



2011 ANNUAL SUMMARY



Strathcona
Industrial
Association



UPDATEline

1-866-653-9959

SIA members use the UPDATEline to post information messages regarding non-routine activities on their sites that the public may be curious about, such as prolonged flaring, noise, odour, training exercises and incident details.

Resources

Learn more about air quality and monitoring in our region with the following links:

Strathcona Industrial Association
www.sia.ab.ca

Alberta Air Quality Index
<http://environment.alberta.ca/01620.html>

Alberta Air Quality Health Index
<http://environment.alberta.ca/0977.html>

Alberta Capital Airshed Alliance
www.capitalairshed.ca

Clean Air Strategic Alliance
www.casahome.org

Environment Canada
www.ec.gc.ca/rnspa-naps

Shelter-in-Place

In case of a major incident with airborne release of a hazardous substance:



Go inside. Turn on local radio/TV.



Close all doors, windows and openings.



Shut off ventilation systems that draw outdoor air inside (fans, air conditioning units, clothes dryers, turn down furnace and close fireplace dampers).



Listen to radio or TV for further instructions. Keep phone lines free.

Unless advised to do so by authorities:

DO NOT evacuate or travel.

DO NOT bring home children from school, or other family members from work.

911 should be called only for emergencies.

Connected to Our Community

Established in 1974, the Strathcona Industrial Association (SIA) has a long history of promoting a safe and healthy working and living environment. As part of the community, SIA members work together and with partners from municipalities, the province and various committees on matters of common interest, including air quality monitoring, industrial development, safety and emergency preparedness.



See Us in 2012!

Get Prepared Strathcona
Sunday, April 22nd
Strathcona County
Community Centre Agora
1 pm – 4 pm

Capilano CAER Fair
Saturday, April 28th
Capilano Mall
9 am – 1 pm

River Day
Saturday, June 9th
Rundle Park
10 am – 2 pm

Air Quality Monitoring

Over three decades ago, the SIA worked with Alberta Environment to integrate the individual monitoring stations of its members into one network to monitor overall ambient air, or the air we breathe. The SIA network is in east Edmonton and west Strathcona County, and stations are located in neighbourhoods as well as in the industrial area. Using continuous, intermittent and passive monitoring methods, the SIA network monitors air quality trends, confirms effectiveness of emission control measures, and provides data to studies and surveys. An annual report is submitted to Alberta Environment and Water.

Community Outreach

SIA members connect with their communities through the CAER (Community Awareness Emergency Response) program. Built on the foundation of increasing public understanding of industrial operations and safety and maintaining positive relationships with community stakeholders, the CAER program consists of community event participation, a quarterly newsletter, advertising in local papers, a website, public inquiry line and the UPDATEline.

Emergency Preparedness and Response

For SIA members, overall safety and emergency response planning is integrated into how they do business, and occurs from construction through to daily operations. Industrial facilities are engineered, designed and built to ensure process safety. Computerized control systems, containment and automated suppression systems provide inherent levels of process protection. Highly skilled employees monitor processes, and can quickly investigate process changes or respond to incidents at their sites. Through the local mutual aid emergency response group, Strathcona District Mutual Assistance Program, SIA industries and municipal emergency services conduct regular exercises and work together to ensure effective and coordinated incident response.

Land Planning Near Industry

When originally constructed, SIA industrial facilities were located far from other urban development. As our communities continue to grow, so does the need to maintain an effective transition zone to ensure safety and reduce nuisance effects. Thoughtful and deliberate planning must occur to create an environment where current and future developments can prosper in harmony. The SIA supports using risk assessment principles in the planning process to promote overall safety of the community.

Committed to safe, environmentally responsible operations.

The SIA is an association made up of 12 member companies with heavy industry operations in east Edmonton and west Strathcona County. Together our members employ more than 2500 people, and provide products and services people use every day. These include home insulation, engine oil, gasoline additives, recycled steel as well as waste management and wastewater treatment services.

