



# **Sarnia Area Environmental Health Project**

## ***Air Exposure Review***

### **Update on Progress to Date**

***Community Information Meeting***

***June 2023***

# Project Team for Air Exposure Review (AER) Study



- ***Intrinsik Corp.***

- Scientific and regulatory consulting firm providing expert toxicology and regulatory advice for the protection of human health and the environment
  - Extensive experience in health studies in Sarnia



- ***CanNorth***

- An environmental services company that is 100% owned by the Lac La Ronge Indian Band
  - Risk assessors with extensive experience in air quality evaluations

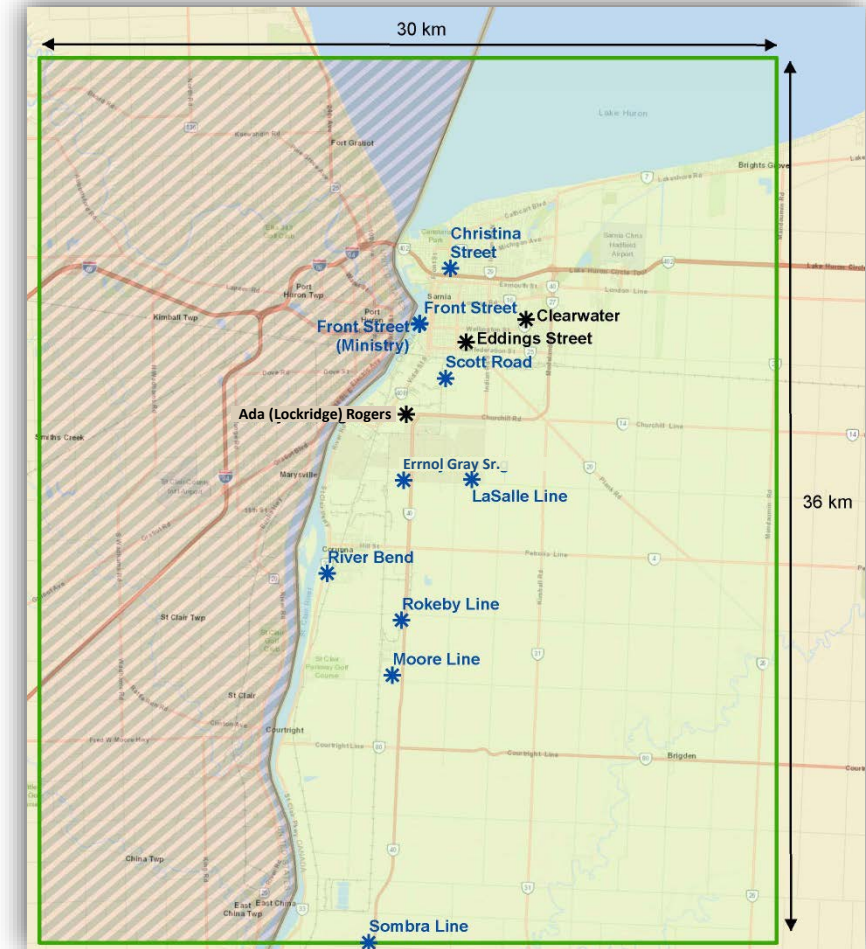


- ***4 Directions of Conservation***

- An Indigenous owned company based out of Hiawatha First Nation
  - Land Use/Traditional Knowledge
  - Indigenous Engagement
  - Environmental and ecological services

