





DANGER

- NO TRESPASSING
- DO NOT CLIMB FENCE
- DO NOT APPROACH BISON

Syncrude













Cleanup of latest Alberta oil spill could take all summer

NATHAN VANDERKLIPPE AND DAWN WALTON

Sundre, Alberta and Calgary — The Globe and Mail

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Gord Johnston's tranquil life along the Red Deer River in central Alberta was shattered Thursday night as the nauseating scent of crude oil hung in the air and a coffee-coloured liquid lapped the banks near his home.

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He reported the oil leak and, within two hours, a helicopter dispatched by a local oil company landed on his 57-acre property near Sundre, Alta.,

TODAY'S MUST READS

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Environmental Effects on Cancer in Canada

Alexia Marcil
June 2012

Focus Question:

- **What kinds of pollution in Canada are causing cancer rates to rise tremendously and how?**

Thesis

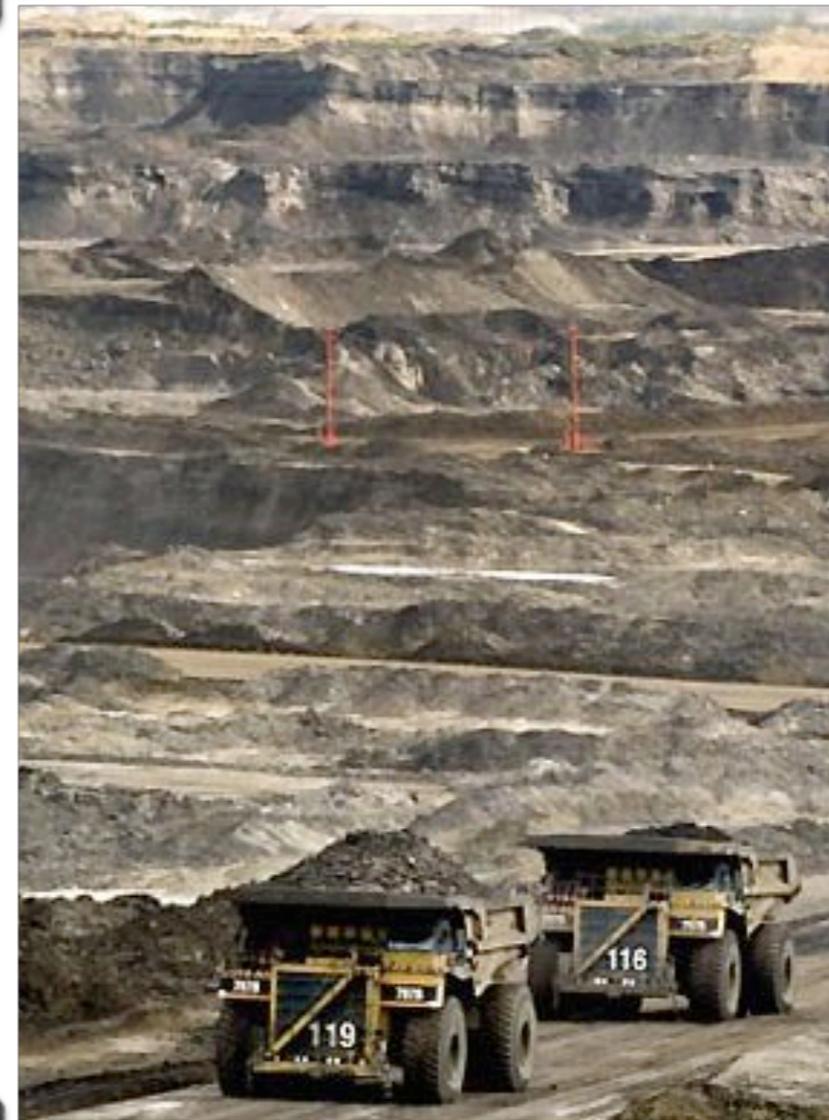
- **THERE IS A LINK BETWEEN ENVIRONMENTAL POLLUTION AND THE INCREASE OF CANCER RATES.**

