

## **Backgrounder: *Does the Alberta Tar Sands Industry Pollute? The Scientific Evidence***

Timoney Kevin P, and Peter Lee. 2009. Does the Alberta Tar Sands Industry Pollute? The Scientific Evidence. The Open Conservation Biology Journal, 2009, 3, 65-81. Available at: <http://www.globalforestwatch.ca> OR <http://www.bentham.org/open/toconsbj/openaccess2.htm>

This research paper reports on the analysis of a diverse set of environmental data on water and sediment chemistry, contaminants in wildlife, air emissions, pollution incidents, traditional ecological observations, human health, and landscape changes from the Athabasca Tar Sands region, Canada.

The study documents how government agencies and energy companies have failed to provide timely, accurate and comprehensive environmental studies. The industry-led Regional Aquatics Monitoring Program was found unable to measure and assess development-related change locally or in a cumulative way.

This research paper answers this question: "To what degree are tar sands industrial activities detectable in the ecosystems of northeastern Alberta?" in four ways.

1. Do present levels of contaminants, regardless of origin, present an ecosystem or human health concern? Yes. Data indicate that contaminants of concern include PAHs, mercury, and arsenic in the lower Athabasca River system and air pollutants.
2. Is there evidence of increased levels of contaminants when sites downstream of industry are compared to sites upstream of industry? Yes. Increased levels of PAHs in the Muskeg River and of porewater metals in the Athabasca River are examples.
3. Is there evidence of increased levels of contaminants over time? Yes. Data indicate increased levels of PAHs in sediment, of mercury in fishes, of arsenic in water and sediment, and of criteria air contaminants such as PM2.5, VOCs, and sulphur dioxide. Increased rates of fish abnormalities have been observed by local fishermen.
4. Are there documented incidents of industrial pollution or degradation? Yes. Examples include spills in 1967-68, 1970, 1982, and 2007 into the Athabasca River. Pollution from the Alsands Ditch led to elevated levels of sulphate, cations, and various metals in the Muskeg River. Large numbers of birds die each year due to exposure to tailings ponds. Native biota have been obliterated from 65,040 ha of boreal landscape.

Other key points:

- The evidence reveals ecological and environmental health impacts from tar sands exploitation. Industry and government have thus far neglected to provide such information to the public.
- Present levels of some contaminants from tar sands development pose a human health risk. Elevated levels of mercury and arsenic in the local fishes

pose a dilemma due to the nutritional value of fish and the traditional-cultural and economic importance of fish to Ft. Chipewyan residents.

- The study found that air particulates pose health concerns, as they contain not only organic contaminants such as PAHs but also a suite of metals such as vanadium and arsenic.
- For years, the people of Ft. Chipewyan have believed that they are suffering increased rates of cancer, diabetes, and heart problems. Recent studies have found that incidences of several forms of cancer, type II diabetes, lupus, renal failure, and hypertension are elevated in Fort Chipewyan.
- Between 1992 and 2008, the extent of tailings ponds grew by 422% while the extent of mine pits, facilities, and infrastructure grew by 383%. These ecosystem conversions have resulted in the loss of many tens of thousands, and perhaps hundreds of thousands of birds, in addition to losses of other wildlife species.
- Given the 40-year history of licensed and unlicensed discharges into air, soil, and water, the 'baseline' predevelopment condition of the Athabasca River may have been lost long ago. Presently, we cannot quantitatively apportion contaminant levels into natural and industrial sources.
- The attention of the world's scientific community is urgently needed. The extent to which tar sands pollutants are affecting ecosystem and public health deserves immediate and systematic study. Short of this, the projected tripling of tar sands activities over the next decade may result in unacceptably large and unforeseen impacts.