicant, Gastrointestinal or Liver Toxicant, Immunotoxicant, Kidney Toxicant, Neurotoxicant, Reproductive Toxicant, Respiratory Toxicant, Skin or Sense Organ Toxicant

**t. Phenanthrene**

**Suspected:** Respiratory Toxicant, Skin or Sense Organ Toxicant

**u. Ethylbenzene**

**Recognized:** Carcinogen

**Suspected:** Cardiovascular or Blood Toxicant, Developmental Toxicant, Endocrine Toxicant, Gastrointestinal or Liver Toxicant, Kidney Toxicant, Neurotoxicant, Reproductive Toxicant, Respiratory Toxicant, Skin or Sense Organ Toxicant

**v. Xylene (mixed isomers)**

**Suspected:** Cardiovascular or Blood Toxicant, Developmental Toxicant, Gastrointestinal or Liver Toxicant, Immunotoxicant, Kidney Toxicant, Neurotoxicant, Reproductive Toxicant, Respiratory Toxicant, Skin or Sense Organ Toxicant

**w. Pyrene**

**Suspected:** Neurotoxicant, Skin or Sense Organ Toxicant

**x. Fluoranthene**

**Suspected:** Gastrointestinal or Liver Toxicant

**y. Benzo(b) fluoranthene**

**Recognized:** Carcinogen

**z. Indeno(1,2,3-CD)pyrene**

**Recognized:** Carcinogen

**aa. Lead and its compounds**

**Recognized:** Carcinogen, Developmental Toxicant, Reproductive Toxicant

**Suspected:** Cardiovascular or Blood Toxicant, Gastrointestinal or Liver Toxicant, Immunotoxicant, Kidney Toxicant, Neurotoxicant

**ab. Sulfur Dioxide**

**Suspected:** Cardiovascular or Blood Toxicant, Developmental Toxicant, Gastrointestinal or Liver Toxicant, Neurotoxicant, Respiratory Toxicant

**ac. Oxides of Nitrogen**

**Suspected:** Cardiovascular or Blood Toxicant, Developmental Toxicant, Endocrine Toxicant, Immunotoxicant, Neurotoxicant, Reproductive Toxicant, Respiratory Toxicant, Skin or Sense Organ Toxicant

**ad. Carbon Monoxide**

**Recognized:** Developmental Toxicant

**Suspected:** Cardiovascular or Blood Toxicant, Neurotoxicant, Reproductive Toxicant, Respiratory Toxicant

**ae. PM10**

**Suspected:** Carcinogen, Cardiovascular or Blood Toxicant, Developmental Toxicant, Reproductive Toxicant, Respiratory Toxicant

**af. PM2.5**

**Suspected:** Carcinogen, Cardiovascular or Blood Toxicant, Developmental Toxicant, Reproductive Toxicant, Respiratory Toxicant

**ag. Methanol**

**Suspected:** developmental toxicant, gastrointestinal or liver toxicant, kidney toxicant, neurotoxicant, respiratory toxicant, skin or sense organ toxicant

**ah. Formaldehyde**

**Recognized:** Carcinogen

**Suspected:** Gastrointestinal or Liver Toxicant, Immunotoxicant, Neurotoxicant, Reproductive Toxicant, Respiratory Toxicant, Skin or Sense Organ Toxicant

**Appendix D:**

**Voluntary Agreements: Definition, Advantages and Disadvantages**

### **Summary on Voluntary Agreements: Definition, Advantages and Disadvantages**

The following information was taken from a report from the Environmental Commissioner of Ontario titled "Self regulation, Voluntary Compliance and Environmental Protection". There are many sources and opinions regarding voluntary agreements. The Environmental Management Agreement referred to in this report is a voluntary agreement that exists between ASI, Environment Canada and the Ministry of Environment.

Voluntary compliance measures may be designed to complement or enhance an existing environmental regulatory scheme, may replace regulations or stand alone.

#### **Some Arguments For Voluntary Compliance And Self Regulatory Initiatives**

- ✓ They provide incentives for industry to initiate environmental clean-up measures.
- ✓ They are more cost effective than regulations at achieving environmental protection, because they cost less to implement and enforce.
- ✓ They can be designed and implemented more quickly than Acts or regulations, and are thus more efficient for achieving environmental protection.
- ✓ They allow industries to design their own cost-effective environmental protection methods. Industries claim that they hold real potential for environmental benefits through emissions reductions.
- ✓ They provide greater flexibility in the process of how they are designed and implemented.
- ✓ They increase certainty for regulated industries.
- ✓ They can lead to a more cooperative climate among government, industry and other stakeholders.