Scenario

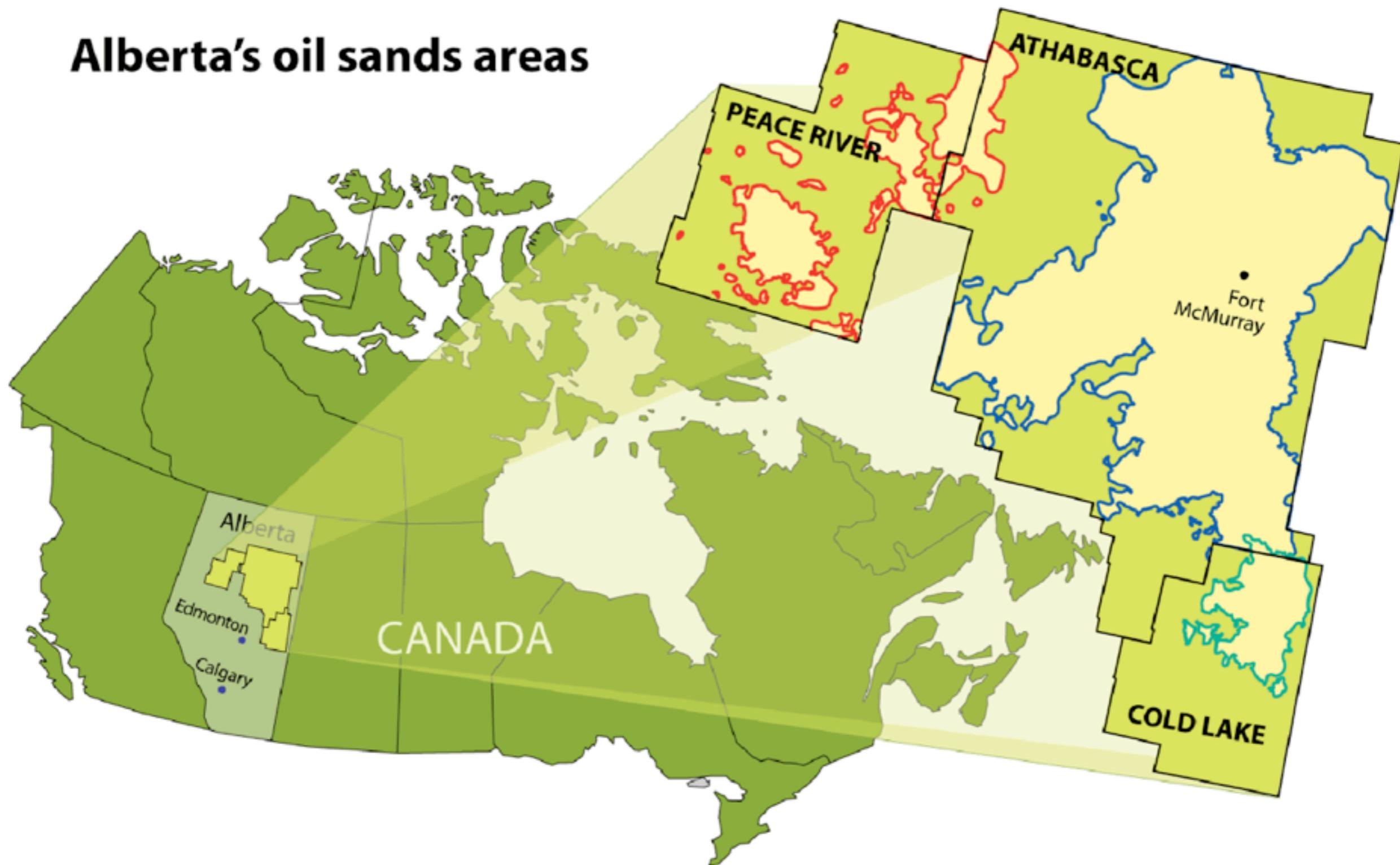
- **THIS IS DEMONSTRATED BY TAR SAND POLLUTION IN ALBERTA, WHERE TOXINS ARE RELEASED IN THE AIR AND THE WATER SYSTEMS.**

What are the Alberta Oil/Tar Sands?

