



Air Monitoring

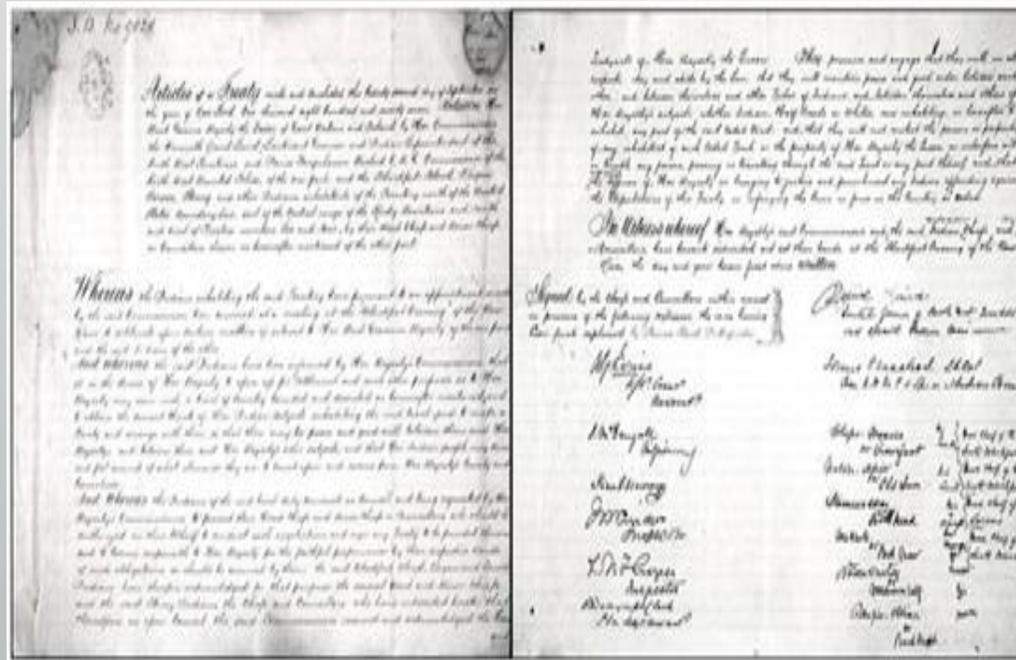
An Aamjiwnaang First Nation Perspective

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- 1. Who are the Aamjiwnaang
 - 2. Community Concerns
 - 3. Current Monitoring Program
 - 4. Next Steps – Accomodation, new technology, oversight and resources
 - 5. First Nations Jurisdiction

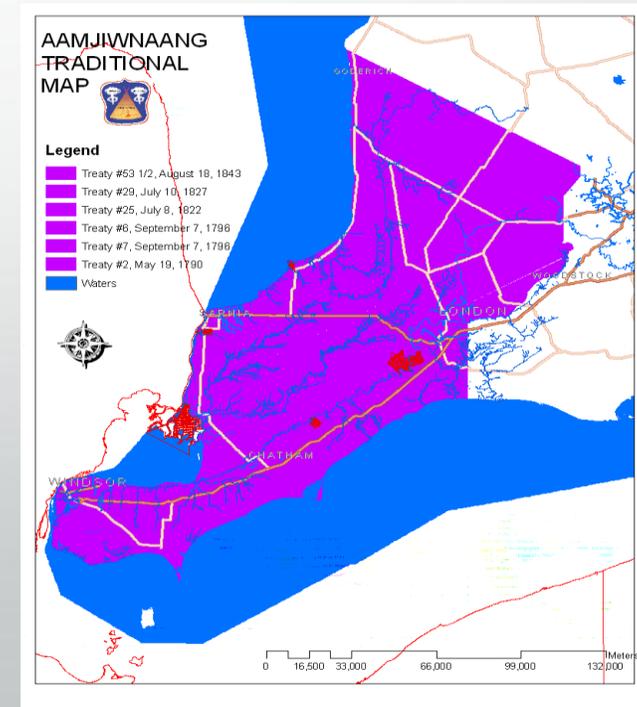
About the Aamjiwnaang People

We use the word Anishinabek to describe ourselves, other names that we use include Ojibway and Chippewa.