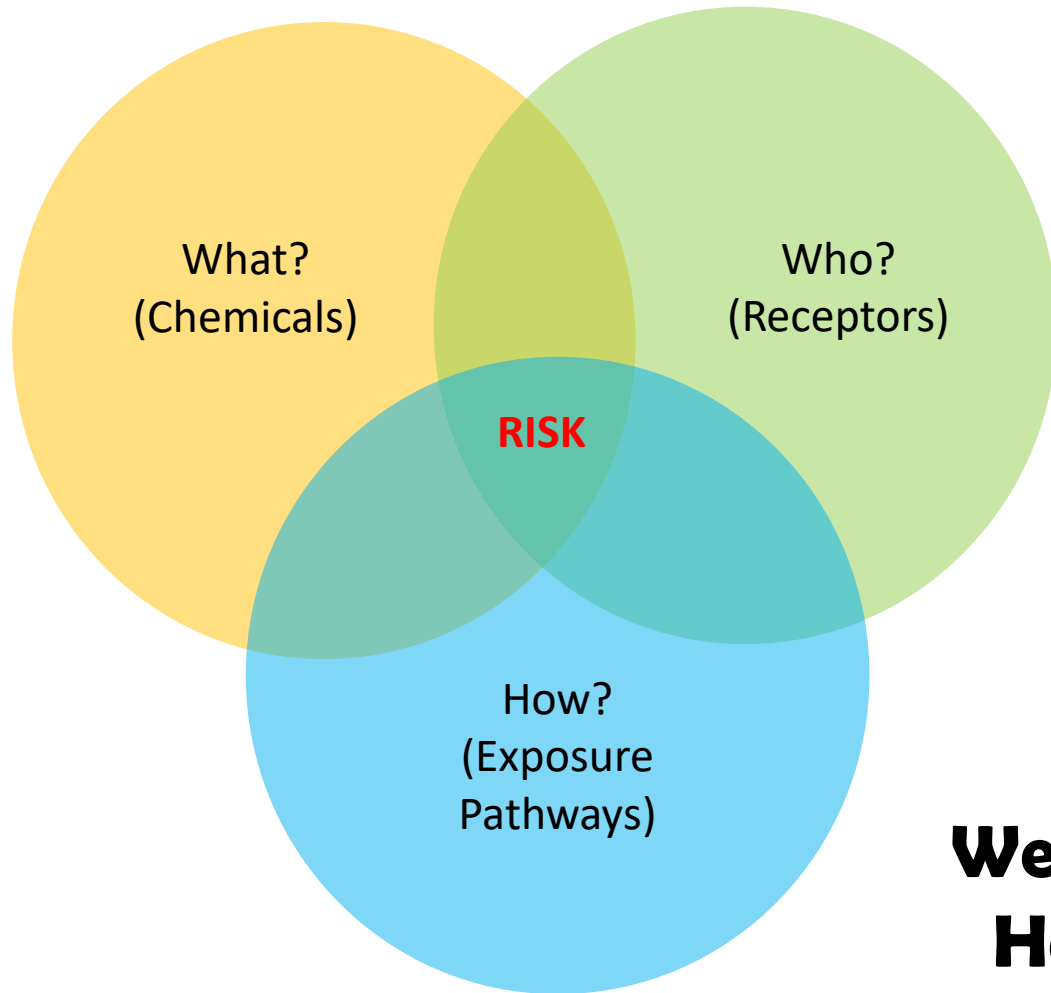
# What is the Scope of the Air Exposure Review?

- The Study is designed to answer the following questions:
  1. What is being released in the air?
  2. How much am I being exposed to?
  3. Are these exposures posing a risk to my health?
- To answer these questions, we are applying a risk assessment approach to evaluating the human health risks of air emissions on all the people that live, work and play in the broader Sarnia area, which is situated on the treaty territories of Aamjiwnaang and Walpole Island First Nations.

