

## Oil sands waste

by Mike Walker

"Alberta's (synthetic oil) industry is rich enough to contain its pollution," says Dr. Stuart B. Smith of the Alberta Oil Sands Environmental Research Program (AOSERP). Smith, director of the program, gave an overview of AOSERP's work to the November meeting of the Boreal Circle sponsored by the Boreal Institute.

With billions of dollars of investment being poured into oil sands development in Alberta, Smith said it is "not an idle occupation" to be concerned now with the environmental impact of this development. The human impact of the drastic population increase that will accompany oil sands development is also a matter for concern, he said.

AOSERP, a branch of Alberta Environment, has a budget of twenty million dollars over ten years to "gauge in a scientific manner the effect of oil sands development," said Smith.

AOSERP monitors air and water quality and the effects of sands development on vegetation, wildlife and people.

Smith mentioned a number of areas of environmental concern, including air and water pollution, liquid and solid waste, and water use.

Sulphur emissions are the major danger to the air, according to Smith. The acid rain they cause is a source of worldwide concern.

Smith says thousands of lakes in Ontario, the eastern United States and Scandinavia are devoid of fish as a result of acid rain. Smith says there is no measurable acidity resulting from sulphur emissions of current oil sands plants, since they "only emit 140 tons/day each. (Inco's Sudbury Plant emits 3000 tons/day, according to Smith.)

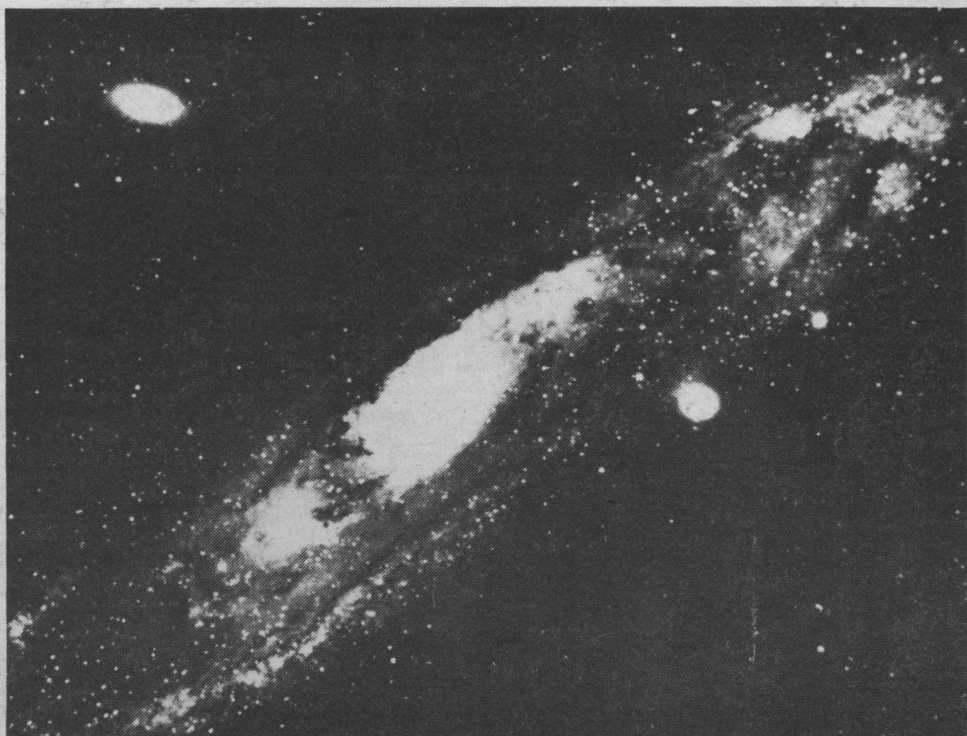
Luckily, Smith adds, "almost all of the pollutants (from oil sands plants) are going downwind out of Alberta."

Tailings (sand and sludge) present another problem. Immense volumes of sand are produced by sands plants, along with dangerous liquid waste. The liquid waste is contained within sand dikes.

There is no measurable leakage of waste now, according to Smith, but erosion could damage the dikes after the oil sands plants are abandoned.

Smith says water use is another potential problem. He says Syncrude will recycle 70 per cent of its water, drawing only 30 per cent of its requirements from the Athabasca River.