SIA Members



Location: 9511 – 17th Street
Production Began: 1992
Employees: 101 full-time
Raw Material: Field butane
Product: Iso-octane gasoline blending component that reduces tail pipe and evaporative emissions
Markets: Western Canada, West Coast United States, International
Website: www.envirofuels.com
Phone: 780-449-7800

AltaSteel

Location: 9401 – 34th Street
Production Began: 1955
Employees: 420 full-time
Raw Material: Scrap steel
Product: Steel bars for mining, oilfield, agriculture, manufacturing, construction industries
Markets: Canada, United States, Mexico, South America
Website: www.altasteel.com
Phone: 780-468-1133

Capital Power

Location: Clover Bar Energy Centre at 1515–130th Avenue and Clover Bar Landfill Gas Generating Station at Edmonton Waste Management Centre
Production Began: Clover Bar 1970, Landfill 2005
Employees: 6 full-time
Raw Material: Alberta natural gas, landfill gas
Product: Electrical energy
Markets: Alberta Electric Systems Operator
Website: www.capitalpower.com
Phone: 780-392-5100

Celanese

Location: 4405 – 101st Avenue
Production Began: 1953
Employees: 220 full-time
Raw Material: Alberta natural gas, ethylene, vinyl acetate
Product: Specialty EVA copolymers and compounds
Markets: Global (North America, China, Asia, South America, Europe, Australia, Africa and New Zealand)
Website: www.celanese.com
Phone: 780-468-0800 (Days)
 780-468-8300 (Nights & Weekends)



Edmonton Waste Management Centre
Location: 13111 Meridian Street
Production Began: April 2000
Employees: 400
Raw Material: Municipal solid waste, biosolids
Product: Compost, paper, plastic, metal, glass for recycling, electrical equipment for recycling
Markets: Alberta, Western North America, and China
Website: www.edmonton.ca/ewmc
Phone: 780-496-5678



Location: 17th Street North and South of Baseline Road (between Edmonton & Sherwood Park)
Production Began: 1949
Employees: 70 permanent staff
Services: Transportation and storage of energy – crude oil, gasoline, diesel, natural gas liquids, condensate; operating the world's longest crude oil and liquids pipeline system
Markets: Canada and United States
Website: www.enbridge.com
Phone: 780-449-2600



Gold Bar Wastewater Treatment Plant
Location: 10977 – 50th Street
Production Began: 1956; expanded in 1968, '81; upgraded to tertiary treatment in '96
Employees: 150 full-time
Services: Municipal wastewater treatment for residential, commercial and industrial customers; supply high-grade process water to local industry; regional biosolids management; wastewater lab services
Markets: Serves over 780,000 residents in Edmonton and area, including Leduc, Beaumont, Nisku and International Airport
Website: www.epcor.com
Phone: 780-969-8496



Location: North of Baseline Road (101 Avenue) on 34th Street
Production Began: 1948
Employees: 450+ full-time
Raw Material: Crude oil and natural gas
Product: Gasoline, diesel, aviation fuels, heavy fuel oil, liquid petroleum gases, lubricating oils, sulphur and waxes
Markets: Canada and United States
Website: www.imperialoil.ca
Phone: 780-449-8110



Location: 17th Street & Hwy 16, Sherwood Park
Production Began: 1953
Employees: 130 (Edmonton)
Raw Material: Crude oil, refined and semi-refined petroleum products
Product: 300,000 barrels per day
Markets: Western North America
Website: www.kindermorgan.com/pipelinesafety
Phone: 780-449-5900



INNOVATIONS FOR LIVING™

Location: East of 17th Street at the Yellowhead
Production Began: 1960
Employees: 150 full-time
Raw Material: Sand, limestone, soda ash, borax and recycled glass
Product: Thermal and acoustical insulation
Markets: Canada and North America
Website: www.owenscorning.com
Phone: 780-472-5883

RioTinto Alcan

Location: Petroleum Way, between 17th Street and Highway 16A
Production Began: 1974
Employees: 18 full-time
Raw Material: Petroleum coke, a by-product of crude oil processing
Product: Calcined coke, used in aluminum manufacturing
Markets: RioTinto Alcan's and Alcoa's aluminum production facilities in North America
Website: www.riotinto.com
Phone: 780-467-9422



