

Toxic Tar Sands Oil

AN ASSAULT ON AMERICAN WATER, AIR, HEALTH AND JOBS

ON July 26, 2010 an Enbridge tar sands pipeline ruptured in Michigan, spilling one million gallons of toxic crude into the Kalamazoo River, a major tributary of Lake Michigan. The crude oil contaminated more than 30 miles of river and forced evacuations for dozens of families. The lasting damage to the Kalamazoo River and Lake Michigan watershed may take years to resolve. This spill, the worst in Midwest history, is only the latest in a string of ongoing environmental disasters stemming from the production and distribution of the world's dirtiest oil from the Alberta tar sands.

Tar sands oil is an environmental and health nightmare. Strip-mined in the boreal forests of northern Alberta, it is the most toxic form of oil on Earth. Tar sands oil is laden with sulfur, arsenic and heavy metals, and contaminates vast amounts of fresh water in processing. Mining and refining tar sands crude produces up to three times as much greenhouse gas per barrel as conventional crude oil. America currently consumes 1.35 million barrels of tar sands oil each day. Planned expansions will nearly triple our reliance on this toxic fuel.¹

The safe life span of the average oil pipeline is only fifteen years, and most pipelines in the U.S. are much older.² The Enbridge pipeline that burst in Michigan is 41 years old, and has no plans for retirement. Unfortunately pipelines are not always reliable even within the first fifteen years, and even the newest pipelines have already reported leaks.³

A planned expansion of tar sands pipelines and refineries in the United States poses a grave threat to our farmland, water, and communities—not just from massive spills like the one in Michigan, but from toxic pollution known to lead to health problems like cancer and emphysema.



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¹ Hobbs, David, and James Burkhard. *The Role of Canadian Oil Sands in US Oil Supply: Special Report*. IHS Cambridge Energy Research Associates. IHS CERA, Apr 23, 2010. Web. Aug. 11, 2010. <<http://www.cera.com/asp/cda/client/report/reportpreview.aspx?CID=11113&KID=>>>..

² Epstein and Selber, eds. "Oil: A Life Cycle Analysis of its Health and Environmental Impacts." *The Center for Health and the Global Environment*, Harvard Medical School. March 2002.

³ Heidelberg, Cory Allen. "TransCanada Keystone Springs Two Leaks in Two Months, Meets Century Spill Quota." *Madville Times*. N.p., July 29, 2010. Web. Aug. 18, 2010. <<http://madvilletimes.blogspot.com/2010/07/transcanada-keystone-springs-two-leaks.html>>.

TAR SANDS OIL POISONS OUR AIR

PROCESSING TAR SANDS OIL RELEASES POLLUTANTS directly linked to asthma, emphysema and birth defects into American communities. Because tar sands oil is a heavy, low-quality form of crude, it requires extensive 'upgrading' to be transformed into fuel. Refining tar sands crude creates far more air pollution in American communities that are already burdened with cancer and poor air quality as a result of oil industry activities. Tar sands oil contains, among other toxic metals, 11 times more sulfur and nickel, six times more nitrogen, and five times more lead than conventional crude oil.¹

Heavy metals and polycyclic aromatic hydrocarbons released in tar sands refining have been linked to pre-natal

brain damage. Nitrogen oxides, along with volatile organic compounds released in tar sands refining are the principle causes of smog and ground-level ozone. Exposure to nitrogen oxides is a direct cause of asthma, emphysema and other lung diseases.

With plans to triple refining and transportation of tar sands by 2015, there is no question that air pollution—and health problems—in communities from the Great Lakes to the Gulf Coast will increase.

- 1 Benjamin J. Wakefield. The Environmental Integrity Project. "Feeding U.S. Refinery Expansions with Dirty Fuel." June 2008. http://environmentalintegrity.org/pdf/publications/Tar_Sand_Report.pdf Web. July 8, 2010. p. 4.

