

Dr Glen Van Der Kraak, Professor of Zoology & Associate Dean of Research, University of Guelph:

Many of the demonstration ponds that have been constructed on the oil sands-leased properties have been in place for 15-18 years. Recent studies done using those tailings ponds' effluence have shown that they are not acutely toxic to organisms, but rather they have a chronic toxicity. I think some of the telling work on this relates to the ability of fish to reproduce in those tailings ponds. Those ponds that have high levels of naphthenic acid show complete cessation of reproductive activity in one of the species, the fathead minnow, which is a species that is indigenous to the Alberta oil sands area.

There's some real concern that a lot of the proverbial eggs-in-the-basket are dependant upon these tailings ponds being reclaimed, and that's an uncertain and unproven technology.

The industry has coordinated a Regional Aquatic Monitoring Program that has been studying this for a number of years. This RAMP has been subject to concern and criticism by a number of panels, and now there are studies that are coming out that are questioning the results of that program...we really need to ensure that this program is continued, and it's done in a transparent manner, where the data is available to all concerned to do the analysis.

The tailings ponds are a very complex mixture of chemicals that includes a variety of metals, oil sands, related organic material including naphthenic acid, petrogenic polyaromatic hydrocarbons... We really don't know a lot about the chemistry of some of these compounds, we do not know a lot about their rates of degradation in the environment. Some of them we can see are very, very persistent. The issue is trying to define how these are going to change over time, and whether there are any strategies the industry can use to try to mitigate their degradation and ultimately their bioavailability.

We know, based on water quality guidelines, that the concentration of these contaminants needs to be reduced in order to reach the levels that are generally acceptable from Canadian or US government standards.

Dr Steve Hrudey, Chair of the Expert Panel and Professor of Environmental Health Sciences, University of Alberta

Ultimately, these tailings ponds have to be reclaimed.

For instance, at the Suncor Tar Island pond that was announced as reclaimed in September, the mature fine tailings were removed from that pond and replaced with sand. Those tailings have basically been put into other holes in the ground, ultimately the water will separate from the tailings either naturally or through treatment. And that water, something has to be done with it. It would have to be treated before being released to the Athabasca River. Or, what's been proposed are so-called end-pit lakes, which are lakes where that water would be part of the landscape. It's worth noting that the Energy Resources Conservation Board (ERCB) approved this concept in principle in 1993, and to date no one has proved that it is feasible.

Dr Anne Naeth, Professor of Ecology, Land Reclamation, Revegetation and Restoration Ecology, University of Alberta:

According to the regulations today, land has to be reclaimed after it has been mined. 'Reclamation' and 'restoration' and 'equivalent land capability' are all keywords that are used by the regulators, by industry, by government, etc., and they have different meanings. So there's always been this ongoing debate - are we actually reclaiming to the level we should be depending on which of these terms are used. One of the Panel's recommendations was that there had to be some standardization of terms.

Many people believe that you can rebuild a soil, you can re-vegetate an area, and it's going to look exactly the way it did before. We're dealing with very young landscapes in any kind of reclamation, so you're not going to see the same thing as you did prior to the disturbance. We're recommending - and this is something that has been recommended frequently - that reclamation needs to be addressed on a trajectory basis. So, are these landscapes developing in a natural way?

One of the main reasons for the lack of certification [as reclaimed] is, companies are reluctant to get a certificate saying it's reclaimed, because they may want to use that land area in the future, for storing materials, for some operational process. One of the other reasons given is that it hasn't been overly encouraged by

government or industry.

There has been a lot of research on the de-watering potential of certain types of plants, and that research took place over several decades. It just wasn't successful, so you don't really hear a lot about it. It was working but it was so time consuming that it was abandoned as a way of reclaiming the tailings ponds.

Dr André Plourde, Professor and former Chair, Dept. of Economics, University of Alberta:

There is both Canadian and international evidence that there is a tendency to have financial securities that are inferior to the total environmental liability that does occur, in situations where operators are incapable or unwilling to undertake that work. This would create a liability for the public. There are mechanisms that have been developed to address this question. Essentially, operators during the life of the project will have to post some kind of financial security, which typically takes the form of something like an irrevocable letter of credit that is left with the regulator in order to alleviate any issues relating to potential liability to the public down the road. What we've found is that there is no clear systematic way for these liabilities to be evaluated, and financial security to be collected.

Alberta Environment operates part of this project applying to surface mine activities. The ERCB basically administers the part that relates to in-situ production. The rules of the game are not similar in both cases. Just as an example, extraction plants and equivalents are covered under ERCB financial security rules but are not covered under Alberta Environment's rules. So there is at the end of this a potential liability for the public.

Technological and natural disaster risk are not looked at, especially in terms of their impact on socioeconomic factors.

In the kind of growth scenarios we considered in the Report, it's clear that greenhouse gas growth from oil sands expansion over the next few decades are going to be a major part of expected growth in Canadian GHG emissions. At neither the provincial or the federal level is there a plan in place. We conclude there is not sufficient policy in place to manage oil sands expansion at the same time as meeting Canada's international targets under the Copenhagen accord.