Location: Highway 16A, East of 17th Street on Petroleum Way
Production Began: 1951
Employees: 450+ full-time
Raw Material: Synthetic crude-derived feeds, bitumen and synthetic crude, butane
Product: Gasoline, diesel, aviation and heating fuels, liquid petroleum gases, bunker oil, petroleum coke and sulphur
Markets: Canada and United States
Website: www.suncor.com
Phone: 780-410-5610



SIA Board of Directors

| | |
|-------------------------------------------|------------------|
| Alberta EnviroFuels | Les Barber |
| AltaSteel | David Knights |
| Capital Power Corporation | Rudy Barrett |
| Celanese EVA Performance Polymers | David Gets |
| City of Edmonton Waste Management Centre | Jim Schubert |
| Enbridge | Dale Burgess |
| EPCOR Gold Bar Wastewater Treatment Plant | Vince Corkery |
| Imperial Oil Strathcona Refinery | Fabio Garagiola |
| Kinder Morgan | George Metcalf |
| Owens Corning | Todd Tufto |
| Rio Tinto Alcan | Frederic Picard |
| Suncor Energy Edmonton Refinery | John Prusakowski |



2011 Community Outreach

SIA member operations are in east Edmonton and in Strathcona County, near Sherwood Park. To provide opportunities for dialogue with residents and stakeholders, the SIA participated in and supported a number of community events throughout the year:

- Wye Community Emergency Preparedness Event
- Get Prepared Strathcona
- Strathcona Industrial Association Stakeholder Event
- Capilano CAER Fair
- River Day in Rundle Park
- Sherwood Park CAER Fair
- Fire Safety Day at Flint Energy

Call the  **UPDATEline**
1-866-653-9959

SIA members post information messages to the UPDATEline. The line can be called by the public to obtain information about non-routine activities that occur at SIA member sites. In 2011, a total of 48 messages were posted by SIA members and 450 callers heard messages regarding activities including training, flares, noise and incidents.

SIA by phone
780-429-CAER (2237)

The SIA operates a centralized public inquiry line. To contact us, please call the CAER line at **780-429-CAER (2237)**.



CAER News

The CAER News is the SIA's quarterly newsletter. The newsletter is mailed out to more than 450 stakeholders, and is available at public buildings in east Edmonton and Sherwood Park. CAER News is also published as an excerpt in local community newspapers and the full edition is available online at www.sia.ab.ca.

www.sia.ab.ca

Association information, publications and links to our members are available at www.sia.ab.ca or email info@sia.ab.ca.

Air Quality Monitoring Network



What is Ambient Air?

Ambient air is defined simply as outdoor air. Nearly everything affects ambient air, including a range of industries, motor vehicles, home heating, as well as wind, precipitation and temperature.

Why Monitor Ambient Air?

Monitoring air quality on and near industrial facilities has always been part of individual member operating approvals. While this 'site' monitoring satisfies regulatory requirements, it is limited in providing an overall look at the quality of the air we breathe. Integrating the stations into one network and placing them in nearby neighbourhoods aids in assessing changes and trends in air quality.

Located in a 12 km² area in west Strathcona County and east Edmonton, the SIA network:

- monitors trends and changes in air quality,
- confirms effectiveness of emission control measures,
- assists with immediate investigation of unusual readings,
- collects and contributes data for scientific studies,
- provides air quality information to the community,
- monitors off-site air quality in an emergency situation.

What Monitoring Takes Place?

Continuous monitoring gathers real-time data 24-hours per day, seven days per week. Hydrogen sulphide, sulphur dioxide and nitrogen dioxide are continuously monitored.

Intermittent monitoring collects data once every six days for a 24-hour period, following the National Air Pollution Surveillance (NAPS) program across the country. Respirable particulate matter (PM_{2.5}) is intermittently monitored.

Passive monitoring collects data for an entire month. The passive network provides data on sulphur dioxide, nitrogen dioxide and ozone.

These three monitoring methods provide a comprehensive approach to measuring overall air quality within the SIA network area.