We have treaty rights to exclusively use and enjoy our reserved lands and assert our aboriginal harvesting rights in our traditional territory



Traditional Territory



Aamjiwnaang First Nation

The community of Aamjiwnaang is located on the St. Clair River, three miles south of the southern tip of Lake Huron within Sarnia city limits. There are approximately 2000 band members and approximately 850 live on Aamjiwnaang Territory.

We are descendants of a part of the Anishinabe Nation. Our ancestors occupied southwestern Ontario and the Great Lakes long before contact with the Europeans occurred. Our people have been asserting Aboriginal rights over their traditional territory since time immemorial.

Cumulative Environmental Impacts

- Within the past few years Aamjiwnaang First Nation has received 52 requests for consultation from companies looking to upgrade and/or expand their facilities within our traditional territory;
- In the last two years there have been pipeline ruptures, air releases of toxic chemicals and spills of hazardous materials in the St. Clair River that have directly impacted our community.

Ministry of Environment Continues to Fail Aamjiwnaang First Nation

- The Environmental Commissioner of Ontario recently released the 2013/14 Annual Report titled “Managing New Challenges” and specifically identified the air quality impacts on Aamjiwnaang Residents as an area of concern.
 - “since the 1940’s, the area surrounding Aamjiwnaang has developed into one of the most heavily industrialized enclaves in Canada. Widely known as “Chemical Valley”, the area is home to several dozen large industrial facilities, representing **40 per cent of Canada’s entire chemical industry.**”
 - “As a result of this concentration of industrial facilities, Sarnia suffers some of the **worst air pollution in Canada** according to the World Health Organizations 2011 Outdoor Air Pollution Database.”

Aamjiwnaang Environment Department

- The Aamjiwnaang Environment Department was established in 2007 with a mandate to:
- study, preserve, and protect traditional species and their habitat
- provide technical expertise to Chief and Council regarding Environmental impacts that infringe on aboriginal lands, resources, and treaty rights.
- to implement community engagement around environmental projects and to provide outreach and education regarding projects proposed in the area.

Differing world views

Eagle Staff Gathering took place Sept 20, 2013...23 staffs come to Aamjiwnaang for ceremony

Feb. 2014, 23 eagles return to the St. Clair River. People say its because of the 80% ice cover of the Great Lakes and the eagles are returning because the river is open and water and food are available

Aamjiwnaang believes its because they were honoured and acknowledged in ceremony



Imperial Oil Flare

Wednesday
October 29,
2014



LANXESS Inc. Sarnia Site

LXS Butyl Chemical Leak

Tue 1:44 PM 16 KB

LANXESS Inc.

Sarnia Site

Emergency Community Alerting Network (E-CAN)

LANXESS Code 9 issued for a Catalyst Leak, Butyl Unit. For periodic updates call 1 8 5 5 472 7642

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U.S. Chemical Safety Board Report Anacortes, Washington

- conduct more comprehensive hazard analyses and damage mechanism reviews;
- document the effectiveness of process safeguards;
- increase the role for worker representatives in process safety management
- have company safety reviews examined by technically competent regulators
- investigators also reported their findings of a substandard safety culture at Tesoro, which led to a complacent attitude toward flammable leaks and occasional fires over the years. And the CSB found that the complexity of the start-up procedure typically required more than just the one outside operator. Yet operating procedures were not updated to account for the role of additional personnel during the hazardous non-routine work.
- www.facebook.com/AamjiwnaangEnvironment

Community Monitoring Concerns

Focus groups held in May 2014

- More monitoring in the community is needed
- The federal canister readings are higher than the station monitors
- Science as a tool to confuse the people
- There needs to be more transparency with the community – warnings to the community of releases to air and the river.
- Perhaps industry sets up in Ontario because the standards are lower
- Asbestos in Scott Road Landfill and any affect it has on the Environment
- Noise Concerns
- University of Michigan did a study of the people here and found heavy metals in our blood
- Rotten egg smell often brings on headaches
- Even though the OPG coal plant was shut down, we still get emissions from coal plants in the U.S
- After a while people don't say anything because there is no validation
- Children are more vulnerable.
- Scared for children being exposed to contamination when playing in the parks and on the shores of the St. Clair River.