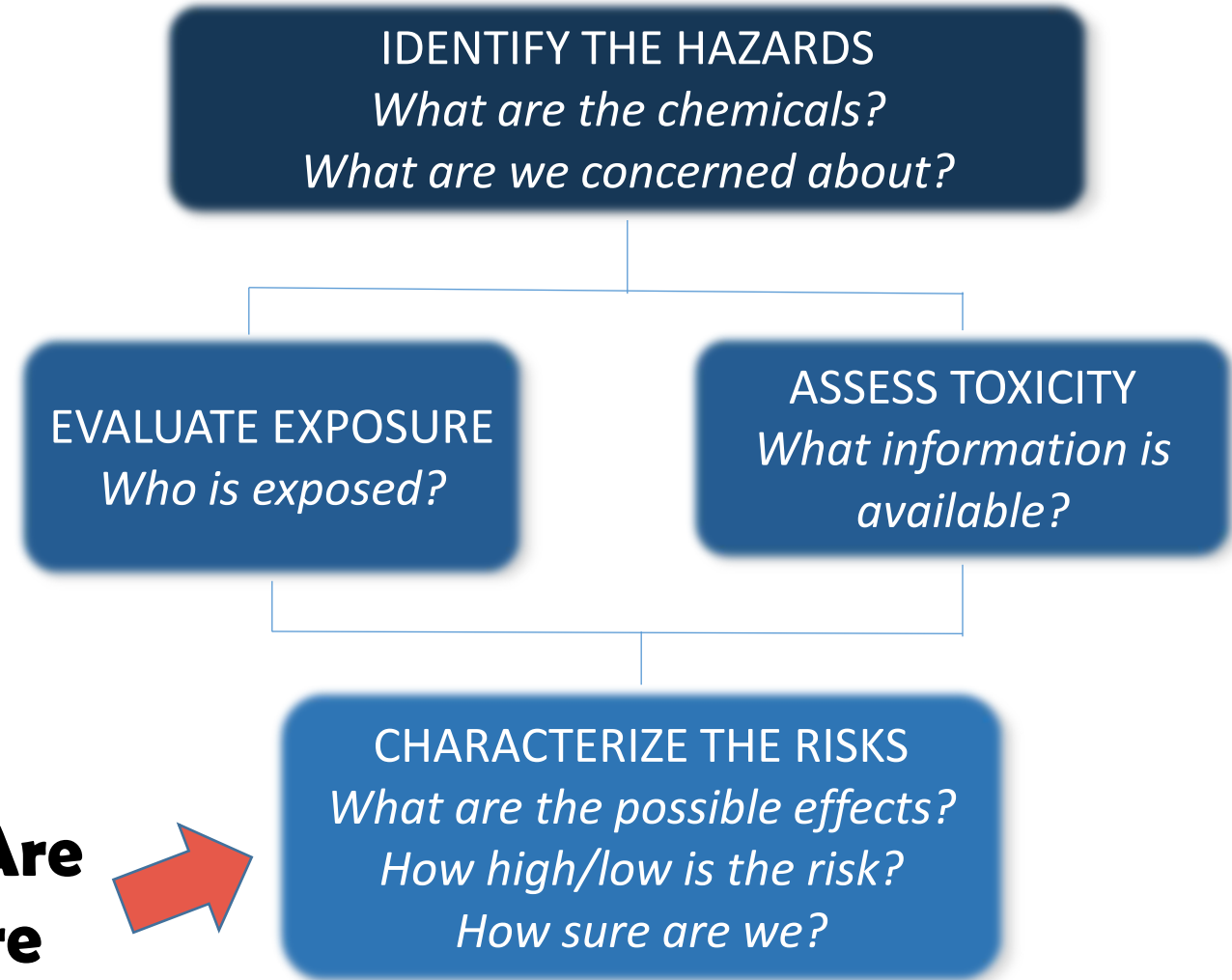
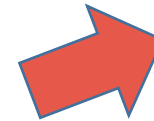


