THE MOST DESTRUCTIVE JECT ON E

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ENVIRONMENTAL D

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➜ **Even the largest trucks in the world seem tiny in a Tar Sands mine.** *CREDIT: DAVID DODGE, COPYRIGHT PE I A I TIT TE, / / / OI A D/ ATCH ORG*

INTRODUCTION

The Most Destructive Project on Earth

Few Canadians know that Canada is home to one of the world's largest dams and it is built to hold toxic waste from just one Tar Sands operation. Everything about the Tar Sands happens on a massive scale. The enormous toxics problems go hand-in-hand with massive global warming pollution and the impending destruction of a boreal forest the size of Florida.

Because of sheer scale, all Canadians are impacted by the Tar Sands, no matter where they live. If you live downstream, your water is being polluted and your fish and wildlife may be dangerous to eat. If you live in Saskatchewan you are a victim of acid rain. If you live in BC, "supertankers" may soon be plying your shoreline carrying Tar Sands oil to Asia. If you live in Ontario, you are exposed to harmful emissions from the refining of Tar Sands Oil. And the impacts do not stop at Canada's border – US refineries are re-tooling to handle the dirty oil from Alberta.

Moreover, no matter where you live in Canada, your desire to tackle global warming is being held hostage to the Tar Sands. Instead of reducing greenhouse gas emissions, Canada is quickly increasing them, and fully half of that emissions growth is projected to come from the Tar Sands.[1] Because Canada's elected officials refuse to clamp down on Tar Sands operators, they also refuse to clamp down on industry across Canada for fear of a double standard.

And it is just beginning. Approvals have already been given that will double the size of existing operations, and our leaders have been talking with the US government to grow the Tar Sands five-fold in a "short time span."[2] The Tar Sands are now the biggest capital project anywhere on Earth and the biggest energy undertaking anywhere. Already, Canada is the largest foreign supplier of US oil.

With the Tar Sands, Canada has become the world's dirty energy superpower.

In the service of growing the Tar Sands, the Canadian government gives tax breaks to the worst polluters; it fails to enforce its own environmental laws; and it is even engaging in cover-up when people blow the whistle on how the Tar Sands have harmed our health and our environment.

It doesn't need to be this way. Technologies are available to curb the damage, yet the Canadian government so far refuses to force industry to clean up.

As Parliament's Natural Resources Committee recently stated:

> **A business as usual approach to the development of the oil sands is not sustainable. The time has come to begin the transition towards a clean energy future.**[3]

All Canadians should join the chorus of leading figures such as Peter Lougheed, the former Premier of Alberta, in calling for a moratorium on new projects and a clean up of the Tar Sands. Premier Lougheed, originally instrumental in scaling up the Tar Sands, now says:

> **...it is just a moonscape. It is wrong in my judgment, a major wrong... So it is a major, major federal and provincial issue."**

This is Canada's problem. It's time to clean it up or shut it down.

DR. RICK SMITH
Executive Director
Environmental Defence

TOXICS DOWNSTREAM

A Giant Slow Motion Oil Spill

Toxic pollution from the Tar Sands has created what amounts to a slow motion oil spill in the region's river systems. According to leading experts, the Tar Sands may be worse in many respects than the Exxon Valdez oil spill.[5]

Scientists are worried since the levels of notorious carcinogens in sediments and waterways are steadily rising. First Nations downstream see the impacts first hand: "There's deformed pickerel in Lake Athabasca... Pushed in faces,

Poisoning People?

Not only animals and boreal ecosystems are being poisoned. Communities living downstream from the Tar Sands have seen unusual cancer clusters. A recent report for the Health Authority of one downstream community – Fort Chipewyan – found serious flaws in the monitoring programs and went on to discover dangerous and rising levels of mercury and arsenic, and raised disturbing questions about polycyclic aromatic hydrocarbons (PAHs).[10]

These chemicals could help explain the unusual cancers that have been cropping up in the community. For years, Dr. John O'Connor, the family doctor for Fort Chipewyan, has been growing increasingly worried about the number of cases of bile duct cancer (cholangiocarcinomas), colon cancers, lymphomas, leukemia, autoimmune diseases such as lupus, as well as thyroid cancers, overactive thyroid, and skin rashes.