Community Environment Concerns

- Cumulative effects – more analysis to inform policy and to be included as part of the modelling requirements for industry.
- For the Shell spill, the Ministry did not go into the area to monitor the air when there was a shelter in place. **This is not good enough for the residents.**
- Is there a Hydrogen Sulphide standard?
- Aamjiwnaang community needs better air quality monitoring – daily and when there is a spill.
- The community wants to see more compliance monitoring including the monitoring van (mobile)
- Concerns raised that it has taken too long to get the air standards and now it will take longer to get these new rules in place.
- What about the start-ups and shutdowns for maintenance and other “emergencies”. It seems Companies can spew out anything they want and just tell the community it is ok we are just shutting down.
- Distrust – fears that all spills are not being reported
- **We don’t want to allow any more emissions from industry. This has been going on for too long. There should be no more excuses.**

Community Health Concerns

- **Seeing a lot more cancer deaths now....possible legacy of contamination and pollution many years ago?**
- Asthma
- Asthma flare ups with industry stack “burn offs”
- **Skin Rashes and irritations – concern that this directly relates to exposure**
- **Cancer care Ontario did a study of this area – there is a high incidence of skin cancers – is this coincidence or proof of exposure?**
- Our Asthma medications are higher than any other prescribed medication i.e. diabetes or heart according to FNIHB reports
- Need more monitoring to prevent exposure to pollution, to inform people of a release when it happens.
- sulphur smells
- **University of Michigan did a study of the people here and found heavy metals in our blood.**

Environmental Commissioners of Ontario Report 2014

Shell Spill Incident - Jan. 11, 2013

Shelter in place was issued, community members felt that if any chemical release that the company has responsibility to notify their neighbours. It took an hour for sirens to be sounded.

- Chemicals released adversely affected Aamjiwnaang by reports of the following symptoms;
 - Nausea, red eyes, dizziness, shortness of breath, coughing, and skin irritations
 - Odour was so strong (gas smell) caused headaches

April 26, 2013

- rotten egg smell caused headaches
- MOE said it was a hydrogen sulphide and sulphur dioxide release

Environment Committee meeting – October 21/14

- AFN's rights to exclusively use and enjoy our reserve lands is adversely affected and is not protected by mandated agencies and their enforcement regulations
- MOE is failing on it's mandate of protecting our air, land and species
- Polluters need to pay for chemical releases
- Need update on standards and guidelines.

Recommendation # 4

"The ECO recommends that the Ministry of the Environment enhance its efforts to eliminate the adverse effects of the industrial facilities within Chemical Valley on the Aamjiwnaang community and the environment."



“Under today’s land use rules, it would be highly unlikely that this type of concentrated industrial development would occur in such close proximity to a residential community. Yet, the Aamjiwnaang First Nation suffers a daily assault on their ancestral land as a result of this disturbing historical legacy, coupled with contemporary indifference.”

- ECO Annual Report 2014

Current Monitoring Program



Aamjiwnaang Air Monitoring Station

14310

- **Continuous monitors** (data collected in logger, real time)
- **SO₂ Monitor** , measures sulphur dioxide in ppb , oil refinery, fossil fuel , crude oil etc.
- **TRS Monitor** , measures total reduced sulphur (primarily H₂S) in ppb , crude oil
- **NO,NO₂,NO_x monitor** , measures oxides of nitrogen in ppb , power production , transportation.
- **Grimm Particulate analyser** , Measures real time inhalable and respirable particulate, Pm₁₀, Pm_{2.5}, Pm_{1.0} in ug/m₃ , combustion, transportation, long range transport.
- **Wind Speed / Wind Direction** monitor km/hr and degrees.
- **GC/MS** , Gas Chromatograph/ Mass Spectrometer , for analysis of Volatile organic (contains carbon) compounds in the air. Measures low ppb to ppt depending on the compound. This monitor will generate a concentration of a selected list of compounds every hour.
- **TAGA** comes to the territory to monitor different areas of the reserve at different times