- ❑ **Located in Alberta the Canadian Oil/Tar Sands are a large deposit of oil buried deep beneath the earth**
- ❑ **They are one of the world's largest oil deposits. Workers extract the Oil from the ground**
- ❑ **Removing the oil and tar from the ground creates many environmental issues such as: air pollution, land use and waste management, greenhouse gas emissions, water management, aquatic life deformities, public health impacts**
- ❑ **The oil/ tar sands create many jobs for people in Canada**
- ❑ **The Sands create great revenue for Canada as the world searches for and needs more and more oil**



Alberta's oil sands areas



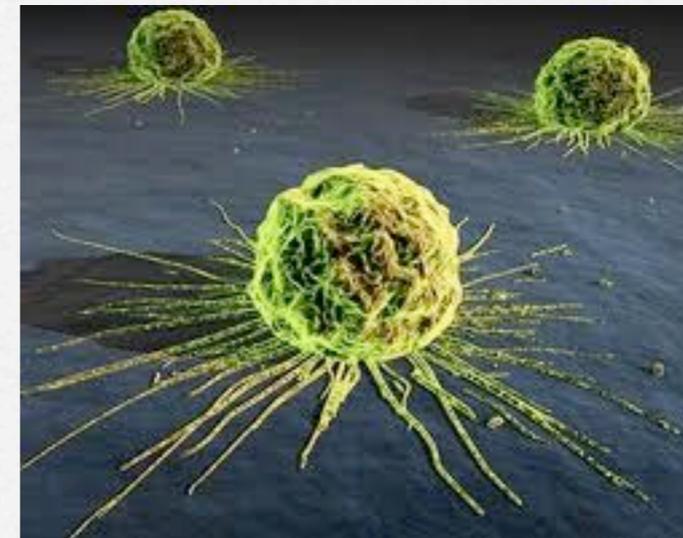
Cancer: the basics

- ❑ Cancer is a growing problem in every country of the world.
- ❑ 60% of cancer-related deaths are caused and created by man, e.g. food, pollution, etc.
- ❑ Cancer attacks cells of the body. Everyone has cancer cells but only some develop cancer.
- ❑ You are fighting cancer everyday. Until cancer takes over, your cells you are considered healthy.
- ❑ The number of people who die of cancer every day is equivalent to a jumbo jet crash per day - 365 days a year

Cancer: the basics

□ Cancer is a collection of disease consisting of:

- Bladder
- Breast
- Colon
- Endometrial
- Kidney
- Leukemia
- Lung
- Melanoma
- Blood
- Pancreatic
- Prostate
- Thyroid



What are some general types of pollution related to the Tar Sands?

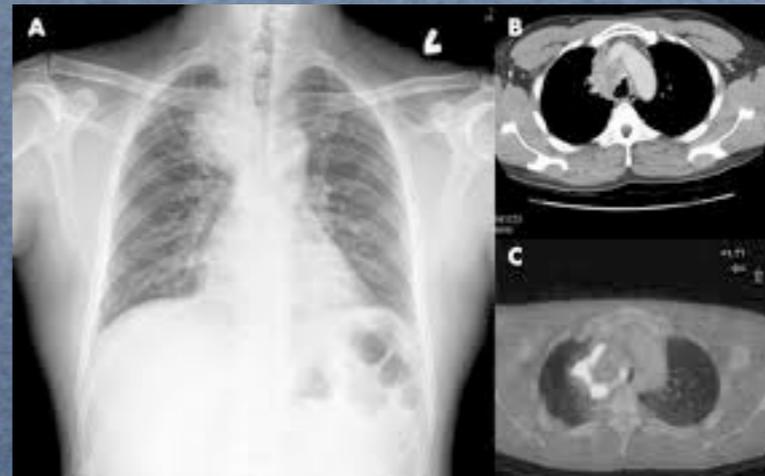
- Air Pollution
- Water Pollution
- Toxic Waste pollution
- Heavy Metals



How can pollution affect the human body?