#### **Some Concerns Expressed About Voluntary Compliance And Self Regulation Initiatives**

- ✓ Such initiatives are usually unenforceable and cannot bind members of industry associations. Remedies and a process for dealing with non-compliance may be unavailable without a regulatory backdrop.
- ✓ Voluntary compliance initiatives are undertaken by industry leaders, while non-compliers or free riders have the benefit of enhanced public image for the industry sector without the cost of implementing the initiative, causing an uneven playing field for businesses.
- ✓ Often the specific terms of the agreements and initiatives are negotiated in private or with the participation of selected stakeholders which results in fewer opportunities for the public to participate in environmental decision making (e.g. proposals for new environmentally significant regulations should be posted on the Environmental Registry, but voluntary agreements do not have to be posted). If it is unclear who the parties to voluntary compliance agreements are, some corporations may be disadvantaged if they are unable to participate in forming voluntary initiatives.
- ✓ Voluntary programs may be time consuming and expensive to design and implement, costing tax payers where government staff are developing these measures.

- ✓ Voluntary compliance and self regulation reduce government accountability and government's role in ensuring the public interest in environmental protection is met.
- ✓ Voluntary agreements implicitly bind the hand of governments that sign them, inhibiting regulation. This may happen without the public realizing that power has shifted from government.
- ✓ Voluntary agreements depend on the goodwill of industry and companies are naturally inclined to set goals and targets that are easy and inexpensive, even if they are not goals or targets that scientists or communities recommend.
- ✓ The long-term success of voluntary compliance agreements and industry self regulation in
- ✓ preventing pollution and cleaning up the environment is unknown and untested.

## **Appendix E:**

### **Example of Good Neighbour Agreement and the Minimum Standards for a Good Neighbour Agreement**



## Minimum standards for a Good Neighbour Agreement

Folk will only approve a Good Neighbour Agreement which meets these minimum standards:

### A GNA must be owned by the community.

Ideally it should be initiated by the community or their representatives, rather than the company. But in all cases the community must have the opportunity to set the parameters of the GNA independently of the company. This can be ensured in a number of ways, such as public meetings, discussions in community groups or even a local ballot.

### A GNA must be additional to existing responsibilities.

It must set standards which are higher than those required by law, or for planning or operating consent, and should include conditions outwith the remit of licensing authorities. If any aspects of the GNA merely reinforce legal responsibilities, this should be clearly stated.

### A GNA must be progressive.

Any agreement must be regarded as temporary and require regular review to improve the standards or increase the scope of the agreement. If this is written into the agreement, then improvements can be made on the basis of annual review or on an *ad hoc* basis as issues arise.

### A GNA must have effective sanctions from the community.

The community must be able to implement action which could damage the company if it reneges on any aspect of the agreement. This might include bad publicity, boycotting products or services, use of democratic leverage,

direct action such as blockades or, in collaboration with an organised workforce, industrial action. Some American GNAs are legally enforceable, and there is no reason why they should not be included in planning conditions for a new development. Ultimately, the community representatives can walk out of the agreement.

### A GNA must give access to independent expertise.

Community representatives should not be expected to have the technical or legal expertise needed for an informed negotiation. It is therefore essential to recognise their right to access experts, for example scientists, engineers, lawyers, from Universities or campaign groups. The agreement should include their right to participate in meetings (without voting rights), and may include a mechanism for the company funding the payment of such experts without influence.

### A GNA must be open to other stakeholders.

The operations of a company affect the neighbouring community, but also other communities further afield, the workforce, other local businesses, those with an interest in nature conservation or recreation in the area, even subcontractors, suppliers and consumers of the products. A good GNA should consider which stakeholders should have a say in the standards to which it adheres. It may involve the operation's workers, trade union representative, environmental groups, local schools and voluntary organisations and religious institutions.



# Good Neighbours Charter

## Dundee Energy Recycling Limited and the Douglas Community

This Charter will be agreed and published, and embodies the principles of a good neighbour agreement. The Charter will be open to periodic review and revision.

The Liaison Group will form a structure for communication between the community and DERL.

### Liaison Group

DERL agrees to the establishment of a Liaison Group which will be made up of:

- 1 representative from DERL,
- 1 community representative,
- 1 elected councillor and
- 1 suitable community volunteer

Minutes of the meetings will be made public.

A Constitution and Standing Orders will be agreed at the initial meeting, and will be subject to confirmation by the DERL Board.

The Liaison Group will meet quarterly, with a provision for additional meetings if required.

### Community Access to Information

A comprehensive DERL site will be held in the local library in the neighbouring community and at the Council Library. Information will be presented in an accessible and understandable form to lay members of the community.

### Open Access to Visit the Facility

The Liaison Group is welcome to visit the facility by prior arrangement. Other community groups wishing to visit the facility may apply via the Liaison Group.