Dr. O'Connor first raised the alarm when he found one of his patients had a rare form of cancer from which his own father had died. The cancer is so rare that O'Connor would not have expected ever to come across another case but now had as many as five suspected cases.

"I know a lot about it, but I never expected to see it again. Without treatment, you're dead in about a month. My dad lasted six weeks."[11]

Government Cover Up – Whistle-blower Silenced

For years, Fort Chipewyan has been trying to get the government to do something about the strange illnesses afflicting residents, but instead, government has covered up the situation. At the request of Health Canada and Alberta Environment, the Alberta College of Physicians launched investigations against Dr. O'Connor to stop him speaking out. The government of Alberta quickly produced a statistical study denying any toxic problems. The

Negligent Oversight

The Science of Tar Sands Pollution

The Tar Sands generate a number of toxic chemicals. Of primary concern are naphthenic acids, mercury, arsenic salts and PAHs. The levels found by independent scientists already present a toxic hazard to humans and wildlife. But even more disturbing is the fact that they are rising.[19]

◂e largest dam in t◂e world is a to ic sludge reservoir e◂ind one of Syncrude=s eart◂en dy es.

Canada's National Energy Board has warned that: "the principal environmental threats from tailings ponds are the migration of pollutants through the groundwater system and the risk of leaks to the surrounding soil and surface water.... the scale of the problem is daunting and current production trends indicate that the volume of fine tailings ponds produced by Suncor and Syncrude alone, will exceed one billion cubic metres by the year 2020."[28]

Toxic chemicals are seeping into waterways and the ponds themselves are a mega-disaster waiting to happen. Tailings dykes fail with disturbing frequency. The International Commission on Large Dams tracks major failures world-wide and finds that "Unfortunately the number of major incidents continues at an average of more than one a year. During the last 6 years the rate has been two per year."[29]

An earthquake or a severe weather event could be fatal to the downstream environment. "If any of those tailings ponds were ever to breach and discharge into the river, the world would forever forget about the Exxon Valdez," predicts Professor David Schindler, one the world's pre-eminent water scientists.[30]

Negligent Monitoring

With government outsourcing monitoring to industry, the Canadian public and environment are at risk. Consider just one example of industry's implausible conclusions. When Syncrude presents its research report, the company asserts that "Overall, produced waters are relatively benign."[31] This conclusion follows their own findings that the waters are "acutely toxic," that their "High solubility and low adsorption result in export from reclaimed areas to off-site aquatic environments," that they are "toxic to many biota" and that there are measurable "dyke seepage waters."[32]

There is no monitoring at all of the toxic chemicals travelling through groundwater. This, despite the fact that, as Canada's National Energy Board has said, groundwater is the most obvious pathway for Tar Sands poisons to travel throughout the environment and into the major waterways.[33]

With a tone of exasperation that so many years have passed without action, the federal Parliament's Standing Committee on Natural Resources has called on all government agencies to "step up research in order to: determine the true impact of oil sands activity on the Athabasca River ecosystem, as well as on Aboriginal fisheries in the Peace and Athabasca river delta."[34]

Implausible Reclamation

The Tar Sands companies say that they intend to dig up the oil and then return the region to its original state before leaving. Anyone who has visited the region can see for themselves how implausible this public relations message really is. From horizon to horizon, the Tar Sands have created a toxic moonscape of strip mines and tailings ponds. When industry is finished digging out the oil, it will leave. And as we know from similar operations in other parts of the country, Canadians will be left with the toxic legacy.

Consider the liabilities cost to the taxpayer just of the relatively small Sydney Tar Ponds, in wNiOWV Slge reWNjOWVNuOWW

TOXICS DOWNWIND

The Tar Sands are already a significant source of dangerous air pollution – a situation that will get much worse should Tar Sands expansion continue to proceed without government forcing industry to clean up.