What the Continuous Network Measures

| Station | Hydrogen Sulphide | Sulphur Dioxide | Oxides of Nitrogen | Total Hydrocarbons | Particulate Matter | Wind Speed, Direction and Temperature |
|---------------|-------------------|-----------------|--------------------|--------------------|--------------------|---------------------------------------|
| Sherwood Park | + | + | + | + | + | + |
| Elmjay | + | + | | | | + |
| Gold Bar | + | + | + | | + | + |
| Beverly | + | + | | + | + | + |
| Clareview | | | | | | + |

Wind Speed and Direction

Wind speed and direction influence air quality by diffusing and dispersing gases and particulates. In 2011, 98% of wind speeds were recorded between 1 – 20 km/hour. Prevailing wind direction for the year was southeast.

Response System

Occasionally, weather conditions, process upsets at industrial facilities or incidents like forest fires may cause local concentrations of measured substances to rise. When a concentration reaches an alert level, which is below provincial objectives, an investigation is immediately conducted.

- STEP 1** System alerts network manager and team of elevated reading
 - STEP 2** Manager reviews data and operating controls for monitoring equipment to determine source
 - STEP 3** SIA members are notified of elevated reading and check individual operations
- If a parameter is measured above a Provincial objective, move to step 4**
- STEP 4** Alberta Environment and Water is notified
 - STEP 5** A full investigation report is sent to Alberta Environment and Water

Alberta's Ambient Air Quality Objectives

Alberta Environment and Water is tasked with developing ambient air quality objectives. Air quality objectives are generally established for 1-hour, 24-hour, and annual averaging periods. Objectives are based on an evaluation of scientific, social, technical and economic factors.



2011 Operational Highlights

- Annual uptime average above 90%
- New SO₂ monitor at Beverly Station
- Clareview Station enclosure repair
- Installation of instrument status alarm



Alberta Ambient Air Quality Objectives

Hydrogen Sulphide

- 1-hour average: 10 parts per billion (ppb)
- 24-hour average: 3 ppb



2011 Network Results

Annual average concentrations of all parameters recorded by the SIA network in 2011 were well below Alberta Ambient Air Quality Objectives (Alberta Objectives).

Throughout the year, there were 15 occurrences above the 1-hour Alberta Objective for hydrogen sulphide (H₂S) on ten separate days. Strathcona Industrial Association members reported routine operations during these times. Alberta Environment and Water reference numbers were obtained in all cases.

Five-Year History:

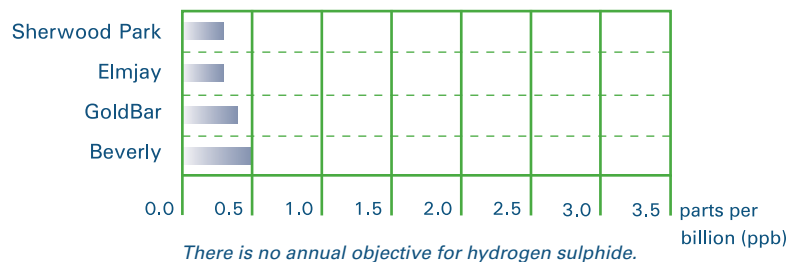
Total Occurrences Above Ambient Air Quality Objectives

| | | | | | |
|-----------------------------------------|------|------|------|------|------|
| Hydrogen Sulphide | 15 | 1 | 2 | 6 | 2 |
| Sulphur Dioxide | 0 | 0 | 0 | 0 | 0 |
| Nitrogen Dioxide | 0 | 0 | 0 | 0 | 0 |
| Particulate Matter (PM _{2.5}) | 0 | 2 | 3 | 0 | 0 |
| | 2011 | 2010 | 2009 | 2008 | 2007 |

Hydrogen Sulphide (H₂S)

H₂S is a colourless gas with a rotten egg odour. Man-made sources include petroleum refineries, natural gas plants, petrochemical facilities, storage cylinders, pulp and paper mills, wastewater treatment plants and coke ovens. There are also naturally occurring sources, such as the annual turning over of Cooking Lake, sulphur springs, sloughs and swamps. The Sherwood Park, Elmjay, Beverly and Gold Bar stations measure H₂S.