### Accident Emergency Plans

DERL will include in the public file referred to above, procedures for dealing with emergencies or accidents, likely to affect the local community. These procedures will be subject to consultation with the Liaison Group.

### Environmental Performance

A statement of Environmental Performance will be published in lay terms and agreed by the Liaison Group. Technical reports on emissions will be made available as part of the agenda of Liaison Group meetings.

Where emissions limits are exceeded a full explanation of the cause, and corrective action as a result, will be made available to the Liaison Group.

### Employment Policies

DERL will take full account of all legal requirements in respect of employment, including those relating to occupational safety and health, and to equal opportunities and pay. DERL will give sympathetic consideration to employment and will welcome the suggestions for any part.

### Local Economic Conditions

DERL, and the Liaison Group will discuss matters of mutual and economic interest.

When providing goods and services DERL will give sympathetic consideration to locally qualified and experienced companies who can meet DERL's needs.

### Transportation of Waste

DERL will use all reasonable endeavours to ensure that emissions following waste in the plant do so with due consideration to local communities. In particular, emissions will be subject to design control and there is to be no amount of local schools, and any other local factors which should be considered for the protection of children and other vulnerable groups.

### Changes to Operating Conditions

The Liaison Group may discuss any change to legislation that relates to emissions from the plant.

In addition, DERL will consult with the Liaison Group prior to any decision being taken to process types of waste which are not covered by the current EPA/IPC authorisation.

### Signed on behalf of the Douglas Community

*John P. ...*

### Signed on behalf of Dundee City Council

*John P. ...*

### Signed on behalf of Dundee Energy Recycling Ltd

*David L. ...*

This Charter will be reviewed every two years



Signed in the presence of

*John P. ...*

Signed in the presence of

*John P. ...*

**Appendix F:**  
**Huntsman Community Report Card**



*We at the Huntsman  
Guelph Plant are  
committed to  
operating a safe,  
clean, and efficient  
facility in an  
environmentally  
responsible manner*



# **HUNTSMAN**

## **Community Report Card**

*The performance of the Huntsman Guelph Plant is being  
gauged on the community's outlook of our operations.*

*Please help us determine if we make the grade!*



### **Why is this report being sent to the public?**

The objective of this report card is to inform the public about the operation of the Huntsman Guelph Plant. In addition we wish to address our responsibility to the neighbouring community and businesses and get their feedback on our performance.

#### **Included in this report:**

- Plant Production
- Waste Composition
- Air Releases
- Injuries and Incidents
- Responsible Care
- Community Outreach

**The Huntsman Guelph Plant is one of many different International Huntsman sites. It is only one of two Canadian sites.**

The combined Huntsman companies constitute the world's largest privately held chemical company. The operating companies manufacture basic products for a variety of global industries including chemicals, plastics, automotive, aviation, footwear, paints, and coatings, construction, technology, agriculture, health care, textiles, detergent, personal care, furniture,

appliances and packaging. Originally known for pioneering innovations in packaging, and later, rapid and integrated growth in petrochemicals, Huntsman-held companies today have revenues of approximately \$8 billion, more than 13,000 employees and facilities in 44 countries.

The Guelph manufacturing facilities are located on a 17-acre site on the east side of the city. The plant is bordered on the south by the Eramosa River, on the west by a residential subdivision, on the north by a small shopping plaza and on the east by a more remote industrial area including the Guelph Correctional Facility.



### **How can I share my comments and concerns with staff at Huntsman about the contents of this report card?**

Please feel free to contact the following individuals at the Huntsman Guelph Plant in regards to the content of this report or for any general inquiries.

*Se avete tutte le domande soddisfanno non esitate a denominare!*

Huntsman      phone number: (519) 824-3280  
                     fax number:      (519) 824-0755

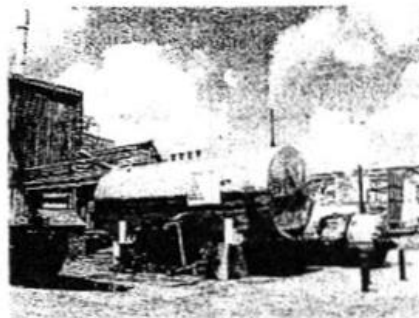
- ♦ Ralph Shapiro, Plant Manager ext. 212  
    email: [ralph\\_shapiro@huntsman.com](mailto:ralph_shapiro@huntsman.com)
- ♦ Jeannette Hull, Environmental Health and  
    Safety Coordinator ext. 224  
    email: [jeannette\\_hull@huntsman.com](mailto:jeannette_hull@huntsman.com)
- ♦ Kirk White, Purchasing Manager and  
    Responsible Care Coordinator ext. 244  
    email: [kirk\\_white@huntsman.com](mailto:kirk_white@huntsman.com)