**Study Area**

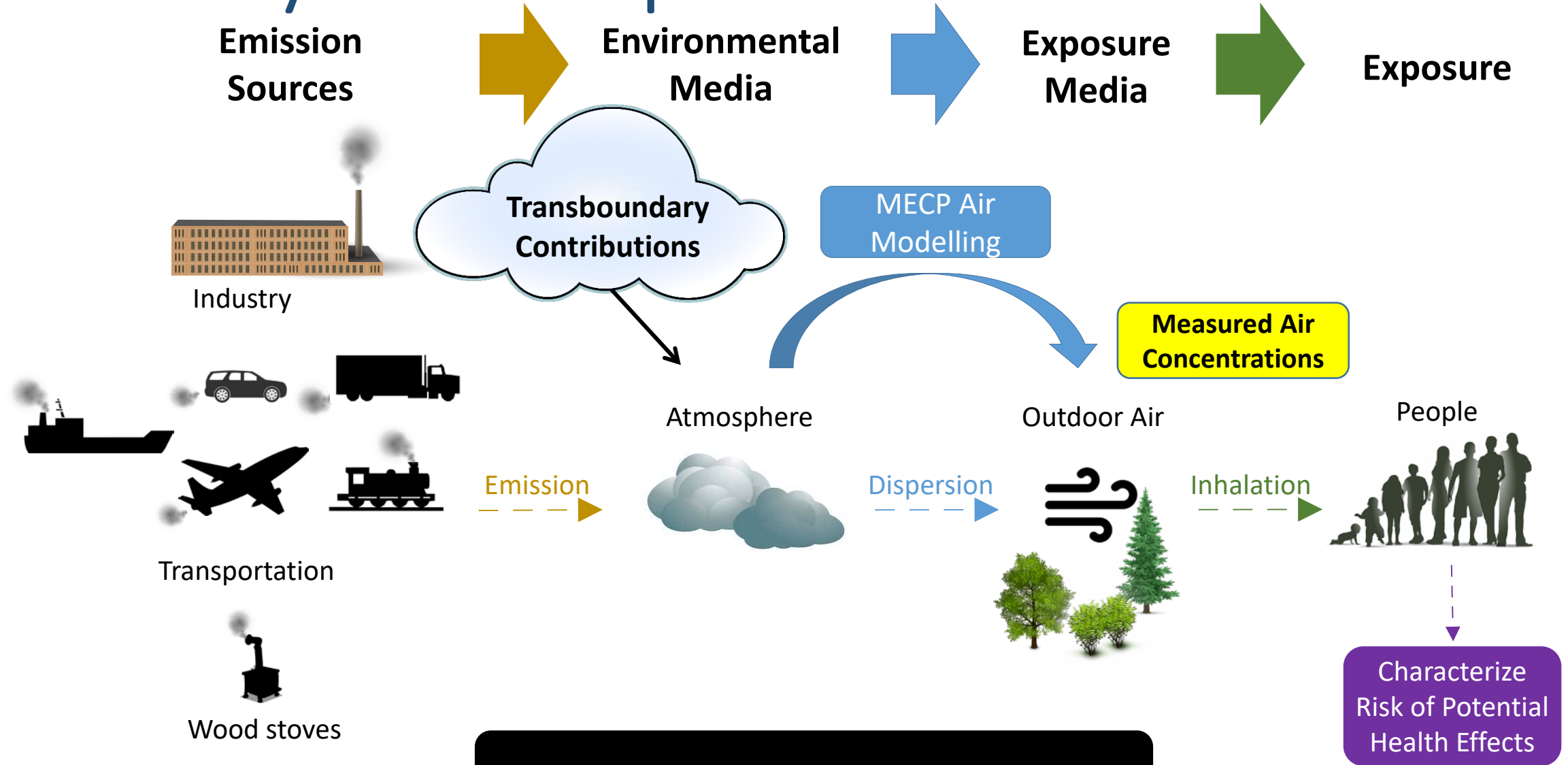
# What is Risk Assessment?



