IN DEFENCE OF THE CHRISTIAN LEADERS' STATEMENT ON URANIUM MINING

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for the Inter-Church Uranium Committee

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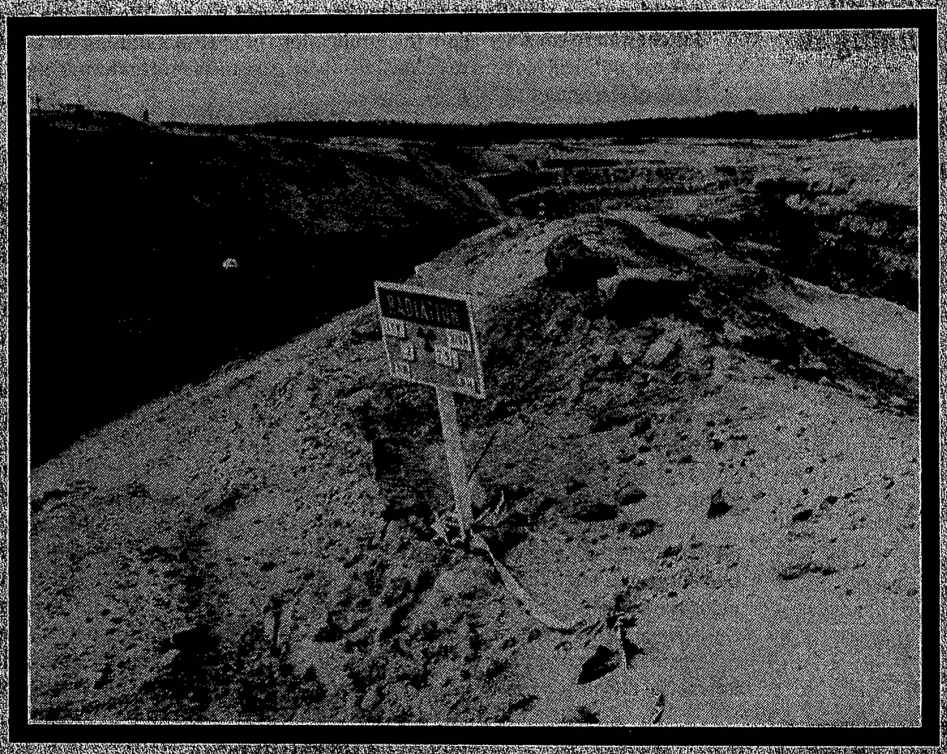

Gaertner Pit, Key Lake Mine, Northern Saskatchewan, on the site of what was once Sea Horse Lake. The pit is 300 metres wide and 80 metres deep. At the time of this photograph (September 17, 1986) this pit was the richest uranium mine on earth. Radiation levels in the mine change frequently, but can be 7,000 times as high as background levels.

Photo by Robert Del Tredici

In a January 1991 letter sent to Saskatchewan libraries, Atomic Energy of Canada Limited recommended that librarians in Saskatchewan acquire a book called the *Anti-Nuclear Game* which attacks a statement on uranium mining made by Saskatchewan religious leaders including Catholic Bishops. In this book, Gordon Sims, a former employee of the nuclear industry in Canada, criticizes the statement *Christian. Leaders Call for a Halt to Uranium Mining for the Sake of Peace* which was released on June 23, 1983, in Saskatoon. Sims accuses the statement of being inaccurate and misleading. An examination of these accusations, however, reveals that Sims makes unwarranted logical leaps, plays on irrelevant technical differences, accuses the Christian leaders of positions supported by the industry itself, constructs straw arguments, and does not support his accusations.

The Christian leaders' statement was released at a time of a new awareness about the historical links between Saskatchewan uranium mining, & nuclear weapons production in the United States.

The Statement

Disturbed by problems created about uranium mining, fifteen Christian leaders from the Catholic, Mennonite, United, Anglican, and Lutheran churches in Saskatchewan released their statement which said:

> We Christian leaders believe that a moratorium on uranium mining in Saskatchewan would make a significant contribution to world peace. We ask the people of Saskatchewan to consider again the implications of uranium mining for our future. We ask our political leaders to reconsider their commitments to the uranium industry in light of the demands of making peace.