TAR SANDS OIL CONTAMINATES OUR CLEAN WATER

TAR SANDS PRODUCTION WASTES AND CONTAMINATES tremendous amounts of water. Every barrel of oil produced requires four barrels of water. In this process, water is pumped into toxic waste reservoirs large enough to be seen from space. The mercury, lead and arsenic in tar sands waste threaten human health, even at small levels of exposure. Already, communities downstream from tar sands mines in Canada report 500 times more incidents of rare bile duct cancer than those who do not live near the tar sands¹.

Expanded reliance on this dirty oil would put important American water sources at risk. Canadian pipeline companies currently operate 1,900 miles of oil pipelines in and around the Great Lakes watershed, which supplies 25 million people with drinking water.

Tar sands oil contains elevated levels of many known carcinogens and toxins. In a recent study, tar sands wastewater 'tailings' from extracting oil were found to contain ammonia, benzene, cyanide, phenols, toluene,

polycyclic aromatic hydrocarbons, arsenic, copper, sulphate, and chloride². Many of these chemicals are highly toxic and known to cause cancer, and regularly leach into groundwater from the massive lakes used to store tailings³. These chemicals are present in tar sands oil before and after processing, and will end up in American groundwater when pipelines leak.

- 1-5 Brethour, Patrick. May 25, 2006 "Why is Cancer Sweeping Ft. Chipewyan?" The Globe and Mail Update
- 2 Moorehouse, Jeremy, E.I.T. Appendix One: Methodology and Sample Calculations. The Pembina Institute. The Pembina Institute, Dec. 2008. Web. Aug 19, 2010. <<http://www.ceaa.gc.ca/050/documents/44671/44671E.pdf>>.
- 3 Price, Matt. 11 Million Litres A Day: The Tar Sands' Leaking Legacy. Environmental Defense . Environmental Defense Canada, Dec. 2008. Web. Aug 19, 2010. <http://www.environmentaldefence.ca/reports/pdf/TailingsReport_FinalDec8.pdf>.

From Montana to Texas:

AMERICAN COMMUNITIES AT RISK

THE KEYSTONE XL PIPELINE: A THREAT TO AMERICA'S HEARTLAND

The largest proposed tar sands pipeline expansion, the Keystone XL, will slice through six states, including Montana, North Dakota, South Dakota, Nebraska, Oklahoma and Texas.

This massive pipeline is nearly 2,000 miles long. It threatens hundreds of acres of wetlands and 91 streams that support large recreational and commercial fisheries, in addition to thousands of smaller streams and waterways. Worse, the pipeline jeopardizes one of the most important agricultural aquifers in the nation, the Ogallala aquifer. Equal in volume to Lake Huron, the Ogallala aquifer supplies the breadbasket of America with fresh water. One-third of all irrigated American farmland relies on water from this single aquifer, supporting one-fifth of all cattle, wheat, and corn grown in the United States.

To make matters worse, TransCanada, the company behind the Keystone XL pipeline, has proposed using cheaper steel for the pipeline, needlessly exposing American communities along much of its route to risk of spills.

NEBRASKA

In addition to the Ogallala aquifer, the Keystone XL pipeline will traverse some of Nebraska's most important rivers and fisheries, including the Niobrara River, the Elkhorn River, Cedar River, Loup River, and the West Fork of the Big Blue River. Even the oil industry admits it can't prevent pipeline spills. Despite their continued assurances of safety, pipeline companies know their products are inherently unsafe. A spill in this area of Nebraska would be disastrous for the Ogallala and major Nebraska Rivers. The Niobrara River area is of particular concern, since it flows above shale deposits that are highly prone to fracturing and sinking, making underground pipes especially risky.

These important rivers are home to a vast array of birds and aquatic life, as well as large recreational fisheries, which are particularly vulnerable to oil contamination.

OKLAHOMA

In Oklahoma, the Keystone XL pipeline will cut through the Okmulgee State Park and Deep Fork Wildlife Management Area. The Deep Fork Wildlife area is one of the only public hunting areas in Oklahoma. The Canadian River, Red River, and six other sensitive and protected waterways in Oklahoma will be exposed to threats from tar sands contamination in construction and operation of the Keystone XL pipeline.¹

In addition to thousands of Oklahoma farmers who rely on fresh water from the Ogallala aquifer, anglers and residents living near these waterways will be hit hard by a pipeline spill.