Possible VOC compounds are, but not limited to the following:

	d10-xylene in %		m-XYLENE + p-XYLENE	
TETRACHLOROETHENE	o-XYLENE	1,1,2,2-TETRACHLOROETHANE	PINENE	1,3,5-TRIMETHYLBENZENE
CHLOROBENZENE	1,2-DIBROMOETHANE	1,2,4-TRIMETHYLBENZENE	STYRENE	Isopropyl ether
ETHYLBENZENE	1,2,4-TRICHLOROBENZENE	ACETONITRILE	MIAC	Butyl Acetate
MIBK	Diisobutylene	Acetone	MEK	2-Propanol
NAPHTHALENE	1,2-DICHLOROBENZENE	1,3-dichlorobenzene	1,4-dichlorobenzene	1,1,2-TRICHLOROETHANE

Monitoring Cycles

6 Day cycle particulate monitoring

- PQ100 24hr particulate sampler , uses 47m Teflon filter to collect all particulate for:
- 24 hrs, samples are sent to MOE lab for analysis of
- TSP (total suspended particulate ug/m³)
- Metals eg. Copper, Nickel , Cadmium , Chromium , Lead , Iron , Manganese ,
- Vanadium , Zinc in ug/m³.

12 Day cycle VOC canister sampling

- Environment Canada to provide 24hr VOC canister sampling on a 12 day cycle.

Canister is collected and sent to the Env. Can Lab for analysis of the following VOC

Propene	Propane	Freon 22 (Chlorodifluoromethane)	Freon 12 (Dichlorodifluoromethane)	Propyne
Chloromethane	Isobutane (2-Methylpropane)	Freon 114 (1,2-Dichlorotetrafluoroethan	Vinylchloride (Chloroethene)	1-Butene/2-Methylpropene
1,3-Butadiene	Butane	t-2-Butene	2,2-Dimethylpropane	Bromomethane
1-Butyne	c-2-Butene	Chloroethane	3-Methyl-1-Butene	2-Methylbutane
Freon 11 (Trichlorofluoromethane)	1-Pentene	2-Methyl-1-Butene	Pentane	Isoprene (2-Methyl-1,3-Butadiene)
t-2-Pentene	Ethylbromide	1,1-Dichloroethene	c-2-Pentene	Dichloromethane
2-Methyl-2-Butene	Freon 113 (1,1,2-Trichlorotrifluoroetha	2,2-Dimethylbutane	Cyclopentene	t-1,2-Dichloroethene

Air Monitoring Station

Pros

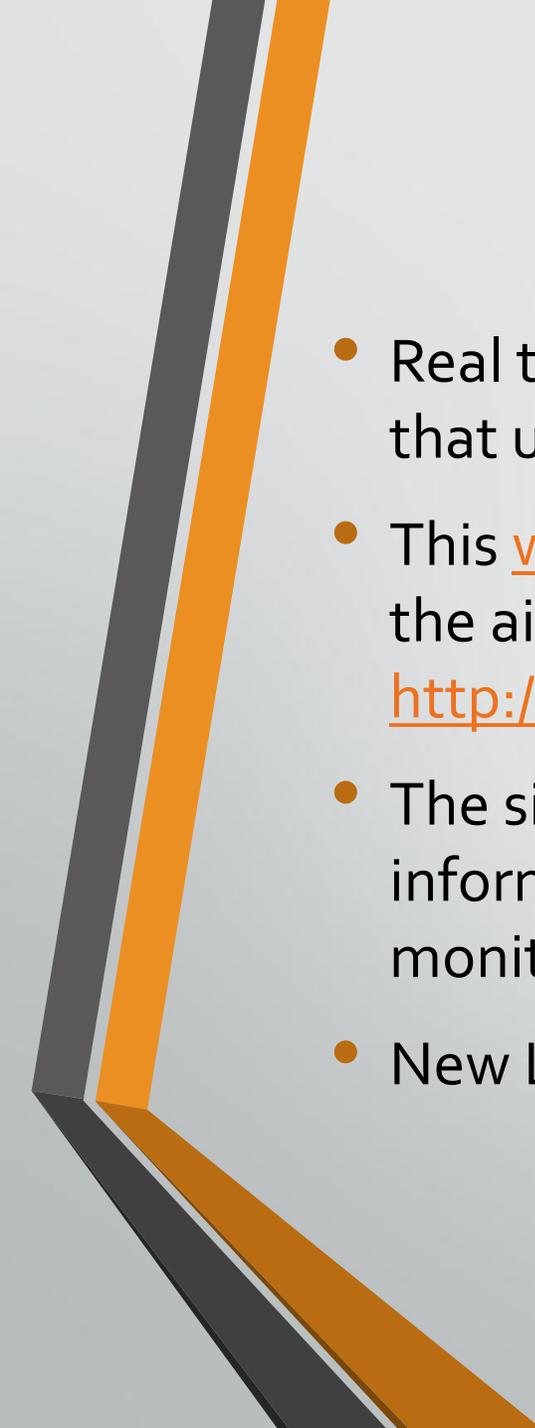
- State of the art instrumentation
- GC/MS for low concentration analysis of VOC's
- Can be calibrated to contaminants of interest
- Able to track trends and patterns
- Real time data
- Annual Air Quality report produced