**We Are  
Here**

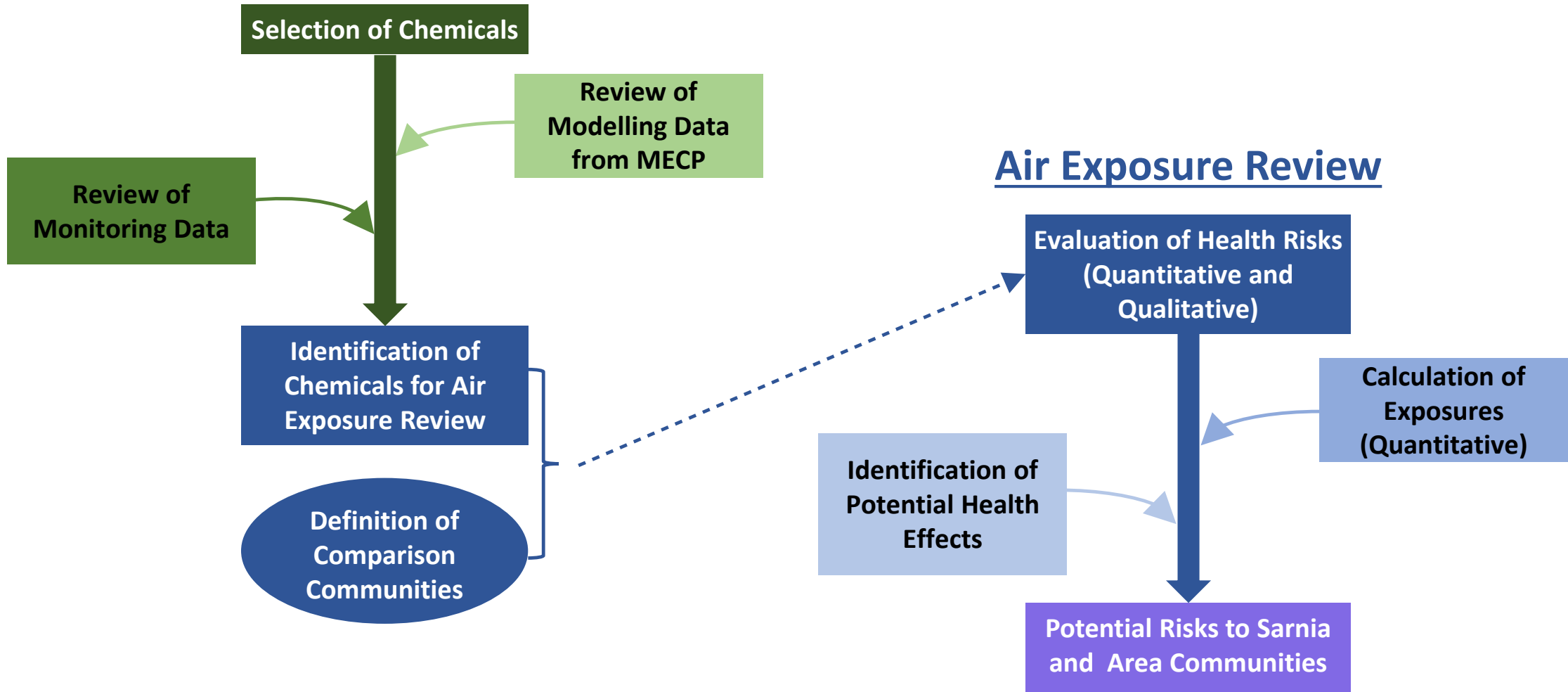


# Pathways for Air Exposure Review



# Steps in the Air Exposure Review Process

## Scoping Document

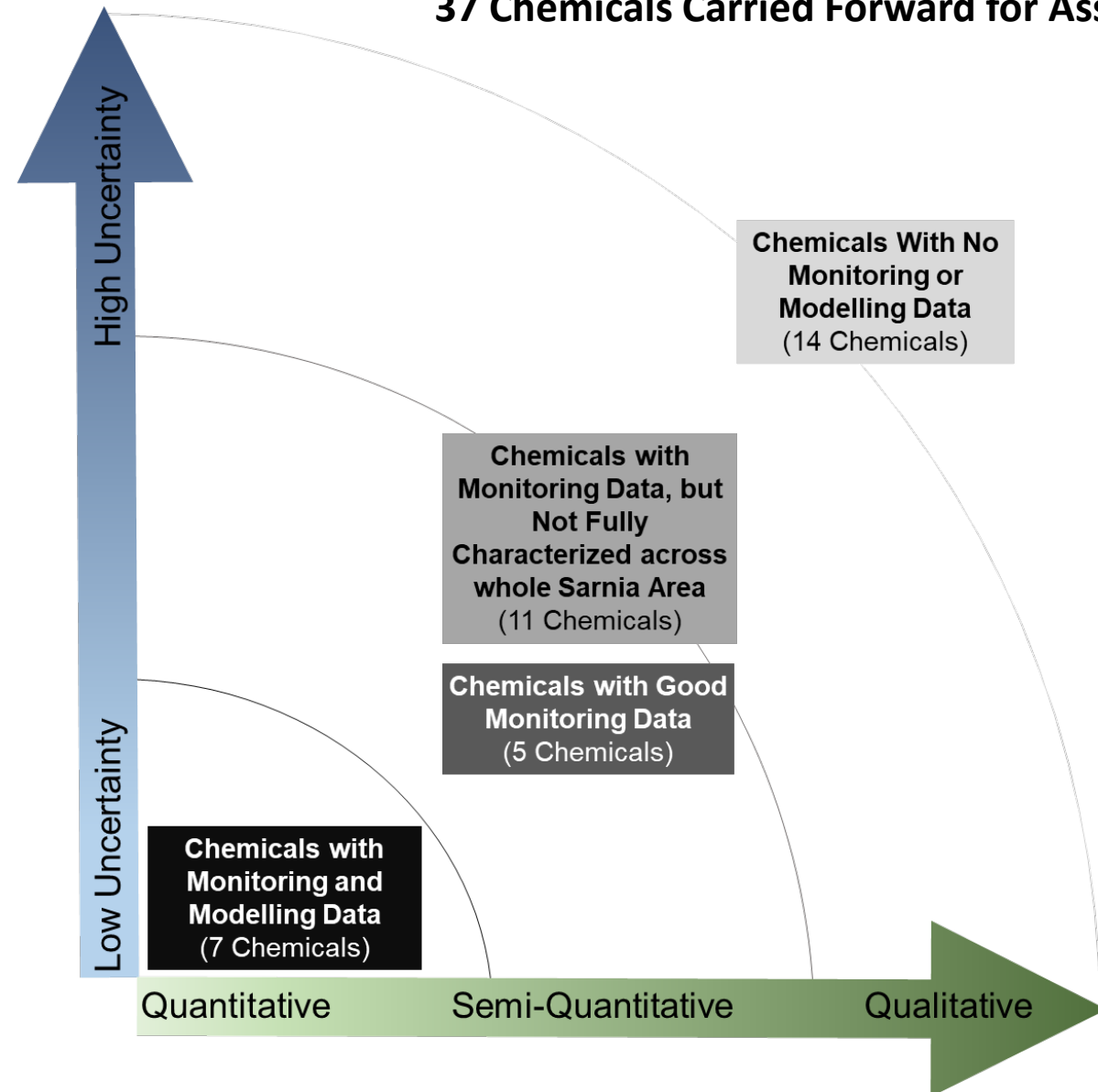


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# Identification of Chemicals for Further Study