MONTANA

In Montana, the Keystone XL pipeline will cut through historic sites near the confluence of the Milk and Missouri Rivers--sites so important that they are under consideration for Montana State Park designation. The pipeline will also cross some of the state's largest and most vital rivers, including the Missouri and the Yellowstone.

The Missouri is the second-largest tributary of the Mississippi River, and the longest river in the country. The Yellowstone River is the longest undammed river in the lower 48 states. These massive rivers serve as major sources of fresh water to Montana's arid regions. Spills in these rivers would prove disastrous for the state.

The Keystone XL pipeline will also cross nearby tributaries of Lake Fort Peck.² This lake is among the largest in eastern Montana, supporting a large fishing and boating community and tourism industry. The Keystone XL pipeline would threaten Montana residents and visitors who count on clean water and fresh fish from Lake Fort Peck.

¹ Orlando, Elizabeth, Esq. *Draft Environmental Impact Statement: Keystone XL Pipeline Project. US Department of State, Keystone XL Project.* United States Department of State, Apr 20, 2010. Web. Aug 16. 2010. <<http://www.keystonepipelinexl.state.gov/clientsite/keystonexl.nsf?Open>>.
² Orlando, Elizabeth, Esq. *Draft Environmental Impact Statement: Keystone XL Pipeline Project. US Department of State, Keystone XL Project.* United States Department of State, Apr 20, 2010. Web. Aug 16. 2010. <<http://www.keystonepipelinexl.state.gov/clientsite/keystonexl.nsf?Open>>.

**"CAN WE PROMISE THERE WILL NEVER BE AN ACCIDENT?
NO. NOBODY CAN".** -PATRICK DANIEL, THE CEO OF ENBRIDGE ENERGY

TEXAS

In Texas, the Keystone XL pipeline will traverse sixteen large rivers. It will crisscross several rivers that are listed as sensitive and protected, including Big Sandy Creek, Angelina River, Neches River, and the Pine Island Bayou.

These rivers and drainages feed 21 lakes and municipal reservoirs, including the Pat Mayse Lake, Lake Tyler, and Lake Cypress Springs,³ supporting robust fishing and tourism industries. As the BP disaster in the Gulf showed, oil spills can be devastating to tourism. It's not worth putting these major Texas lakes at risk from a toxic pipeline disaster.

Water contamination isn't the only concern, however. Ninety percent of the increased refining capacity accompanying the proposed Keystone XL pipeline will likely occur in Port Arthur and Houston, an area already plagued with poor air quality.⁴ In fact, a Rice University study found that levels of cancer-causing chemicals produced in oil refining are already much higher in Houston than in any other city—in some cases, twenty times higher.⁵ If the Keystone XL expansion is built, Houston residents can expect to see an increase in the kind of air pollution that leads to these serious health problems.

TAR SANDS EXPANSION: PUTTING THE GREAT LAKES REGION AT RISK

The Great Lakes region is already home to the largest overland pipeline network on the planet, Enbridge's Lakehead system, and one of the highest concentrations of pipeline leaks and breakages in North America.⁶

Up to seventeen major tar sands refinery expansions are in the works or already developed in and around the Great Lakes, threatening to bring air pollution and health problems to residents in the region.⁷