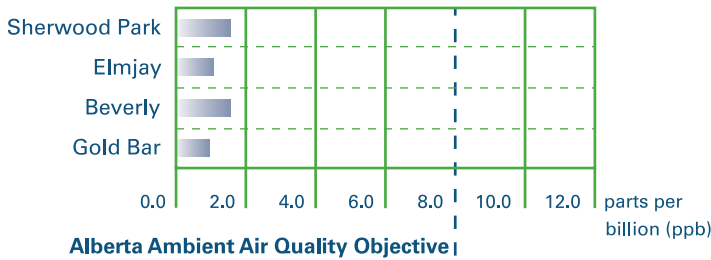
Hydrogen Sulphide (H₂S) 2011 Annual Averages



Sulphur Dioxide (SO₂)

SO₂ is a colourless gas with a strong, pungent odour. Industrial sources include sulphur extraction plants, natural gas processing plants, oil sands operations, power plants, oil refineries, pulp and paper mills and fertilizer plants. The Sherwood Park, Elmjay, Beverly and Gold Bar Stations measure SO₂.

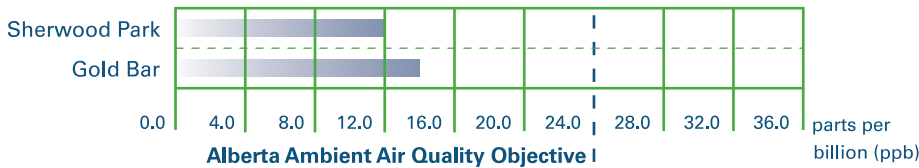
Sulphur Dioxide (SO₂) 2011 Annual Averages



Nitrogen Dioxide (NO₂)

NO₂ is a reddish-brown gas with a pungent odour. Man-made sources for NO₂ are motor vehicles, oil and gas industries and power generation plants, as well as combustion from forest fires and home heating. The Sherwood Park and Gold Bar stations measure NO₂.

Nitrogen Dioxide (NO₂) 2011 Annual Averages



Total Hydrocarbons (THC)

Total hydrocarbons refer to a range of chemicals that contain carbon and hydrogen atoms. Sources of emissions include motor vehicles, petroleum refineries, petrochemical plants, vegetation and combustion. Smaller sources also include dry cleaning facilities, gasoline tanks, solvent handling and fugitive emissions from industrial facilities. The Sherwood Park and Beverly stations measure THC.

Total Hydrocarbons (THC) 2011 Annual Averages



Alberta Ambient Air Quality Objectives

Sulphur Dioxide (effective April 2011)

- 24-hour average: 48 ppb
- Annual average: 8 ppb



Nitrogen Dioxide (effective April 2011)

- 1-hour average: 159 ppb
- Annual average: 24 ppb





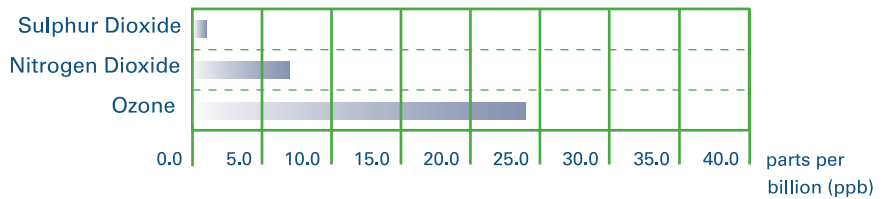
Ozone

In June 2000, the Canadian Council of Ministers of the Environment established a Canada-wide standard for ozone of 65 ppb based on an 8-hour average.

Passive Monitoring: Sulphur Dioxide, Nitrogen Dioxide and Ozone

Passive sampling is performed at six locations around the SIA region for three parameters: sulphur dioxide, nitrogen dioxide and ozone. This sampling technique uses a device which is placed in the ambient air for a one month period. These samples are used to determine potential trends in areas where continuous sampling is not available.

Regional Passive Sampling 2011 Annual Averages



Ozone (O₃)

Ozone occurs naturally in the upper atmosphere (stratosphere) and protects us from harmful ultraviolet radiation. However, ozone in the lower atmosphere (troposphere) acts as a strong oxidant and major component in smog. In 2008, a management plan for ozone and particulate matter was developed for the capital region by the Capital Airshed Partnership. Through the SIA, members have contributed data and funding to this initiative.