## □ Plant Production

### ***What do we make at the Guelph Huntsman Plant?***

All of Huntsman's products are chemical in nature. Our products are sold to a variety of customers. The products are used in the following applications or to make the following end products:

- Liquid and powdered detergents
- Bar soaps and body washes
- Shampoos and conditioners
- Household cleaning compounds
- Textile additives for dyeing and colouring
- Modelling additives for car bodies
- Recycling additives
- De-inking agents



United Way barbecue

## □ Plant Emissions

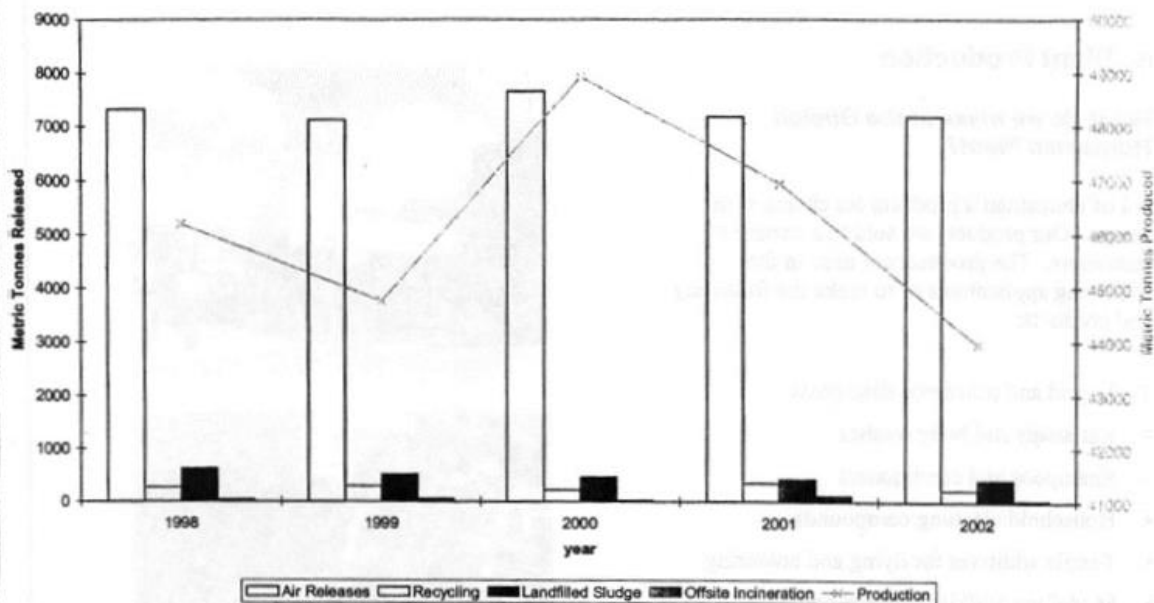
### ***What does Huntsman emit to the environment?***

We work diligently to limit emissions to the air, water, and soil. Steam boilers are used to fuel all of the production processes in the plant and heat the facility. Consequently, some steam is vented to the atmosphere. Huntsman has an onsite Wastewater Treatment Plant (WTP) to clean as thoroughly as possible any water we use in the plant. For example, we send wash water used to clean out of vessels and tanks to the WTP. Once the treated wastewater from the site meets the City of Guelph's standards, we release it to the city's sewer system. The wastewater undergoes daily laboratory analysis to determine when discharge to the city sewer is permissible.

### ***All solid/liquid waste is dealt with offsite. How do we continue to monitor this waste?***

The waste processing activities of all companies that collect the plant's waste – both hazardous or non-hazardous - are monitored by Huntsman staff in the following manner.

- Each waste collecting company must provide their Certificate of Approval which ensures us that the waste servicing company operates under Ministry of the Environment approval.
- These companies are required to complete a Responsible Care® self-assessment.
- Huntsman staff also reserve the right to visit the sites of their waste companies to evaluate the particular operating practices.



**Figure 1. Metric tonnes of emissions released since 1998**

The above chart (Figure 1) illustrates the metric tonnes of annual waste released from 1998 to 2001. The various waste streams are given as well as the production levels. More detail of the different air emissions is provided in the next section.

The landfilled sludge is biosolids from the onsite wastewater treatment plant. All solvent waste is recycled offsite. Waste from the manufacturing process is incinerated offsite.