There are many kinds of air pollution from the Tar Sands. We will focus here briefly on two main areas – the benzene, and acid rain.

Emissions Exploding

Tar Sands workers and local residents don't have the option of holding their breath in the summertime, but it might otherwise be recommended. The summer heat releases thousands of tonnes of volatile organic compounds (VOCs) from the exposed tailings ponds, including large amounts of benzene.

Benzene is a human carcinogen for which long-term exposure can result in leukemia, a potentially fatal cancer of the blood-forming organs. It is a "non-threshold" pollutant, meaning that there is a risk of harm at any level of exposure.

Environment Canada estimates that Tar Sands releases of benzene are now about 100 tonnes per year, and could grow to 500 to 800 tonnes per year by 2015.[39]

➜ **Tar Sands toxic ponds are already visible from space.** *CREDIT: GARTH E*

As for the broader category of VOCs that contains other dangerous chemicals, the Tar Sands released 63,000 tonnes in 2006, and this could grow to 200,000 tonnes per year by 2015 based on current trends.[40]

The Government of Canada is contemplating new regulations for various air pollutants, including VOCs. Incredibly, these proposals would sanction a 60% growth in VOCs from the Tar Sands by 2015.[41] The Government is considering a future cap on benzene for the Tar Sands, but in a clear double standard it is already pressing ahead with regulating benzene from the natural gas, iron and steel sectors.[42]

Raining Acid on Saskatchewan

When Canada's former Environment Minister Rona Ambrose started her job, she was warned by her staff about

TOXICS DOWN THE PIPE

Because bitumen and synthetic crude is piped far away from the Tar Sands for processing, the toxic impacts of the Tar Sands affect people hundreds and even thousands of kilometres away. This makes the toxic impacts of the Tar Sands a North American problem.

Alberta's Sacrifice Zone – Upgrader Alley

Oil from the Tar Sands is not initially in liquid form like oil found elsewhere. The thick bitumen must first be "upgraded" into synthetic crude before it gets refined into end products like gasoline or jet fuel.

Some of this upgrading occurs at Tar Sands operations themselves, adding to the pollution created on site. Increasingly, however, bitumen is piped south to Edmonton or into the US.

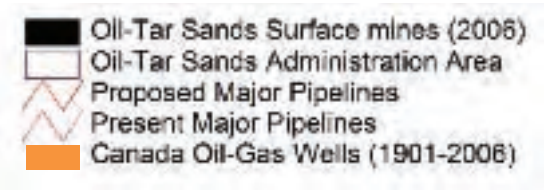
Shell built the first upgrader northeast of Edmonton, and there are two more under construction and up to 10 more in various stages of development, earning the area the nickname "Upgrader Alley."[53] In 2006 the one Shell upgrader alone reported releases of over 6,000 tonnes of sulphur dioxide, 850 tonnes of nitrous oxides, 200 tonnes of VOCs.[54]

This does not include "fugitive" or unplanned emissions that can also be significant in quantity. Facilities are also at risk for dangerous accidents such as the one that took place in November of 2007 at the Shell facility.[55] In case of emergencies, local residents may have to evacuate or 'shelter in place' – staying indoors and sealing a small room with duct tape or wet cloths until chemicals in the air dissipate.[56]

➜ **Sarnia is already heavily**

In 2005 and 2007, an independent and prize-winning air pollution specialist studied the area and found that existing levels of pollution already rival the most polluted cities in China.[57] This included elevated levels of benzene near the Shell complex that should be of concern to employees there. The results disputed the conclusions from industry air monitoring for the areaanFVFVFj_TYaeYYbNrOWVNsheerNconcernOSYntngOSaSYb_NspOSYYbNconcesbNe

Tar Sand oil is piped across North America and starting to be shipped overseas. *CREDIT: G O A ORE T/ ATCH CA ADA*



At 70,000 barrels per day, the Suncor Sarnia refinery that processes Tar Sands oil is the fourth largest polluter in the region, sending out over 10 million kilograms of toxic air pollutants in 2005.[61] But, the Suncor refinery is ranked number one in the region in terms of the chemicals released that are known or suspected to be reproductive or developmental toxicants.[62]

The Aamjiwnaang First Nation in Chemical Valley is experiencing disturbing impacts from the pollution as twice as many girls are being born as boys. Moore Township next to the reserve is also experiencing a lower male birth rate, and scientists have found evidence of "feminized" turtles in the St. Clair River that runs through the area.[63] It is not known, however, what exactly is causing these results, and many types of heavy industry exist there.