- 3 Orlando, Elizabeth, Esq. *Draft Environmental Impact Statement: Keystone XL Pipeline Project*. US Department of State, Keystone XL Project. United States Department of State, Apr 20, 2010. Web. Aug 16, 2010. <<http://www.keystonepipeline.lx.state.gov/clientsite/keystonexl.nsf?Open>>.
- 4 Richard B. Kuprewicz. Accufacts Inc. "PADD III & PADD II Refinery Options for Canadian Bitumen Oil and the Keystone XL Pipeline." June 29, 2010. p. 2
- 5 Ward, Jr. Ph.D., Jonathan B., and Matthew P. Frazer, Ph.D. *The Control of Air Toxics: Toxicology Motivation and Houston Implications*. Rice University Department of Civil and Environmental Engineering. Rice University, Oct 3, 2006. Web. Aug 11 2010. <http://ceve.rice.edu/research.cfm?doc_id=4206>.
- 6 Fenton, Cameron. "Ruptured Enbridge Pipeline a Sign of Things to Come." *The Media Co-Op*. Dominion News Cooperative, July 28, 2010. Web. Aug 16, 2010. <<http://www.mediacoop.ca/story/ruptured-enbridge-pipeline-sign-things-come/> 4313>.
- 7 David Israelson. "How the Oil Sands Got to the Great Lakes Basin: Pipelines, Refineries and Emissions to Air and Water." *The Program on Water Issues*. Munk Center for International Studies. October 2008.

INDIANA

In Whiting, Indiana, a refinery owned by BP is expanding to handle thick tar sands crude oil. Because it lies in a densely populated area just outside Chicago, at the corner of Lake Michigan, this expansion will impact air quality for millions of residents across three states. Studies estimate emissions of particulate matter may increase 21 percent with the expansion.⁸ The BP Whiting refinery already discharges forty five toxic compounds into Lake Michigan, including benzene, toluene, mercury, lead, nickel and vanadium.⁹ The refinery is the top industrial source of lead, nickel and ammonia, and one of only two industrial polluters that still dumps mercury directly into Lake Michigan.¹⁰

In fact, the BP Whiting refinery is also the number one source of mercury in Lake Michigan.¹¹ A permit loophole has allowed the refinery to release an average of 671.5 pounds of mercury into Lake Michigan every year.¹²

MICHIGAN

We've already seen the impacts of a pipeline spill in Michigan. Now, tar sands refinery expansions threaten the state's air. The Marathon refinery in Detroit recently approved plans for a massive expansion to process tar sands crude, in the heart of Michigan's Oakwood Heights neighborhood. The neighborhood, which sits adjacent to the Marathon tar sands refinery, has the highest rate of pollution in Michigan, according to the University of Michigan and Karmanos Cancer Center. Thirteen of Detroit's twenty-seven polluting industries operate in the Oakwood Heights area. Bringing toxic tar sands to this area would increase health threats in a community that is already unfairly burdened by pollution.

- 8 "BP Whiting Refinery Expansion." *Dirty Oil Sands*. Dirty Oil Sands.org, 2009. Web. Aug 16, 2010 <http://dirtyoilsands.org/dirtyspots/article/bp-whiting_refinery_expansion/>.
- 9 "Detailed Facility Report: BP AMOCO Oil Company Whiting Refinery." *Enforcement and Compliance History Online*. Enforcement and Compliance History Online (ECHO). U.S. Environmental Protection Agency, Aug 18, 2010. Web. Aug 17, 2010. <<http://www.epaecho.gov/cgibin/get1cReport.cgi?tool=echo&IDNumber=110000398338>>.
- 10 Hawthorne, Michael. "BP Dumps Mercury in Lake." *Chicago Tribune* [Chicago, IL] July 27, 2010, Tribune Exclusive ed.: n. page. Web. Aug 17, 2010. <http://www.chicagotribune.com/services/chimercury_27jul27,0,6726083.story>.
- 11 Hawthorne, Michael. "BP Dumps Mercury in Lake." *Chicago Tribune* [Chicago, IL] July 27, 2010, Tribune Exclusive ed.: n. page. Web. Aug 17, 2010. <http://www.chicagotribune.com/services/chimercury_27jul27,0,6726083.story>.
- 12 "Detailed Facility Report: BP AMOCO Oil Company Whiting Refinery." *Enforcement and Compliance History Online*. Enforcement and Compliance History Online (ECHO). U.S. Environmental Protection Agency, Aug 18, 2010. Web. Aug 18, 2010. <<http://www.epaecho.gov/cgibin/get1cReport.cgi?tool=echo&IDNumber=110000398338>>.