***We monitor the quantity of waste we produce on an annual basis and we are constantly developing different waste minimization activities.***

#### **□ Releases to the Air**

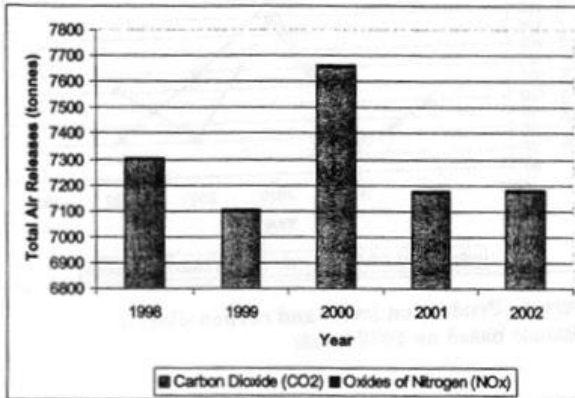
The topic of the "greenhouse effect" and the gases that contribute to this global warming phenomenon has gained prominence with the Canadian ratification of the Kyoto Protocol in December of 2002. The Kyoto Protocol is an international agreement to address climate change by reducing greenhouse gas emissions caused primarily by the burning of oil, gas and coal. Canada's target is to reduce its greenhouse gas emissions to 6 percent below 1990 levels by 2012.

#### ***What is the greenhouse effect and does the Huntsman Guelph Plant contribute to it?***

Much of the energy absorbed at the Earth's surface is radiated upward as infrared (IR) thermal energy. Several gases that occur naturally in the atmosphere absorb this infrared energy and re-radiate it back



to the surface. Therefore, heat that would be lost to space is trapped near the surface. The effect of the atmosphere and its heat-absorbing gases warms the Earth's surface. The term "greenhouse" is used to describe this phenomenon since the gases involved act like the glass of a greenhouse to trap heat and maintain higher interior temperatures than would normally occur. A number of gases are involved in the greenhouse effect. The atmospheric gases most responsible include water vapor ( $H_2O$ ), carbon dioxide ( $CO_2$ ), methane ( $CH_4$ ), nitrous oxides ( $NO_x$ ) and ozone ( $O_3$ ). Carbon dioxide, in particular, is the main contributor to the greenhouse effect and is strongly influenced by human activities.



The Guelph Huntsman Plant emits both carbon dioxide and oxides of nitrogen and consequently our plant does contribute to the 'greenhouse effect'. As illustrated in Figure 2, the emissions of carbon dioxide are substantially larger than the emissions of oxides of nitrogen. The high levels of greenhouse gases released in 2000 are linked to the high production levels and the fact that it was a particularly cold winter. A great deal of carbon dioxide was consequently released both to maintain production levels and to heat the facility.

Figure 2. Greenhouse gas emissions

#### **What is being done at Huntsman to reduce our contribution to the greenhouse effect?**

The following tasks are being undertaken or have been completed:

- the implementation of a 'Condensate Recovery' system in 2000 to improve the efficiency of the steam boilers and recover more water from the boilers and thus release less carbon dioxide (recognized in a Guelph Environmental Award)
- participation in the annual Commuter Challenge program that is held during Environment Week to encourage more sustainable modes of transportation (recognized in 2001 and 2002 as winners for most participation in Guelph)
- education and awareness of greenhouse gases and other related issues for all Huntsman staff

#### **What about smog? Does our plant release gases that contribute to this?**

Smog is composed largely of ozone and fine particles. Ozone is created when nitrogen oxides and volatile organic compounds combine in the presence of sunlight. Carbon monoxide is another component of smog and it also contributes to the greenhouse effect when it converts to methane. The Huntsman Guelph Plant emits carbon monoxide and nitrogen oxides that are both considered smog forming

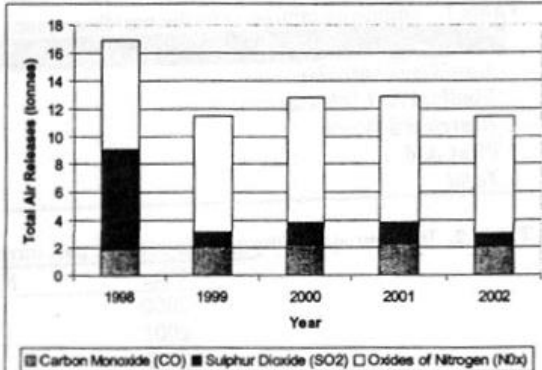


Figure 3. Emissions of gases that contribute to smog or poor air quality



gases. Sulphur dioxide is an additional gas that results in poor air quality. In high quantities this gas can cause breathing problems and respiratory illnesses. Our plant has been shown to release quantities of sulphur dioxide. The annual emissions of gases contributing to smog or poor air quality are illustrated in Figure 3.