Their brief statement then questioned uranium mining and its links to weapons production, its risk to health, and its questionableness as a form of, economic development. The statement was signed by the Most Revs. N. Delaquis, C Halpin,J. P. Mahoney, and B. Morand - the four Roman Catholic Bishops, and Abbot J. Weber - Abbot of Muenster in Saskatchewan; E. Epp - Executive Director of the Mennonite Central Committee; Dr. J. Kleiner of the Lutheran Theological Seminary and Bishop G. W. Leutkehoelter - Central Canada Synod of the Lutheran Church of America; the. Most and Right Reverends, M. G. Peers, H. V. R. Short and R. Wood - the Anglican Bishops in Saskatchewan; and W. Stevens, and Dr. P. Newman,- Past President of the United Church of Canada in Saskatchewan.

The. Christian leaders' statement was released at a time of a new awareness about the historical links between Saskatchewan uranium mining and nuclear weapons production in the United States, nuclear weapons related mining companies operating in Saskatchewan, cruise missile tests proposed for the Primrose weapons testing range in northern Saskatchewan, northern native groups expressing dissatisfaction with the lack of participation in the promised new uranium economy, and the down-grading of public hearings for uranium mine proposals to a thirty day review process that made citizen participation virtually impossible. Peace research institutes and interest groups had documented links between the nuclear arms race and the military-scientific-industrial complex, and links between the civilian and military nuclear research and production.[2] Christian leaders throughout the world were, calling for moral opposition to the arms race, for the development of economies that served human need rather than national security ideologies, and for special attention to the political and economic development of Aboriginal peoples.

Sims' book reflects a hostile rather than critical review of the church leaders' statement.

The Attack

Sims claims these Christian leaders have been misled by the "anti-nuclear establishment" - a group of activists as difficult to pin down as "trying to put a thumb on a blob of mercury." He states that although the future of nuclear energy in Canada should be secure, it is not. Widespread fear and doubt about nuclear energy is a function of what he calls an "anti-nuclear game" in which the anti-nuclear establishment is convincing Canadians by unsupported statements, distortions and specious reasoning that nuclear energy, really the safest form of energy, is the most dangerous; that nuclear energy, really the cheapest form of energy, is uneconomic; and that nuclear waste burial is beyond the capability of present technology.

Sims explained that it is important for him to speak out because those who work for the nuclear industry are inhibited and when "combined with their fragmented voices, they give pro-nuclear arguments a muted air."[3] His explanation came when he was on an openline talk-show in Saskatoon

to promote his book, at a book signing at a local bookstore, and when his book was reviewed in the local newspaper. At the same time, a twelve page Canadian Nuclear Association (CNA) advertisement appeared in the June 11, 1990 Maclean's magazine; the CNA was engaged in a $20 million dollar campaign to enlist church, labour, media, and government to support nuclear expansion; Saskatchewan schools' vice-principals were being flown to Key Lake and their schools are systematically supplied with pro-nuclear materials; Atomic Energy of Canada supported a company to visit Saskatchewan town councils and Chambers of Commerce to promote the sale of a Candu reactor in the province; and Atomic Energy of Canada advanced the sale of a Slowpoke nuclear reactor to the University of Saskatchewan in a marketing scheme involving billboards and newspaper advertisements to the public. So much for an inhibited pro-nuclear constituency, the "muted air," and so much for Sims' credibility.

Nevertheless, Sims extends this calibre of commentary in an eight page[4] discussion of thirteen comments made in the Christian leaders' statement. He claims that the leaders' comments include "two sets of statements which are true, five which are inaccurate, and six which are misleading.' '[5] However, the examination of Sims' book below reveals it as a classic example of specious "reasoning," which reflects a hostile rather than critical review of the church leaders' statement.

It is clear that since the war, US and *Canadian Christian spokespersons have opposed nuclear weapons development and the nuclear arms race.*

The 'Defence

This defence presents each of the thirteen Christian leaders statements in bold print, summarises Sims' comments on, or accusations against each statement in italic print, then assesses Sims' comment in regular print.

1. Canadian uranium was initially developed to supply the nuclear weapons program of the United States.

Sims claims this above statement is misleading because the leaders did not mention that church leaders supported the struggle against fascism in the Second World War.

Here Sims' equates church opposition to fascism with support for nuclear weapons development and intimates that because the leaders excluded the war "context" in their statement the public is misled from seeing why nuclear weapons development was good. However, opposition to fascism cannot be equated with support for nuclear weapons development. The exploitation of uranium for nuclear weapons was kept secret during the war. The churches could not have known it at the time, and consequently could not have considered its morality. Some leading scientists, however, opposed bomb development on moral grounds and petitioned against its use.

