Insights for Oilsands Emissions in the Wood Buffalo Region: Improving Health Context
19 March 2026

Summary

In 2024, facilities in the Wood Buffalo region of Alberta reported 609,441 tonnes of pollutants across all types of releases[1] to the National Pollutant Release Inventory (NPRI). Across Canada, the NPRI reported 5,680,538 tonnes of pollutants in total.

This means **more than 10%** of all reported pollution in Canada originated from this single region of northeastern Alberta, which is home to 39 First Nations and approximately 80,000 people who are disproportionately affected by environmental harms associated with oil sands development.

Nearly all reported pollutants in this region come from the non-conventional oil extraction sector (i.e. oil sands and heavy oil).

Key observations from NPRI data related to the oil sands sector include:

- 35,213 tonnes of naphthenic acids (NAFCs) were reported in 2024. This represents an ~84% increase in reported NAFCs from the Wood Buffalo region between 2020 (when reporting began) and 2024.
- NAFC releases reported almost entirely as on-site disposal in tailings management systems
- No reported NAFC releases from air or land, and only **one reported release to water bodies**[2] despite documented evaporation, spills, and seepage pathways from tailings ponds.

At present:

- The NPRI website does not provide a sector overview for non-conventional oil extraction, despite its outsized role in national pollutant releases and risk to health and the environment.
- The NPRI does not provide a substance overview for naphthenic acids, despite widespread public concern and ongoing federal investigations into their potential toxicity.

Providing basic health context and sector summaries for pollutants already reported in NPRI would significantly improve public accessibility and support federal commitments to environmental justice and the right to a healthy environment.

These improvements could be implemented using existing scientific literature and publicly available information, requiring minimal or no additional data collection.

[1] All mentions of pollutants released in this document refer to all categories of releases - releases to air, water, land, on and off site disposal, etc.
[2] Described as 1643.8 tonnes of off-site disposal/underground injection

Environmental Justice Context

In 2024, the NPRI reported that 609,441 tonnes of pollutants were released by 53 facilities in the Wood Buffalo region, an area with a population of 80,750 people[3] the same year. This represents a significant increase and concentration of pollutants from 335,829 tonnes reported by 64 facilities in 2015.

Across Canada as a whole:

- 5,680,538 tonnes of pollutants were reported by 7,638 facilities in 2024
- 4,959,048 tonnes were reported by 7,348 facilities in 2015

For comparison, the city of Edmonton, Alberta, with a population of 1,197,770 million people in 2024, reported:

- 17,333 tonnes of pollutants
- 71 facilities reporting emissions

This means that facilities in Wood Buffalo released[4]:

- **~35x more** pollution overall than Edmonton
- **~524x more** pollution per person than Edmonton

This concentration of industrial emissions in a relatively small region with a large Indigenous population, especially when compared to a major urban area, highlights why accessible pollution data and health context are essential for communities living near large industrial development sectors. Ensuring the NPRI clearly communicates potential health implications from highly concentrated pollutants (in geographic, sector, or marginalized population terms) supports Canada's commitments to environmental justice and the right to a healthy environment.

Prominence of the Oil Sands Sector in Pollutant Releases

Of the pollutants reported to NPRI in the Wood Buffalo region in 2024, 605,070 tonnes originated from the non-conventional oil extraction sector. All other sectors combined, including mining, conventional oil and gas extraction, and electricity generation, reported less than 5,000 tonnes.

This means the oil sands (and heavy oil) sector reported **138 times more pollution than all other sectors combined** in the region[5].

---

[3] https://regionaldashboard.alberta.ca/region/wood-buffalo/population/#/?from=2021&to=2025

[4] Using 2024 figures, ~7.547 tonnes of pollution released per person in Wood Buffalo/ ~0.014 tonnes per person in Edmonton; 7.547/0.014= ~524; 609441/17333= ~35

[5] 605070/4367.45= ~138.54
All other sectors = (1531.92+1236.24+724.44+627.57+115.67+78.21+35.4) = 4367.45 tonnes.
Respectively, (mining and quarrying; conventional oil and gas extraction; electricity; oil and gas pipelines

Despite this outsized contribution to national pollutant releases, **NPRI does not currently provide a sector overview for non-conventional oil extraction** explaining:

- the types of pollutants reported
- how they are generated
- potential environmental or health concerns

Health Context: Naphthenic Acids

Naphthenic acid fractional compounds (NAFCs) are complex mixtures associated with oil sands process-affected water. Research[6] has shown that these compounds:

- are toxic to aquatic organisms
- may affect human health
- are present in tailings ponds and surrounding environments

Tailings ponds themselves have been shown to create pollutant exposure pathways through evaporation, seepage and spills. Recent atmospheric measurements[7] also suggest[8] that NAFCs specifically may volatilize from tailings ponds and enter the atmosphere, creating additional exposure pathways.