Cons

- Stationary
- Hard to access real time data when needed
- Annual report is delayed in being presented to community because it has to be verified by Ministry personnel
- Community had belief that the station would provide them with information on the spot about exposure during air releases or events
- Community does not have confidence in where station was located

Next Steps

- Start using enhanced technology. Aamjiwnaang is frustrated with using the same methods and seeing the same results. Companies, workers, and communities would all benefit from a more rigorous regulatory system that is focused on continuously lowering risks
- There is better technology out there – such as enhanced fence line monitors for Benzene. Fenceline passive diffusive tube monitoring networks employ a series of diffusive tube samplers at set intervals along the fenceline to measure a time-integrated ambient air concentration at each sampling location. Passive diffusive tube monitoring still allows earlier detection of significant fugitive emissions than conventional source-specific monitoring.
- Fenceline monitoring will identify a significant increase in emissions in a timely manner (*e.g.*, a large equipment leak or a significant tear in a storage vessel seal), which would allow corrective action measures to occur more rapidly than it would if a source relied solely on the traditional infrequent monitoring and inspection methods. Small increases in emissions are not likely to impact the fenceline concentration, so a fenceline monitoring approach will generally target larger emission sources that have the most impact on the ambient pollutant concentration near the refinery.

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- Real time data is needed in this community – Web based Real Time Data like that used at the **Rodeo Refinery Real-time Data Website**
 - This website provides the general public with real-time data about what's in the air in Rodeo, California. <http://www.fenceline.org/>
<http://www.fenceline.org/richmond/>
 - The site lists air monitor readings and is designed as an educational tool to inform the community about air quality and answer questions about the air monitoring system used to capture these readings.
 - New LDAR technology –Rebellion Photonic- reliable and less expensive

Nation to Nation

- US Tribes have a role in implementing and enforcing the US Clean Air Act on tribal land
- Congress recognized that Indian Tribes have the authority to implement air pollution control programs.
- EPA's Tribal Authority Rule gives Tribes the ability to develop air quality management programs, write rules to reduce air pollution and implement and enforce their rules in Indian Country. While state and local agencies are responsible for all Clean Air Act requirements, Tribes may develop and implement only those parts of the Clean Air Act that are appropriate for their lands. Tribes are monitoring criteria and hazardous air pollutants to better understand their air quality.
- 78 tribes are monitoring with 52 reporting their air quality monitoring data to EPA's Air Quality System. 22 tribes are conducting activities and implementing programs to address toxic air pollutants in their communities. These activities range from monitoring for acid and mercury deposition; to sampling subsistence food sources to measure the accumulation of toxins such as mercury, dioxin and pcb's; to working on assessment projects with other jurisdictions in their area; and doing outreach to their communities.
- 11 tribal governments and organizations participate in the "Communities in Action for Asthma Friendly Environments" Network.