Pollution mainly affects
three major organs:

1. liver
2. lungs
3. kidneys



How are the Tar Sands suspected to cause cancer?

1. Air quality near the oil sands have been reported to be contaminated with noxious and toxic emissions
2. It is believe that the 'local' water table is severely affected by extensive digs and by uncontrolled contamination
3. Regional if not provincial water system contamination due to dumping and leaching in the Athabasca River



Suspected source of pollution

1. Air Quality

- ❑ Pollution from burning fuels as well as from extracting, refining, or transporting them
- ❑ Large majority of this is CO₂, which will have environmental impact but is not toxic per say
- ❑ However, benzene has been measured in the air near the Tar Sands; this is extremely worrisome because benzene is extremely toxic
- ❑ So far, cases of lung cancer (and other cancers) have not been attributed to the Tar Sands; there is simply not enough conclusive research.
- ❑ **CANCER IMPACT: INCONCLUSIVE**

Looking into the Future:

“By 2020 the tar sands are expected to release over 141 megatons of GHG (greenhouse gases) - twice that produced by all cars and trucks in Canada”

(Stop The Tar Sands blog, 2012)

Suspected source of pollution

2. Local water table

- ❑ There is extensive evidence that water tables have been disrupted
- ❑ Unfortunately, most of the land is private land and monitoring of the water table has been poor
- ❑ Government (federal and provincial) has been slow to assess and study the issue
- ❑ Environmentalists believe that the physical environmental destruction has irreversibly impacted the water table; unfortunately, the water table near the tar sands are not monitored and we don't know the extent of human and non-human consumption
- ❑ CANCER IMPACT: INCONCLUSIVE



Suspected source of pollution

3. Rivers and lakes

- A dozen toxins have been found in at significant levels in waterways downstream of the Tar Sands
- A number of these chemicals are known carcinogens, e.g. benzene, arsenic, heavy metals, polycyclic aromatic hydrocarbons and more; furthermore, we know little about the interaction among these toxins
- Fish downstream of the Tar Sands have shown mutations, tumours and cancer
- Cancer rates in people living downstream of the Tar Sands is anecdotally greater
- Unfortunately monitoring of toxin levels and their impact on animal and people has been weak; furthermore, there is currently no population study to compare cancer rates here versus anywhere else in Canada
- The World Health Organization suggests that Tar Sands represent a meaningful risk to humans and that exposure needs to be monitored and reduced.
- CANCER IMPACT: PROBABLE



TAILING POND



Water Pollution from the Tar Sands

- Statistics show that people living downstream from the Tar Sands have 30% higher cancer rates



(The Huffington, 2012)

Thesis

- **THERE IS A LINK BETWEEN ENVIRONMENTAL POLLUTION AND THE INCREASE OF CANCER RATES.**
- **SEEMINGLY THERE SEEMS TO BE GROWING EVIDENCE OF THIS IN THE CASE OF THE TAR SANDS**

Who are the Stakeholders?

ALL OF US

Who are the Stakeholders?

- Employees
- Residents
- Employers
- Environmentalists
- Government
- Politicians

Conflicting interests?

- ❑ **Canadians need jobs**
- ❑ **Canadians need a safe place to live, work & play - today and tomorrow**
- ❑ **Canada needs the jobs and the revenue from Tar Sand exports**
- ❑ **Canada wants to do what's right for the environment and the planet**
- ❑ **Business wants to employ Canadians and provide the world with oil**

Possible Solutions?

- **Accept that there are various risks associated with Tar Sands**
- **Do population studies**
- **Monitor toxin level closely in air, water table and water systems**
- **Rely on outside experts (WHO) and not oil companies**
- **Upgrade technology as fast as possible**

iPhone, Smartphone, Blackberry?



Let's play a game...

Use your iPhones, smartphones and blackberries to
research and answer the following questions.



How many jobs in Alberta are created by the Tar Sands?

- Almost 139,000 jobs are created in Alberta

(Economic and Investment Information, 2012)



Which top 3 countries in the world have the most oil reserves?