Furthermore, the US interest in building the first nuclear weapons was not solely motivated by a desire to stop fascism. The US continued to build the bomb for its own purposes after they knew ° that Hitler was not building a bomb and did not have the capacity to build one. If, Christian leaders knew of the bomb's development and realised the US no longer needed it in the war against Germany, they might have opposed its continued development. It is clear that since the war, US and Canadian Christian spokespersons have opposed nuclear weapons development. and the nuclear arms race.[6]

The Christian leaders, however, could update their statement to recognize that Saskatchewan uranium mines were opened and began production in 1953 in direct response to the United States' demand to construct its arsenal of 27,000 nuclear weapons. Contrary to an article in the ***Musk-Ox,*** a University of Saskatchewan journal which suggested that after 1953 all Saskatchewan uranium went for nuclear power,[7] Robert Bothwell's 1985 book ***Eldorado'*** documents that between 1953 and 1965 Saskatchewan uranium was part of the one-and-a-half billion dollars of Canadian uranium mined almost exclusively for US nuclear weapons production long after the Second World War and the threat of fascism were over. Eldorado Nuclear's annual reports for the period gave no indication that any of this uranium went for weapons.

2. Canadian nuclear reactors sold for generating electricity have enabled other countries to develop nuclear weapons. Uranium mined in Saskatchewan is often used in these reactors. Saskatchewan uranium, can thus be channelled to fuel weapons.

Sims states that this statement is inaccurate because (a) India used a "research" reactor and not a reactor for "generating electricity" from Canada to develop the bomb; (b) India detonated what India defines as "a simple nuclear explosive" claimed to be for "peaceful purposes," therefore it is improper to conclude that India has developed .a bomb; (c). "no country has used a reactor primarily designed for generating electricity to produce plutonium for nuclear weapons," but they have all used "dedicated" reactors which produce a higher grade of plutonium than power generating reactors, and (d) no Canadian uranium has been sold for weapons production since 1965.

The Candu prototype was designed for the exclusive purpose of producing plutonium for weapons production - which it did in Canada for the United States military until 1963.

The gift of the research reactor to India was intended, and understood by the Canadian government and public, to be for peaceful purposes. When India exploded its bomb in 1974, the international community was shocked and recognized that claiming the explosion to be for "peaceful purposes" was a rather thin veil of diplomatic manoeuvring. Even the Canadian government protested loudly and tightened up its criteria for, future nuclear assistance to Third World countries. Sims' strategy to focus upon the difference between research and the electricity producing purpose of the reactor misses the Christian leaders' point that this Canadian technology was used for weapons production. It is not surprising, however, that India would select a Candu reactor since the Candu prototype was designed for the exclusive purpose of producing plutonium for weapons production - which it did in Canada for the United States military until 1963.[9]

Sims' point that India has only exploded a peaceful nuclear device is taken up in comment #3 below.

Sims is also incorrect to say that reactors designed for electricity production were not used to produce material for weapons. Margaret Gowing's two volume official history of Britain and atomic energy, titled *Independence and Deterrence,* documents the British government's decision to develop a military nuclear power program to provide plutonium for weapons and electricity for civilian use.° It is quite clear from this account that Britain's nuclear weapons and power programs were joined together physically at birth like Siamese twins" where "military criteria have determined civil progress and moulded the technological and institutional characteristics of civil developments."" France's twinned military and civilian electricity nuclear program is another example of civilian generated plutonium for France's nuclear weapons testing and buildup." True, no uranium has been sold by Canada for the express purpose of nuclear weapons production since the US and UK contracts ended in the mid 1960s. The Christian leaders' statement does not dispute this point. They say that "uranium CAN be channelled to nuclear weapons" through electricity generating programs. While they express concern about this use of uranium, *France: The Nuclear Renegade* documents how French nuclear facilities serve both civilian and military purposes and the CTV W5 program "Nuclear Fudge" shows how Canadian uranium enters the. US weapons program as depleted uranium.

3. Attempts at international nuclear safeguards are not working. More and more countries are joining the nuclear weapons club.

Sims says this statement is inaccurate because he claims that the lack of countries joining the nuclear weapons club is proof that safeguards are working. He states further that, although countries may be suspected of possessing nuclear weapons, actual possession cannot be confirmed until a weapon is tested.

Sims plays with the word "club" in a narrow legalistic sense. Within a strict interpretation, no country could be officially recognized as a nuclear weapons state by an agency such as the International Atomic Energy Agency (IAEA) without confirming possession of a nuclear weapon. China, Russia, England, France and the USA have confirmed their possession of weapons. These states are referred to as the nuclear weapons "club."