Tar Sands Oil

A BARRIER TO AMERICA'S CLEAN ENERGY FUTURE

Photo: U.S. National Transportation Safety Board



Photo: David Dodge, Pembina Institute

TAR SANDS OIL HAS NO PLACE in America's clean energy future. America's addiction to oil has created a growing threat to our national security, and importing toxic tar sands oil will make it worse. Canadian oil companies stand to make windfall profits from our addiction, and industry front groups for major tar sands developers are waging a massive lobbying and legal campaign against policies to reduce our dependence on oil, like California's low carbon fuel standard.¹³

While measures to reduce global warming pollution and oil dependence—like a national Low Carbon Fuel Standard—would spur development of cleaner fuels and American jobs, tar sands companies are spending millions lobbying Congress to block them.¹⁴

We already send over one billion dollars a day to foreign countries in exchange for oil, bolstering their economies instead of making clean energy at home. In 2010 tar sands became the number one oil import in the United States, and we are projected to spend \$47.4 billion on Canadian crude this year.¹⁵ Instead of exporting billions of dollars and putting American farmland and water at risk with foreign crude pipelines, we could be investing in self-sufficiency and clean, homegrown American energy. Every dollar we spend importing oil is a dollar taken away from growing green, clean jobs at home.

Clean energy is already a thriving business in the United States. The

number of clean energy jobs in the United States grew 9.1 percent between 1997 and 2008, while jobs overall only grew by 3.7 percent.¹⁶

In just one example, Michigan, the site of the massive Enbridge pipeline disaster, has seen sixteen new electric vehicle technology plants open in the past year alone, creating new jobs in the wake of a crashing auto market. These plants are projected to create 62,000 new jobs over the next decade. What's more, American wind energy continued its pattern of growth in 2009, despite the recession.¹⁷

Efficiency measures alone can save more oil than the tar sands can provide, and will save billions in American dollars—money that could be invested in domestic clean energy jobs.¹⁸

Expansion of tar sands pipelines and refineries will only bring health problems, air pollution, water contamination, and a constant risk of oil spills. The only way to make our nation more secure, healthy and prosperous is to reduce our dependence on oil by building a 21st century transportation system and investing in clean energy like wind and solar power.

The Keystone XL pipeline will deepen our reliance on foreign, dirty fuels and undermine American clean energy jobs. A massive tar sands expansion stands in the way of our clean energy future, threatens our most precious agricultural and water resources, and puts American health at risk.

¹³ Gerard, Jack N. "Energy Citizen Rally Update." Memo to API Member Companies. Aug. 2009. *desmogblog.com*. Web. Aug 19, 2010. <<http://www.desmogblog.com/sites/beta.desmogblog.com/files/GP%20API%20letter%20August%202009-1.pdf>>

¹⁴ "Executive Summary: Crude Oil Markets." *2009 Crude Oil Forecasts, Markets and Pipeline Expansions*. 4-5, 19. *ISSUU You Publish*. Canadian Association of Petroleum Producers, 2009. Web. Aug 17, 2010. <<http://issuu.com/capp/docs/www.capp.ca>>.

¹⁵ Workman, Daniel. "Costs For US Crude Imports Rise so Far in 2010." *Suite 101*. Suite 101, July 6, 2010. Web. Aug 11, 2010. <<http://news.suite101.com/article.cfm/costs-for-us-crude-oil-imports-rise-so-far-in-2010-a258306>>.

¹⁶ "The US Clean Energy Economy: A Look at Jobs, Savings, Investment, Competitiveness, and the Costs of Inaction." *Center for American Progress: Energy & Environment*. Center for American Progress, Nov 17, 2009. Web. Aug 11, 2010. <http://www.americanprogress.org/issues/2009/11/us_clean_energy_economy.html>.

¹⁷ Stingley, Hilary. "US Wind Energy Reports Record Growth in 2009." *Green Chip Stocks*. Greenchipstocks.com, Apr 23., 2010. Web. Aug 16, 2010. <<http://www.greenchipstocks.com/articles/us-wind-energy-industry/924>>.

¹⁸ Bruno, Kenny, et al. *Tar Sands Invasion*. San Francisco, CA: EARTHWORKS, 2010. p 22. Print.