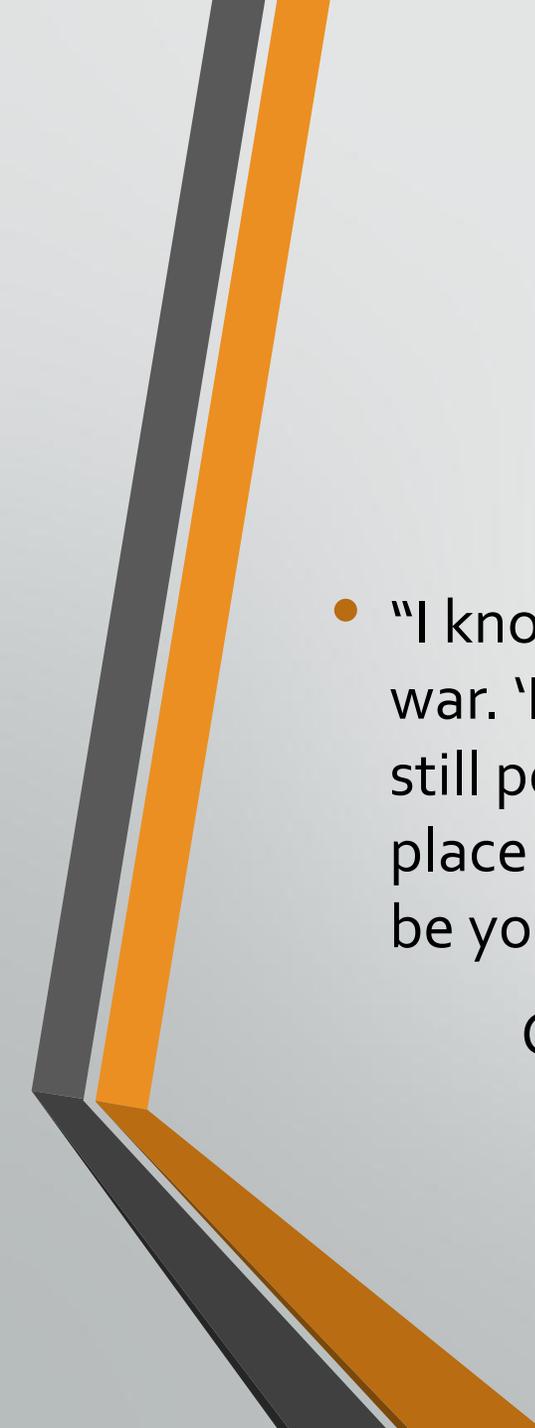
<http://www.asthmacommunitynetwork.org/communityprofiles.aspx>

Aamjiwnaang Asserts Jurisdiction Over Traditional Territory

- As Anishinabe peoples, we are subject to Anishinabe law and have a duty under our law to be stewards of our land.
- Our people have a long relationship with our land, including the harvesting of resources, which remains important to our people.
- Fishing, hunting and the gathering of medicines is of special importance to our people, both historically and today.
- Canadian Courts have recognized and affirmed the protection of existing Aboriginal and treaty rights (which are constitutionally protected).
- Our traditional territory is also important to us for its ceremonial and sacred sites. It is also one of our most important laws that the places where our ancestors are buried should not be disturbed.

Aamjiwnaang Asserts Jurisdiction Over Traditional Territory

- Under Canadian law, any action that may potentially affect our Aboriginal and treaty rights, requires that our people be consulted and accommodated.
- In order to address consultation issues Aamjiwnaang has implemented its own consultation process and flow chart to assist proponents.
- Copies available on website: <http://www.aamjiwnaangenvironment.ca/>

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- “I know how you have spoken to my forefathers when you bid them go to war. ‘I wish to chase anyone [away] who comes near your lake. Your children still posses their lands yonder’. Did you say this to my forefathers at the place where the water runs into the sea [Niagara], ‘Here is the place that will be yours?’”

Chief Bemigwaneshkang July 1862