- Under the Sarnia Air Action Plan, six chemicals have previously been identified as priorities for action:
  - Benzene, 1,3-butadiene, benzo(a)pyrene, sulphur dioxide, ozone and fine particulate matter (PM<sub>2.5</sub> and less)
- The AER Study Team completed a detailed screening process based on industry information to determine whether there were other chemicals from emissions in the area that should be identified for further assessment.
- The detailed screening process resulted in the selection of 37 chemicals for detailed assessment within the Study.

# Path Forward for Assessment of Chemicals





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# Identifying the Hazards

- To evaluate potential health risk, the measured or modelled air concentrations are being compared to benchmark values determined to be a safe level for a specific chemical.
- These benchmarks include safety factors intended to ensure the acceptable air concentrations are protective for even the most sensitive members of the population (*i.e.*, asthmatics, the elderly, immunocompromised, *etc.*).
- Our team of toxicologists and risk assessors took an independent approach at selection of these benchmarks based on a review of all relevant jurisdictions, and not just selecting those benchmarks used under Ontario regulations.

# Assessment of Potential Health Risks

- The published report will present results for specific chemicals and cumulative risks related to any like-acting chemicals across the Sarnia area.
- Chemicals have been evaluated using different approaches depending on the amount of available information
  - Chemicals with modelled and measured concentrations (full quantitative assessment)
  - Chemicals with some measured concentrations (semi-quantitative assessment)
  - Chemicals with no modelled or measured concentrations (qualitative assessment)
- Both short-term (hourly) and long-term (monthly/yearly) risks were assessed for each chemical, where data were available.
- Several modelled scenarios were evaluated for SO<sub>2</sub> emissions to address health risks related to normal, flaring, and accidental upset conditions.

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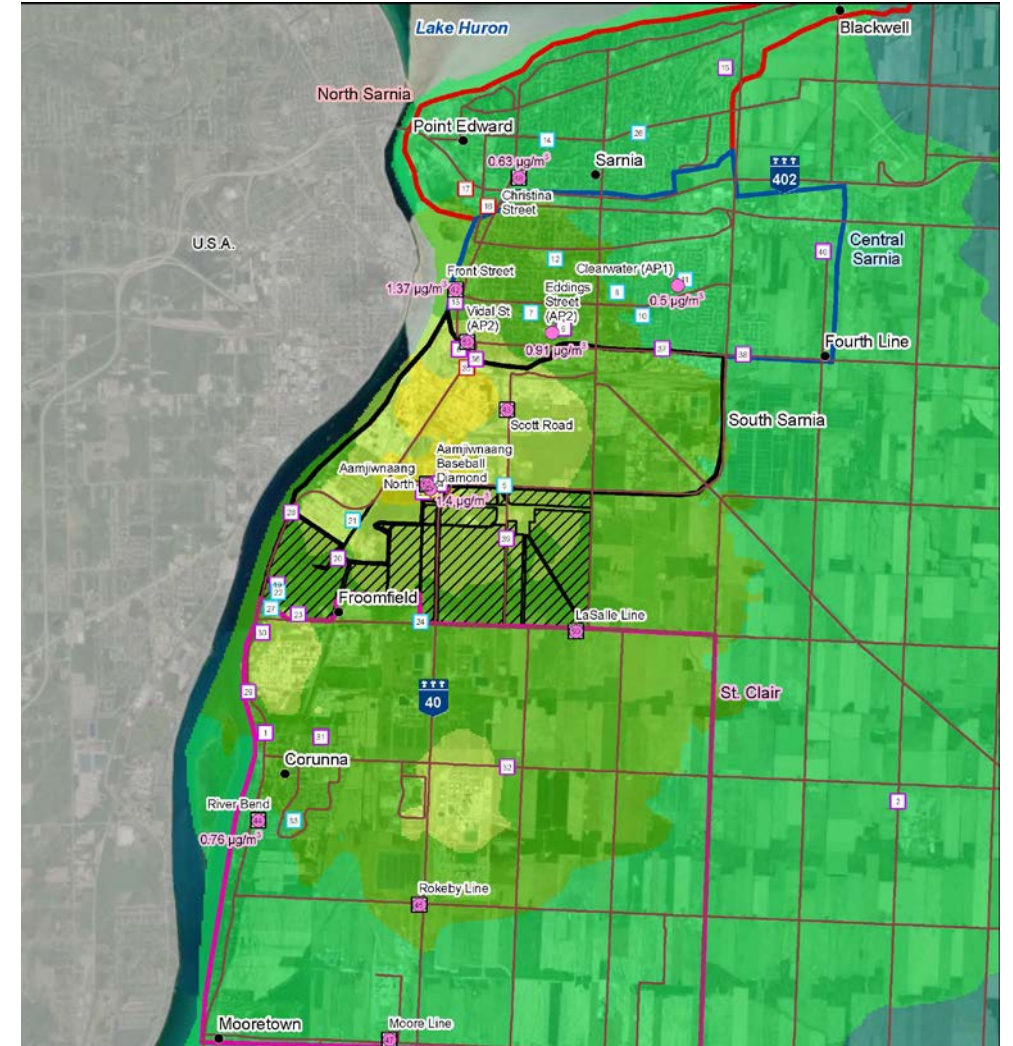
# Approach to Addressing Cumulative Effects