As previously mentioned a 'Condensate Recovery' system was implemented in 2000 to improve the efficiency of the boilers at the plant. Figure 4 illustrates the production and carbon dioxide levels in relation to 1998 levels. Accurate data could only be retrieved back as far as 1998. Thus this will be our reference year. Prior to 2000 production levels and carbon dioxide emissions were directly linked. With the implementation of the 'Condensate Recovery' system, carbon dioxide emissions have decreased significantly (as shown in Figure 4). Additionally, production levels and carbon dioxide emissions are no longer related by the same factor.

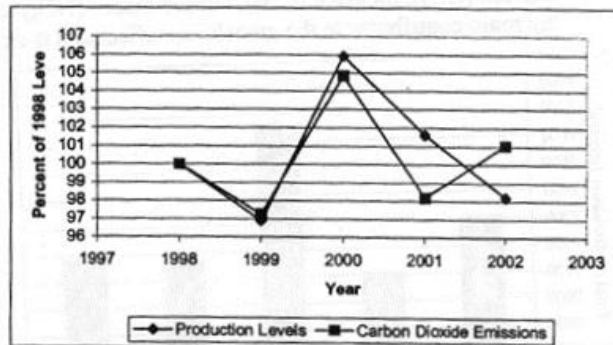


Figure 4. Production levels and carbon dioxide emissions based on 1998 levels

#### □ Incidents and Injuries

We strive to provide and maintain: effective safety rules and practices, firm and fair enforcement of these practices, and communication of safety procedures to all employees and contractors. We focus on injury/incident investigation in order to obtain all the facts pertaining to the injury/accident for the development of corrective actions that will prevent recurrence.

***good safety attitudes + preventative leadership training = accident reductions***

Table 1. Employee injuries over the past three years

	2000	2001	2002
Lost Time Injuries	1	1	0
Medical Aid Injuries	2	1	2
Restricted Work	0	1	1
First Aid	4	10	6
<b>Total</b>	<b>7</b>	<b>13</b>	<b>9</b>

Table 2. Incident and injury reports over the past three years

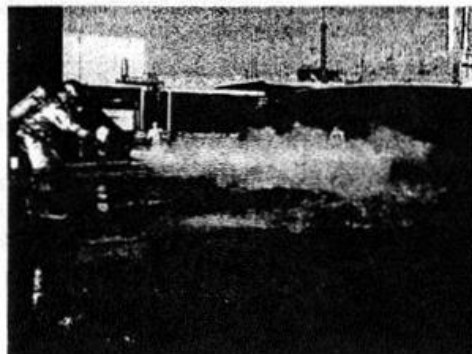
Year	Number of Reports
2000	92
2001	81
2002	65

The incidents and injuries given in Table 2 are considered near misses with the exception of those that resulted in injuries that are given in Table 1. Although the number of injuries to plant employees has

not shown significant decrease over the past three years as shown in Table 2, the number of incident and injury reports filed has decreased. We encourage reporting of all incidents, including near-misses, to capture any unsafe condition that could lead to serious injury. The number of incident and injury reports has decreased by about 30 percent from 2000 to 2002. This can be partly attributed to a significant decrease in the number of employees at Huntsman over this period.

***How are employees at Huntsman prepared for emergencies or potentially dangerous situations that may occur at the plant?***

Nearly 30 percent of the employees at the Huntsman Guelph Plant are members of the Emergency Response Team (ERT). These individuals have been trained and continually undergo refresher training. There are established procedures all staff and any visitors are expected to follow in the event of a fire or other emergency. Those that are involved with the ERT act as respondents to the location where the emergency occurred and they use their training to help them properly deal with the situation.



In addition to this onsite preparedness, the leadership team will provide technical expertise when called upon by the City in the event of a potentially dangerous situation at an industrial facility in Guelph-Wellington County. We also participated in the recent Emergency Preparedness Day (April 23, 2003) sponsored by the City of Guelph.

□ **Responsible Care®**

Responsible Care® is a voluntary initiative developed by the chemical industry to ensure the safe management of the products throughout the entire lifecycle of the products or from the 'cradle to the grave.' Not only does Huntsman Guelph Plant comply with legal requirements that may affect their operations, they also strive to be responsive and sensitive to any community concerns. Employees of the Guelph Huntsman Plant follow the principles of Responsible Care® to ensure that the operating of the plant does not pose any risk to themselves, customers, the public, or the environment.

The Huntsman Guelph Plant is reviewed every three years by an independent panel to ensure that the plant is operating in a safe manner and that employees subscribe to the principles of Responsible Care®. A community member, Mary Gray, joined the reverification team during the past audit. Please feel free to contact Kirk White or the Two Rivers Neighbourhood Group if you are interested in participating in the next reverification process (January 2006).

