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Liquid Salt Could Clean Up Canadian Tar Sand

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by Jo Borrás

Despite being called "the world's most destructive project", the tar sand extraction fields in Alberta, Canada export over one million barrels of oil each day - mostly to the US. Greenpeace, National Geographic, and Canada's own governmental agencies consider Alberta's tar sands to be serious environmental threats, and I think you'd be hard pressed to find a reasonable person (these guys don't count) who has a lot of positive things to say about the tar sand oil's overall impact on the environment ... but that may be about to change.

A new technique being pioneered at Penn State University may serve to dramatically reduce the environmental impact of the oil extraction processes being used in Alberta. Currently, separating the "usable" oil from the tar sands involves mixing them with warm water, then agitating the mixture until it separates. This process requires literally tons of water, however, which is diverted from nearby rivers before being pumped into open-air "tailings ponds", where the toxic sludge can leach its way back into the water table.

Instead of using warm water from diverted rivers and streams, the new method would make use of room temperature ionic liquids (ILs), which consist of salt in a liquid state. When these ILs are introduced to a tar sand mixture and agitated, the resulting combination settles into three distinct layers (below).

As you can see, the process leaves a top layer of bitumen (tar) can be easily removed and refined.

Once the process is complete and the tar is removed, the the ILs - unlike the water being used currently - can be reused, while the now tar-free sands can be returned to the environment. The good news doesn't end there, though: because the process can make use of ILs at much lower temperatures, there are significant energy savings that come from *not* heating thousands of tons of water.

It will be interesting to see how many Albertan oil companies "pick up" on the idea, but it would certainly go a long way towards greening up the region's care-free, "petro-dollar" image.

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