According to NPRI data:

- 35,213 tonnes of NAFCs were reported in 2024 in the Wood Buffalo region
- 19,088 tonnes were reported in 2020

This represents **an ~84% increase** in reported releases since reporting began.

Nearly all reported releases were categorized as on-site disposal via tailings management, including underground injection. There were no reported releases to air, no reported releases to land, and only one year (2022) reporting releases to water bodies. This is notable given documented concerns regarding tailings pond evaporation, seepage, spills, and research on NAFC releases to air.

Without contextual information explaining potential health implications and exposure pathways, communities may find it difficult to interpret the relevance of these emissions or lose confidence in the reliability of NPRI data. It is notable that there is an ongoing federally funded

---

and storage; chemicals; other (except manufacturing); petroleum and coal product refining and manufacturing.

[6] https://ecojustice.ca/wp-content/uploads/2024/03/2024-03-11-Letter-to-Minister-Guilbeault-re-s.-76-request-to-assess-OSPW-NAs.pdf

[7] https://pubs.acs.org/doi/full/10.1021/acsestair.5c00100

[8] In 2013, (Moussa et al., 2025, Fig. 7) measured via aircraft 8,864 tonnes of NAFC emitted to air across 5 facilities (CNRL, Suncor, Shell, Syncrude, Fort Hills). A flux tower positioned next to Suncor pond 2/3 measured 6.6 tonnes emitted per year of NAFCs (18.2 kg/day) to air from the pond.

community-led health study in the Athabasca oil sands region, intended to uphold Canada's commitment to environmental justice, and which may rely on the NPRI as a reliable source of information on toxic exposures.

Although facilities report releases of naphthenic acids and their salts to the NPRI database, the NPRI website currently provides **no substance overview describing their potential health or environmental impacts and limitations in reporting.**

Recommendations

These recommendations focus on low-effort improvements using existing information to strengthen the public accessibility of NPRI data, with a health lens.

Recommendation 1: Create a Sector Overview for the Oil Sands Sector with pollutant releases and transfer data and health concerns

Create a short sector overview page, similar to existing ones, for non-conventional oil extraction summarizing:

- major pollutants reported to NPRI
    - The top 8-10 reported (by volume), including naphthenic acids, are described and relevant health information is listed; all other reported pollutants are listed.
- primary emission sources
    - Include where uncertainties, or monitoring or reporting gaps exist, to highlight that the available data is incomplete and better inform communities on their real risk exposure.
- potential health concerns

This would improve accessibility of NPRI data for communities living near oil sands facilities.

Recommendation 2: Oil Sands Health Context Summaries

Add Health Context summaries for all pollutants reported by the oil sands sector to the recommended Sector Overview. Include where uncertainties or other gaps in health information exist on health harms to highlight where the available information is incomplete and better inform communities on their real risk exposure.

These summaries should include:

- exposure pathways
- key health concerns
- references

Recommendation 3: Require Reporting of Data Limitations and Uncertainty in NPRI Submissions

Where monitoring or reporting gaps are known, NPRI pages should include a brief “Data Limitations” section outlining uncertainties in reporting. This could include, for example, known limitations in reporting for pollutants such as naphthenic acids and other substances associated with the oil sands sector.

These notes could also acknowledge uncertainties in the current scientific understanding of the environmental and health effects of reported pollutants.

To support consistency and transparency, NPRI could standardize the disclosure of data limitations and uncertainty, including requiring facilities to report known uncertainties associated with their submissions where feasible.

Providing this context would help communities interpret NPRI data more accurately and support the community’s right to know.

Conclusion

As physicians often note, we cannot prescribe a remedy without first diagnosing the problem. Without clear emissions data and health context, communities cannot fully understand the risks they face. Improving the health context for pollutants already reported in NPRI would support CEPA’s recognition of the right to a healthy environment and ongoing environmental justice efforts within Canada by ensuring communities can access and interpret pollution data in terms of potential exposures and health impacts, not just reported ones.

Prepared by: Dakota Norris, Canadian Association of Physicians for the Environment
Submitted to: Office of National Pollutant Release Inventory, Environment and Climate Change Canada
Date: 19 March 2026