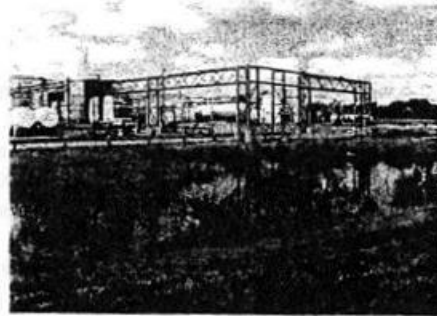
Some comments from the previous Responsible Care® Reverification that took place in January of 2003 are included below. A copy of the report from this latest reverification is available upon request.

The panel recognized that the following areas have improved significantly since the previous audit:

- ✓ Community involvement
- ✓ Involvement with city officials in improving safety and emergency planning in the community

The panel also noted the following key opportunities for improvement:

- Review the worst case scenarios with City emergency officials and provide risk and emergency response information to local residents, businesses, groups, and organizations.
- Develop, test and communicate the best methods to inform the community in the event of an emergency.
- Establish specific plans, goals and systems to reduce greenhouse gas emissions.



Additionally, the panel recognized several different examples of 'going the extra mile' at the plant. Some examples were identified as:

- ✓ The facility's efforts at waste and emission reduction
- ✓ Making the Emergency Team available for Wellington County emergency responses
- ✓ The very intense effort of working with their community

#### □ **Community Outreach**

Employees of the Huntsman Guelph Plant participate in a number of events with different local groups in order to get involved with the community it is a part of. Some employees are involved with community associations including those listed below:

- ❖ City Emergency Joint Coordinating Committee
- ❖ Two Rivers Neighbourhood Group and Board
- ❖ Guelph Chamber of Commerce Environmental Group

The Huntsman Guelph Plant fosters community support by financing the publishing of a community newsletter by the Two Rivers Neighbourhood Group. Additionally, some employees of the Huntsman Guelph Plant generously volunteer their time to make presentations for local organizations and at nearby schools concerning the operation of the plant.

We at Huntsman are pleased to be holding our Annual Community Picnic once again this year in Lyon Park. The public will be offered free food served by community volunteers while being entertained by live music. Free swimming will also be available at the Lyon Park Pool. Horse drawn trolley rides are also provided for the public to tour the property of the plant with a Huntsman employee guide. We view this community event as a great opportunity for our neighbours to learn more about the Huntsman Guelph Plant.

***We welcome the community to this year's***

***Two Rivers Community Picnic***

***held on Saturday, August 16 from 1:00 – 4:00 at Lyon Park***

***We hope to see you there!***

## Ballot and Feedback Form

This form will be used to provide any feedback and will act as a ballot for a draw. The draw will be held at our Community Picnic and the prize will be a \$ 100.00 gift certificate to the Greek Garden.

**Please include your comments below:**

- Have you read and understood the contents of this report card?
  
  
  
  
  
  
  
  
  
  
- Do you have any concerns about Huntsman?
  
  
  
  
  
  
  
  
  
  
- Please give us a grade or score for this report. (Circle a letter grade below)

A   B   C   D   F

**Name (please print):** \_\_\_\_\_

**Phone number:** \_\_\_\_\_

Please return this completed form (including feedback) to Huntsman (256 Victoria Road) or fax it to Huntsman at 824-0755

You may instead give the completed form to The Two Rivers Community Group at 122 Harris Street or fax it to them at 837-4248

Return these completed forms before Saturday, August 16 or bring it with you to the Community Picnic!

**Appendix G:**

**Stack Watch, Hamilton**  
**Community Monitoring Fact Sheet**

## StackWatch

StackWatch is a project of Environment Hamilton, a non-profit, non-governmental citizens group who were concerned about the air emissions coming from their local steel industry.

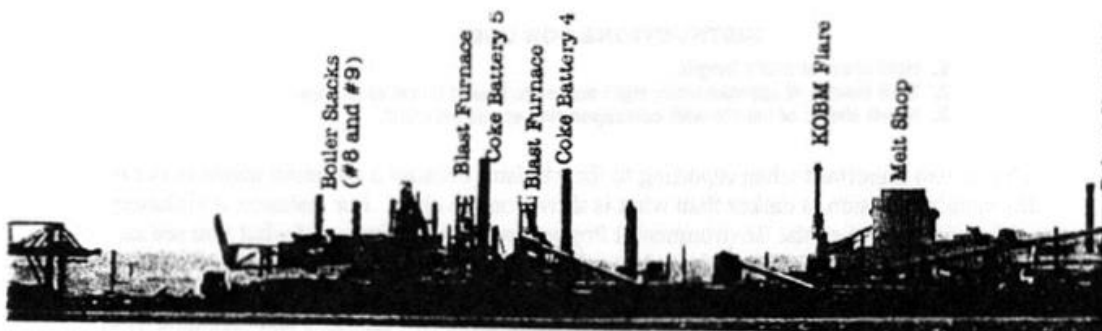
The idea of StackWatch is to document sources of air pollutants coming from local industry in a organized and detailed way and to report these emissions to the local Ministry of Environment. For example, key pieces of information include: the time of day you saw an emission, the wind direction, and the stack that you saw the discharge coming from.