Shell is building a new refinery for Tar Sands oil in the Sarnia area that will be two to three times bigger than the Suncor plant, thereby significantly adding to the pollution in the area.

Exporting Toxics to the USA

Refineries for Tar Sands oil are also exposing Americans to toxic substances. A high-profile battle is underway because of plans by BP to expand its refinery in Whiting, Indiana to process more Tar Sands oil. Already one of the biggest polluters of Lake Michigan, the refinery received permission from the State of Indiana to increase ammonia emissions by a half and solids by a third.

Chicago Mayor Daley is opposed: "Our great resource is Lake Michigan. Our drinking water – the whole idea of quality of life: both the lake and the river," he says. "That is our front door, back door…The idea of dumping now into the lake again is really unacceptable."[64]

BP promised to go ahead with the expansion while adhering to pre-expansion pollution levels, but admits that it does not know how to do this, nor has it been willing to give up its new higher pollution permits.[65]

In South Dakota, Hyperion Resources is moving ahead with plans to build the first new refinery in the US since 1976 – this one sourcing Tar Sands oil and nicknamed "the Gorilla project" for its huge size of 400,000 barrels a day, which would be the sixth largest refinery in the United States. The company wants to site the refinery in an economically depressed area where the jobs will be welcomed, and has even billed the project as "green" but without saying how much pollution will go into surrounding air and water, and also not talking about the destructive nature of the Tar Sands themselves.

In the spring of 2007, Husky Energy bought a refinery in Lima, Ohio to convert to processing Tar Sands oil, following a deal between EnCana and ConocoPhillips in 2006 to gain access to three of Conoco's US refineries for Tar Sands oil.[66] In December 2007, Husky also partnered with BP to process Tar Sands oil in a Toledo, Ohio refinery.[67] Tar Sands oil is already being processed in Commerce City, CO, Rosemont MI, Toledo, OH, Superior WI, and Warren, PA.[68]

"…e idea of dumping now into t…e la… e again is really unaccepta… le." – Chicago Mayor Daley

A TOXIC FUTURE – TAR SANDS AND GLOBAL WARMING

In this way, the rest of Canada's progress on global warming is being held hostage by the Tar Sands.

To create the appearance of doing something, the Canadian government has fallen back on issuing "intensity" targets that cut emissions per unit of production, but allow overall emissions to rise as production rises. This is tailor-made to give the Tar Sands producers the loophole they need to profit from global warming.

The Government of Canada's estimates that its "intensity" system will allow Tar Sands emissions to grow to 75.5 million tonnes in 2020, which is almost a doubling of current emissions.[76] If we believe that number – remembering that there's no actual cap – that would mean that the Tar Sands alone would wipe out all of the emissions cuts promised by BC by 2020.[77]

And of course, this is if the government's 2020 target is met. Virtually every independent analyst from the CD Howe Institute to the Deutsche Bank has concluded that Canada will not even meet its new watered down emissions targets,[78] let alone meet targets that scientists tell us are needed to avoid the most dangerous impacts of global warming.

Most perversely, Tar Sands companies may actually be paid for their emissions growth. According to the Tyndall Centre for Climate Research, Tar Sands companies could earn between $30 million and $700 million from selling carbon credits based on reduced greenhouse gas emissions per barrel of oil, while their actual global warming emissions double or triple. This is because the federal government's proposed rules for large polluters are set at a level that is less demanding than what has already been voluntarily committed to by some companies.[79]

anada s progress on glo al warming is eing eld ostage y t e ar Sands.