Particulate Matter

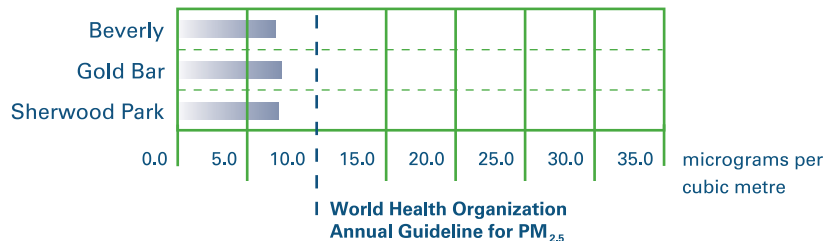
Alberta Environment and Water has adopted a PM_{2.5} objective of 30 micrograms per cubic metre during a 24-hour sampling period.

The World Health Organization annual guideline for PM_{2.5} is 10 micrograms per cubic metre.

Particulate Matter (PM_{2.5})

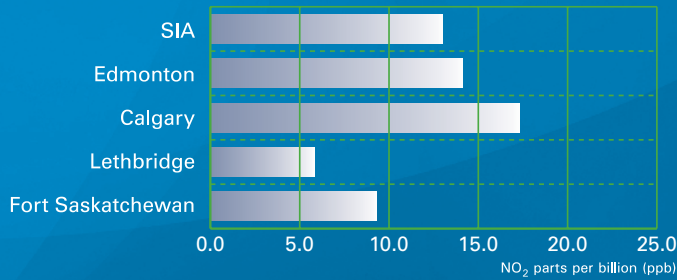
PM_{2.5} includes particles with diameters less than or equal to 2.5 microns (a particle of 2.5 microns is around 20 times smaller than the width of a human hair). Particles of this size can penetrate into the lungs. These particulates typically result when chemical reactions take place between sulfate (from power plants) or nitrate (from vehicles and oil and gas industry) and ammonia, or from sources such as compressor stations, household heating appliances and forest fires.

PM_{2.5} 2011 Annual Averages

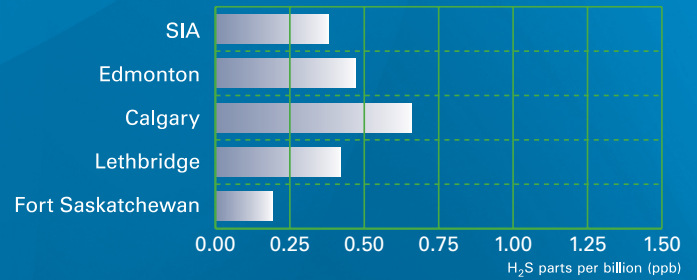


Provincial Comparisons 2011 (Source: Clean Air Strategic Alliance)