This project has been very successful in Hamilton because it has organized residents to become more aware of what is going into the air and into their bodies. Environment Hamilton organized a StackWatch marathon and reported on emissions from both Dofasco and Stelco for one full day.

## Stack Keys

StackWatch has designed a set of "Stack Keys" which are basically different views of the steel plant with labels for each stack. (see the diagram below)

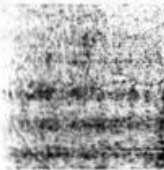
### Dofasco Stack Key - View from Pier near Lift Bridge:



This stack key can help identify **where** (or from which process) the emission is coming from in the plant which is important information because it helps to identify what pollutants are going into the air. This is good information to give to the Ministry of Environment when you are reporting. For example, if the emission comes from a coking stack (from the coking process), the corresponding pollutants would be: volatile organic compounds, polycyclic aromatic hydrocarbons, sulfur oxides, carbon monoxide and carbon dioxide and particulate matter.

StackWatch also uses the Ministry of Environment's "Visible Emission Chart" to identify the density of the air pollutant. (see chart below).

## Visible Emission Chart



Number 1

Number 2

## Visible Emission Chart of the Province of Ontario

Ministry of the Environment

11/18/98



60% Density



80% Density



100% Density

### Comparative Density Chart

#### INSTRUCTIONS FOR USE

1. Hold chart at arm's length.
2. View smoke at approximately right angles to line of travel of smoke.
3. Match shade of smoke with corresponding shade on chart.

This is also important when reporting to the Ministry because a violation might occur if the visible emission is darker than what is shown on the chart. For instance, a violation of Regulation 346 of the Environmental Protection Act would occur if what you see an emission which is darker than the colour of the 60% density on the chart.

These are just some examples of the kind of information that citizen's can take note of in their neighbourhoods and if documented properly can be made into a case to get the industry to clean up their act.

For more information about StackWatch, you can visit their website at [www.environmenthamilton.org/projects/stackwatch](http://www.environmenthamilton.org/projects/stackwatch)



## Emissions From Different Steel Plant Processes

Emission Source:	Typical Emissions:
Coal Storage	TPM, PM <sub>10</sub>
Coking (i.e., coke batteries)	TPM, PM <sub>10</sub> , PM <sub>2.5</sub> , VOC, PAH, Benzene, SO <sub>x</sub> , CO, CO <sub>2</sub>
Ironmaking (i.e. blast furnace stoves)	TPM, PM <sub>10</sub> , PM <sub>2.5</sub> , VOC, NO <sub>x</sub> , SO <sub>x</sub> , CO, CO <sub>2</sub>
Basic Oxygen Furnace (i.e. meltshop, triplestack)	VOC, CO, TPM, PM <sub>10</sub> , NO <sub>x</sub>
Boilers	TPM, PM <sub>10</sub> , PM <sub>2.5</sub> , VOC, NO <sub>x</sub> , SO <sub>x</sub> , CO, CO <sub>2</sub>
Reheat Furnaces	TPM, PM <sub>10</sub> , PM <sub>2.5</sub> , VOC, NO <sub>x</sub> , SO <sub>x</sub>
Flares	TPM, PM <sub>10</sub> , VOC, SO <sub>x</sub> , CO, CO <sub>2</sub>
Acid Regeneration Plant	HCl, Cl <sub>2</sub>
Sinter Plant	TPM, PM <sub>10</sub> , PM <sub>2.5</sub> , VOC, NO <sub>x</sub> , SO <sub>x</sub> , CO <sub>2</sub>

TPM: Total Particulate Matter

SO<sub>x</sub>: Sulphur Oxides

PM<sub>10</sub> & PM<sub>2.5</sub> : Particles of less than or equal to 10µm or 2.5 (respectively) mass median aerodynamic diameter.

VOC: Volatile organic compounds

PAH: Polycyclic aromatic hydrocarbons

CO & CO<sub>2</sub> : Carbon Monoxide and Carbon dioxide (respectively).

HCl: Hydrochloric Acid

Cl<sub>2</sub> : Chlorine gas

NO<sub>x</sub> : Nitrogen oxides