1. Saudi Arabia
2. Canada
3. Iran

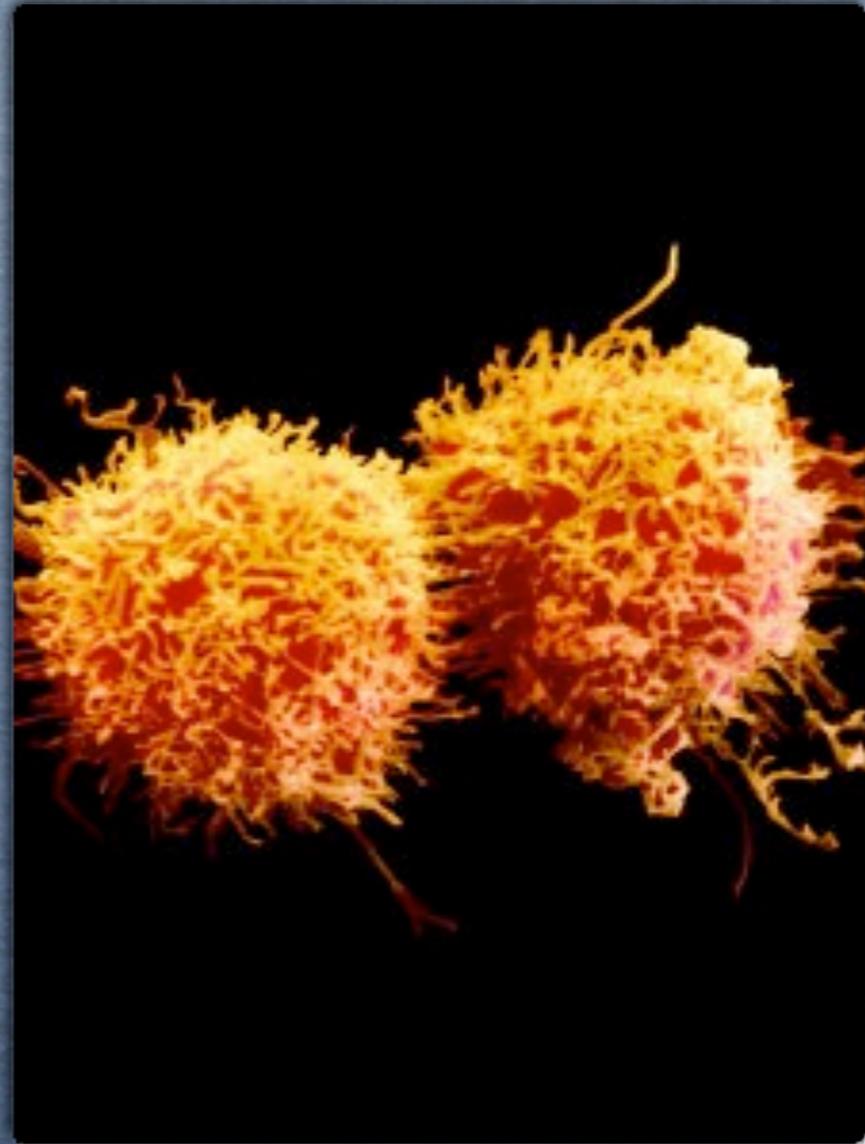
(Oil Reserves by Country, 2012)



How many people in Canada will be diagnosed with cancer this year?

- “An estimated 186,400 new cases of cancer (excluding about 81,300 non-melanoma skin cancers).

(Canadian Cancer Society, 2012)



**On average, how many
Canadians die each day
from cancer?**

**- 200 people on average die each day
from cancer**

(Canadian Cancer Society, 2012)



In conclusion...

Looking at the big picture, the Canadian oil sands are a great source of revenue to Canada, source of trade and jobs but at the end of the day the oil sands may be causing cancer rates to rise due to air pollution, water contamination and affects to the local water table. Although these theories have yet to be proven, they are all very probable and the evidence to back them up is increasing.