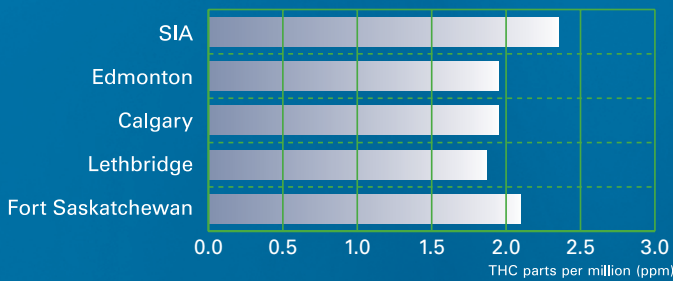
Nitrogen Dioxide (NO₂) Annual Averages



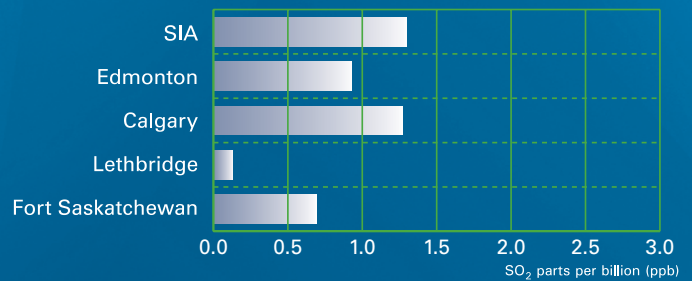
Hydrogen Sulphide (H₂S) Annual Averages



Total Hydrocarbons (THC) Annual Averages

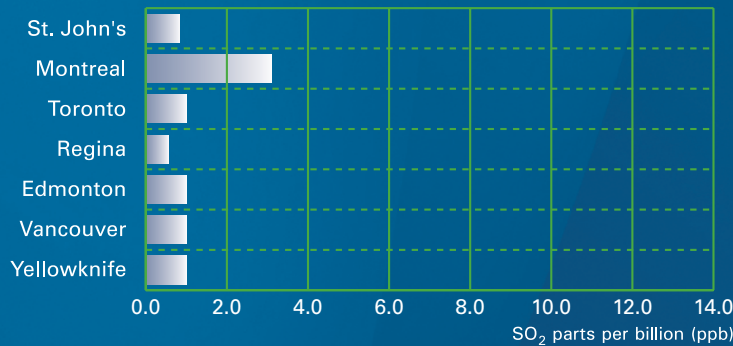


Sulphur Dioxide (SO₂) Annual Averages

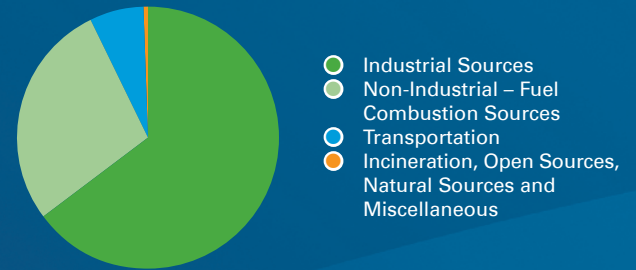


National Comparisons (Source: Environment Canada)

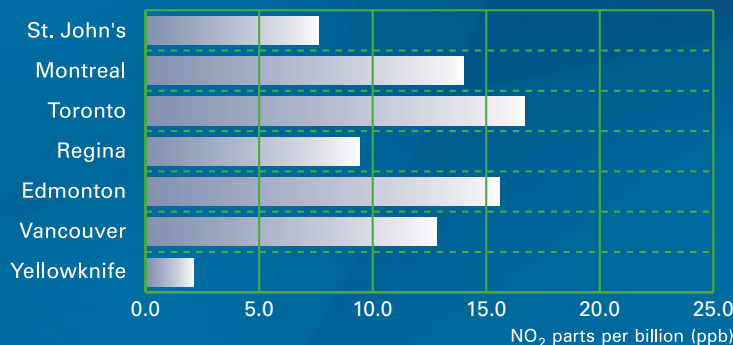
Sulphur Dioxide (SO₂) 2009 Annual Averages



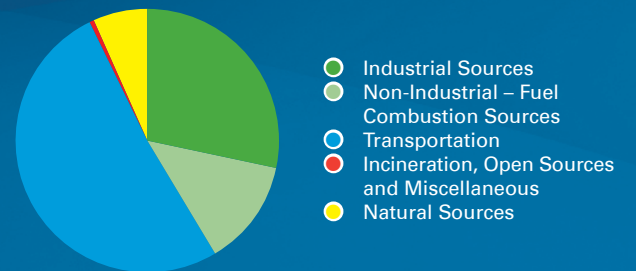
SO₂ Emission in Canada by Source 2010*



Nitrogen Dioxide (NO₂) 2009 Annual Averages



NO₂ Emission in Canada by Source 2010*



* Open Source refers to emissions from agriculture, construction operations, dust from roads, forest fires, landfills, mine tailings and prescribed burning.

SIA Members



AltaSteel



RioTinto Alcan



This report is published as a summary of the Strathcona Industrial Association's Ambient Air Monitoring Network Annual Report to Alberta Environment and Water.

If you have a question about SIA and its activities please call **780-429-CAER (2237)** or email info@sia.ab.ca.

Administration:
780-429-CAER (2237)

Gary Redmond
Executive Director
gredmond@sia.ab.ca

Brenda Gheran
CAER Program Manager
bgheran@sia.ab.ca

Curious about non-routine industry activity?



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Sherwood Park, AB T8H 2T3
Phone: 780-429-2237
Email: info@sia.ab.ca

www.sia.ab.ca

Working with the community and government to promote a safe and healthy working and living environment.