India is not officially designated a nuclear weapons state and is not, therefore, a member of the "club." However, the international community knows through their intelligence gathering that both India and Pakistan possess nuclear weapons even though these countries do not admit publicly to having them. Reports indicate "the US and Soviet governments fear nuclear war between India and Pakistan over the disputed Kashmir region following reports that both countries are preparing nuclear arsenals.'" a

India and Pakistan possess nuclear weapons even though they do not admit it publicly.

The constraints of international diplomacy do not allow countries to formally designate India and Pakistan as nuclear weapons states or members of the "club" because they have not publicly acknowledged their possession of nuclear weapons nor has a weapon been tested. However, Soviet, US, and other leaders, who live in the "real" rather than official political world, acknowledge India and Pakistan as real nuclear weapons states and members of the real nuclear weapons "club."

Most international leaders also recognise Israel and South Africa as members of the nuclear weapons club even though they have not confirmed their possession of weapons. Sims' rhetorical flourish on the technical difference in the meaning of the term "club" to discredit the Christian leaders does not establish his claim that their statement about more countries joining the club is inaccurate.

The Christian leaders' concern about proliferation is confirmed again in the recent Carnegie Endowment for International Peace report. It states that Iran, Iraq, Libya, Syria, South Yemen, Egypt, Saudi Arabia, and other countries are developing long-range ballistic missiles and "require only the nuclear warheads to become instant superpowers" to join the nuclear "club."' Concern about horizontal proliferation was highlighted most *recently in* the war with Iraq. Iraq is expected to possess nuclear weapons or the material to construct one.

4. World-wide proliferation of weapons continues.

Sims says this statement is misleading and asserts that while vertical proliferation of weapons in officially designated nuclear weapons states continues, horizontal proliferation or the number of designated nuclear weapons states is not increasing.

Yes, the vertical proliferation of weapons continues particularly in the US. Reagan's 1984 plan to build 14,000 new nuclear weapons steams ahead as do British and French nuclear weapons programs, in spite of limited nuclear weapons treaties with the Soviets. However, horizontal proliferation also continues. The threat to international security increases as the number of nuclear weapons states continues to increase. One speaker at a recent conference on the future of the Non-Proliferation Treaty commented that there are a number of "latent and blatant" proliferators who show little sign of backing away from being or becoming bomb capable.[16]

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The Non-Proliferation Treaty has been a vehicle for containing the spread of nuclear weapons while it advances the peaceful uses of nuclear technology. But it is this very advancement of nuclear technology that moves countries to being "nascent" nuclear weapons states. As new suppliers of technology emerge, it becomes easier to access necessary parts of weapons related technology without requiring IAEA safeguards." [17] The inability to control new suppliers and "grey" areas in the treaty "allows the use of fissionable materials, without IAEA safeguards, in non military activities."[18] Besides, France and China, two major nuclear powers, have not signed the Non-Proliferation Treaty.

Hostilities with Iraq reflect the importance of halting the spread of nuclear weapons. The world was alarmed at Iraq's attempts to construct a canon that could shoot bombs into neighbouring countries, particularly Israel. CTV National News (on August 14, 1990) reported that the US had provided assistance to Iraqi scientists on how to arm and detonate nuclear warheads. In the US,

Henry Kissinger recommended that the United. States initiate hostilities with Iraq over the invasion, of Kuwait to stop Saddam Hussein "before he gets nuclear weapons." [19] It has been made evident also in several news reports that Israel has from 100 to 200 nuclear weapons.

Intelligence reports and studies by organizations, the Carnegie Foundation for example, contradict Sims' unfounded position that horizontal proliferation is not continuing. His position not only appears uncredible, it appears absurd.

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5. The nuclear industry, from uranium mining through reactors to bombs, produces both radiation and highly radioactive "waste."

Sims says that while this is true "the public has not been affected by the radiation or radioactive waste."

Sims cannot graciously deny that the industry produces radiation and radioactive waste because this production has become common-knowledge and cause of grave public concern. It is precisely because radiation and nuclear waste presents such dangers that standards of protection and safety for workers and the public arc recommended by the International Commission on Radiation Protection and set by governments.

While Sims denies that the public has been affected by radiation or waste, he offers no proof or evidence for his statement. Logicians agree that such universal negative assertions are foolish because they are the most difficult to prove. For Sims to prove that the public has 'not' been affected, he would have to disprove all possible cases. It is like proving that Santa Claus does not exist. Try it.