A Tar Sands Tax

There are signs that the leadership vacuum created by the federal government's weak climate change policies will be filled by other governments.

Pioneered in California as part of Governor Schwarzenegger's battle against global warming, the Low Carbon Fuel Standard (LCFS) will require sellers of transportation fuels to cut the carbon content of their fuels by at least 10% by 2020, taking the life cycle of production of fuels into account.[80]

A life cycle approach is important because deriving a barrel of Tar Sands oil causes as much as three times the greenhouse gas pollution as a regular barrel of oil.[81] California's fuel importers will therefore need to steer clear of Tar Sands oil or face penalties. In this way, other jurisdictions are moving towards a Tar Sands tax because of Canada's failure to act.

The Tar Sands industry can afford it. Oil is now flirting with the $100 per barrel mark, opening up a large profit margin for all oil companies, including Tar Sands operators who face relatively higher costs. In 2006 Suncor made $3 billion[89] and Canadian Oil Sands Trust that owns just over a third of Syncrude made $834 million.[90] Clearly,

Canadian Environmental Protection Act

The Canadian government calls CEPA "the cornerstone legislation for preventing pollution in order to protect Canada's environment and the health of Canadians."[94] CEPA allows the Canadian government to designate a substance as "toxic" and thereby to regulate it. The law could therefore be a very powerful tool for cleaning up the Tar Sands.

The problem, though, as with many Canadian laws, is that discretion is left in the hands of government as to what substances earn this designation and what kinds of regulations then result, if any. For example, while there are tens of thousands of toxic substances that are harmful to human health, only a few dozen so far make Canada's list for action.

In 1999 and 2002, Canada's independent Environment Commissioner reviewed the performance of the Government of Canada under CEPA and found performance wanting. In 2002 she stated: "The processes we observed seem to defy timely, decisive, and precautionary action...We are leaving our children the responsibility of assessing, and certainly of managing, toxic substances in use today."

“Wit◂ eac◂ additional oil sands project, t◂e growing

Alberta Law

The federal government has largely deferred to Alberta on Tar Sands management since natural resources fall within provincial jurisdiction. Environmental protection, however, is a shared responsibility, which is why federal laws should apply, particularly due to the trans-boundary nature of Tar Sands pollution.

To expect that Alberta's legal framework will ensure environmental protection in the Tar Sands would be misguided. Alberta continues to lead the battle against meaningful greenhouse gas caps in Canada and has a culture of resisting environmental progress. For example, Alberta's energy regulator was recently caught spying on people opposed to an electricity line,[103] and its politicians continue to claim that it is a leader in protecting the environment, even when the evidence is firmly to the contrary.[104]

Alberta's main pollution legislation – the *Environmental Protection and Enhancement Act* – relies heavily on "objectives" and "codes of practice" instead of mandatory limits. Like Canada's federal government, Alberta has largely ceded environmental management of the Tar Sands to the industry-led multi-stakeholder bodies in Fort McMurray.

CONCLUSION

Clean It Up Or Shut It Down

While it is a stretch to believe the Tar Sands can ever be truly sustainable, there is much that can be done to clean it up. Technology either currently exists or is close to commercialization that can mitigate many of the worst impacts. The challenge is finding the political will in the Government of Canada and Alberta to require industry to make meaningful progress. New Tar Sands approvals should wait until these kinds of reform elements are implemented:

• **Pass a real carbon cap.** The federal government's flawed "intensity" caps will ensure that Tar Sands emissions grow, not shrink. Hard caps need to be put immediately on Tar Sands emissions, and compliance with those caps must set a price on carbon that has industry pay at levels that result in the deployment of carbon capture and storage no later than the next few years.

• **Use dry tailings.** Tar Sands waste can be put in a dry form rather than into wet tailings ponds that leach pollution into the groundwater and are the source of VOC emissions. Dry tailings would also reduce water withdrawals from the Athabasca River. Care must be taken, though, to cap dry tailings to avoid wind erosion.

• **Require wildlife offsets.** By their very nature, Tar Sands operations cannot be made friendly to wildlife and

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