Nonetheless, he cautions, the Athabasca could be overtaxed in the winter months once more plants are operating. He says engineers claim that by that time the technology will have improved sufficiently to make water use unimportant.



Sitting in space 900,000 light years away, the Andromeda galaxy. This photo, part of a display donated in 1936 by the Royal Astronomical Society of Canada, can be seen on the second floor of the Arts building.

## relative perspectives

by W. Reid Glenn

As one has seen in the previous article, at the end of the second World War, Britain, Canada and the United States emerged as uncontested powers in the nuclear club. At that time, they shared the common (although sketchy) knowledge required to construct nuclear bombs or atomic power plants. Their nuclear programs since the war have developed the different policies of their respective governments.

In Britain and the United States, atomic development has been linked with military applications (the construction of an atomic arsenal). The United States navy immediately saw the usefulness of atomic power plants to propel their submarines. Since the mid-1950s most submarines in the U.S. fleet have been atomic powered. Similar power plant designs have been developed for commercial applications but the spent fuel is invariably used to create more weapons. Great Britain's atomic power authority has pushed the development of several styles of domestic electricity production but again the nuclear wastes end up in her nuclear arsenal.

Canada alone has decided to produce atomic power without a corresponding military program. Foreign policy considerations of the American influence in North America made this a quite sensible decision. Since the war, Canada had funded her nuclear industry in order to develop low cost, safe and reliable power from her uranium deposits. Nuclear laboratories at Chalk River, north of Ottawa, and an Pinawa in Manitoba have continued research to these ends.

There are three major players on the nuclear scene in Canada; AECL, AECB, and Eldorado Nuclear. Atomic Energy of Canada (AECL) is a crown corporation funded to research and develop commercial atomic power in Canada and also for export markets. Subsidiaries of AECL have developed

radioactive isotopes for cancer therapy and other industrial applications. Eldorado Nuclear is another Crown Corporation but it mines and mills much of the natural uranium used in Canadian reactors. Other mining operations have begun in recent years in Canada, outside of Eldorado, as uranium demand has increased.

Controlling the nuclear industry and setting suitable standards has been the responsibility of the Atomic Energy Control Board (AECB). Unfortunately many members of AECL's directors also sit on the AECB's board and so the control board is neither impartial or judicial. An example of what this lack on an independent control agency has meant to Canada can best be exemplified by the Port Hope refinery.

Port Hope is a community of 10,000 about 80 miles east of Toronto on Lake Ontario's shore. Eldorado Nuclear has long operated a milling facility there; extracting most of the natural uranium ore. The tailings from the mill are radioactive, releasing radon gas to the atmosphere and radium to the ground water. About 20 years ago many homes in Port Hope were built on landfill that was waste from the mill. Investigations in the last five years have shown these homes to have very high levels of radiation.

The tailings dumps have only been fenced to prevent access and the runoff from this area flows to Lake Ontario, in addition to affecting wells of all people associated with the nuclear industry, such as miners and mill operators. However no studies have ever been undertaken to estimate the doses of radiation received by residents in Port Hope, by AECB. The board does not plan to carry out such studies because it's not part of their program.

Recently doctors in the area have commented on the incidence levels of cancer in this community but no further studies are expected. In the next article I will discuss AECL's development of the CANDU reactor.

## New attitude to science

The conflict between technology and humanism was the topic of a vibrant discussion by humanist Michel Sanouillet Thursday afternoon.

"It is time for humanists to find a new attitude towards science, with the co-operation of scientists," he said. Sanouillet is director of the Center for the Twentieth Century, a component of the university of Nice, where he is also a professor.

The essence of the humanism versus technology question is the growing trivial interdependence of all our acts, said Sanouillet. In what Sanouillet calls this neo-technological age, the

fields have overlapped and problems have arisen, he said. Thus technological problems have arisen, he said.

"It is in finding solutions to these problems that humanists can contribute", Sanouillet said.

He discussed some possible answers to the conflict. He said humanists had three courses of action. First they could shy away from the reality of the problems and retreat to a solely academic approach. A second possibility is for humanists to invade the field of science and adopt the technological services of science.

The third and most constructive solution, one Sanouillet said he believes will be more effective, is to have humanists devise a new approach to technological problems, through humanism, and apply them to science.

"It is important for humanists to show how far man can go in the process of imagining," Sanouillet said.

But the most important thing is for humanists to show "how man's imagination functions and astonishes," he said.



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