- The AER is considering potential cumulative effects related to the following:
  1. Cumulative risks occurring when the same chemical is emitted by multiple sources in close proximity is accounted for in both the modelling (quantitative) and monitoring (semi-quantitative) data; and,
  2. When different chemicals have the same effect on a person's health, it will be assumed that their individual risks can be added to estimate a cumulative risk.

# Presentation of Assessment Results

## Quantitative Results

- Where we have detailed monitoring and modelling data for a specific chemical, we can make more precise location-specific predictions of health risks.
- This includes graphically presenting results using coloured maps showing ranges of concentrations in different neighbourhoods. This allows us to pinpoint potential areas where air quality may be a concern.
- The monitoring data also allows us to ground truth the modelling results based on real-life measured concentrations within the community.
- We have both modelling and monitoring data for some chemicals because they are of greatest interest to the community and regulators.

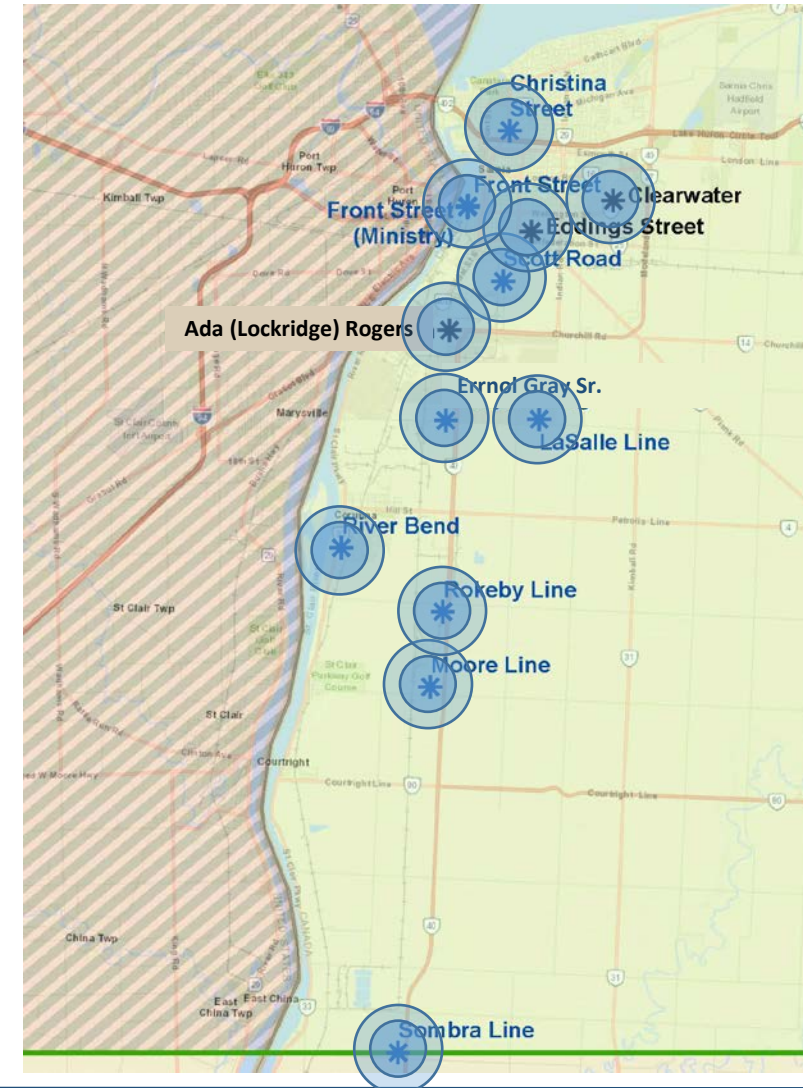




# Presentation of Assessment Results

## Semi-Quantitative Results

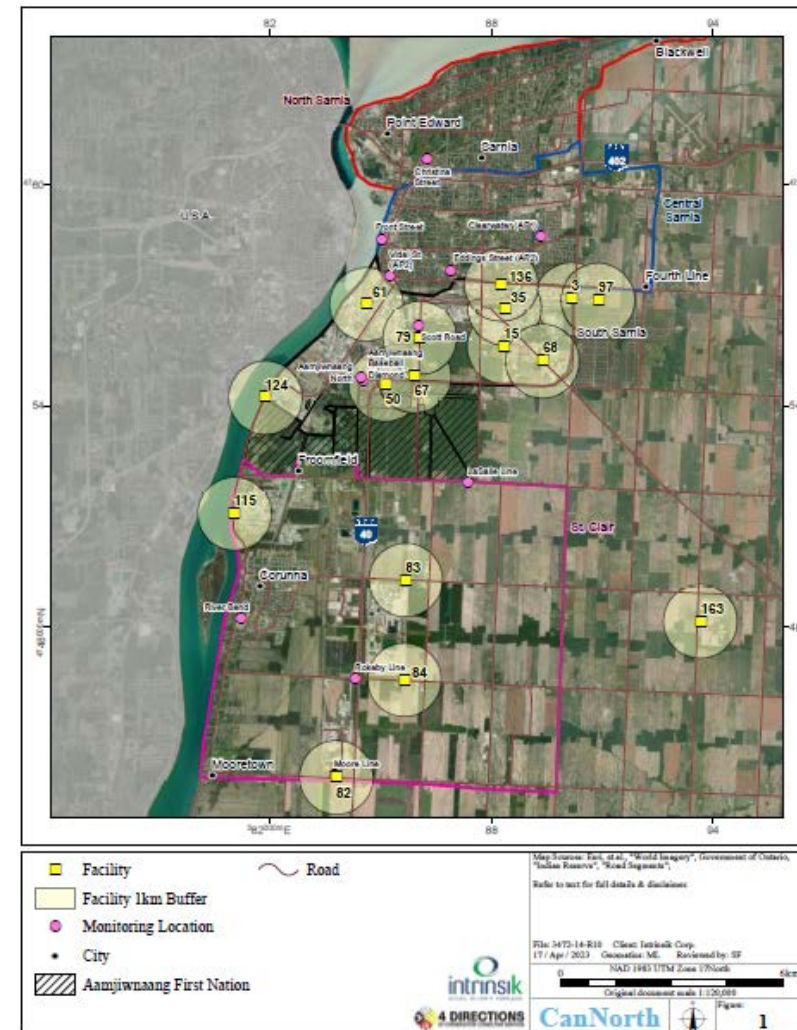
- Chemicals for which we only have measured concentrations at one or two monitoring locations allows us to predict health risks for a given area around these monitoring locations, but less confidence in broader risk predictions across the Study Area.
- Monitoring locations are spread around Sarnia, with a number situated in areas of high pollution concern, and as such, it is less likely potential impacts elsewhere in the Study Area are being overlooked.



# Presentation of Assessment Results

## Qualitative Results

- For chemicals which we have no measured or monitoring data, we have evaluated other available information, such as:
  - How close together are emitting facilities?
  - What is the environmental fate the chemical?
  - Can they be routinely monitored like other chemicals?
  - Do they have additive effects with other similar chemicals?
- These will help us inform recommendations to the MECP, Rightsholders, and key stakeholders for further assessment or monitoring of chemicals of potential concern.



Facility Locations – Cobalt and Compounds

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# What tasks are currently in progress?

- We are currently finalizing a draft of the Air Exposure Review report for review by the Government Air Exposure Review Panel (GAERP).
- Two different reports will be released publicly as part of this study:
  1. A detailed technical report outlining the methodology and results of the risk assessment
  2. A community report summarizing the key results and recommendations
- Presentation of results to the community is planned for late summer 2023.



# Miigwetch and Thank You!

## Questions and Feedback?

Please email [SAEHP@Ontario.ca](mailto:SAEHP@Ontario.ca) if you have any questions or comments for either the Ministry or the Air Exposure Review Project Team