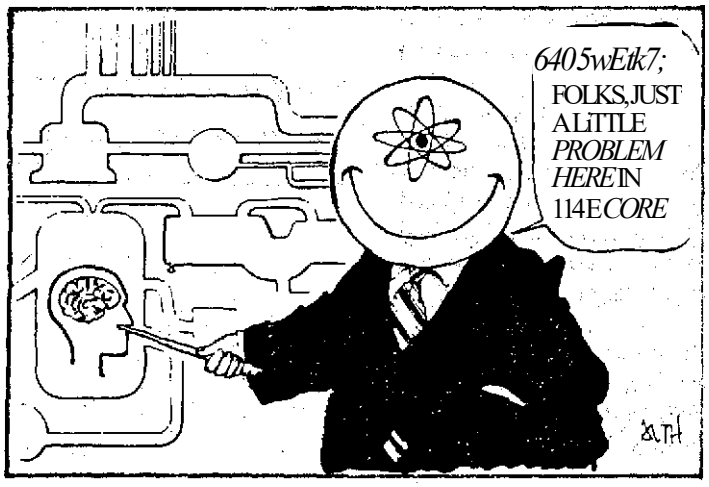
Four very important reports demonstrate the inadequacy of radiation protection and suggest that the industry may not have provided sufficient protection to the public and workers.

- The 1989 Beir V report of the Biological Effects of Ionizing Radiation Committee of the US National Academy of Sciences showed that radiation is more dangerous than previously expected, confirmed that there is no safe level of radiation, and estimated that the lifetime risk of fatal cancers due to radiation is eight times higher than the previous 1977 risk estimate.[20]

- The 1990 International Commission on Radiation Protection (iCRP) found that radiation risks had increased 7.5 times .over the 1977 estimates.[21]

- The 1990 Gardner Report concluded that male workers exposed to small amounts of radiation in the 6 months prior to conceiving children were 6 to 8 times less likely to father children than if they received no exposure.[22]

- A study by. Dr. Muramoto at the Environmental Medicine Research Institute, in Fukushima, published in January 1989, discovered that, workers in two Japanese nuclear power plants have double the normal level of chromosome abnormalities. The number of abnormally shaped chromosomes was proportional to the level of radiation exposure.[23]



These revised risk estimates and studies suggest that the public may be more significantly and extensively affected by radiation than previously thought. They certainly do not confirm Sims' view that the public has not been affected.

In fact, Sims' view stands in stark contrast to US citizens who have reasoned that nuclear plant expansion is immoral because of the dangers to public health and safety. *National Geographic* (April 1989) reports that no nuclear reactors have been ordered in the US since 1978.[24] Between 1980 and 1984, fifty-three reactors were cancelled.[25]

American concern about radiation exposure has become more acute' since 1978, not only because studies recognize the higher risks associated with ionizing radiation, but because they show extensive radioactive pollution in the US. *Newsweek* and *Time*

(October 1988) headlined the shut down of four major US nuclear weapons reactors and production facilities in the face of wide-spread radiation contamination concealed by four decades of government deception. These plants released enormous quantities of radioactive substances into the air and dumped tons of cancer-producing garbage in creeks and pits. *"Government* complacency, recklessness, and secrecy" and industry disregard are blamed for the problems. Clean-up of pollution from these nuclear weapons facilities will cost $19 billion over the next five years and eventually as much, as $200 billion.[26]

At the Savanah River weapons plant,[27] the US Department of Energy reported that as many as thirty significant mishaps occurred over a thirty year period that were never reported to the government or made public. Between 1954 and 1982 the plants "experienced fires, equipment leaks, contaminated water floods, and a reactor coolant leak that almost caused a spontaneous nuclear reaction."

In Hanford, Washington, the facility[28] dumped more than 200 billion gallons of low level radioactive waste, enough to create a forty foot deep lake the size of Manhattan Island. Beyond "death mile," an area of unusually high cancer rates near Hanford, the Centre for Disease Control in. Atlanta suggests that "20,000 children in Eastern Washington may have been exposed to unhealthy levels of radioactive iodine by drinking milk from cows contaminated from grazing in contaminated grasslands." In Funnelled, Ohio,[29] more than 230 tons of radioactive material has leaked into the air and water of the Great Miami River since the plant was built in the early 1950s and another 337 tons of uranium hexaflouride is simply unaccounted for at this site.

Can Sims say that the US public has not been affected by all these spills? He cannot. However, in strictly scientific terms, studies which "correlate" cancers or other effects with radiation exposure can not confirm that these exposures "cause" those cancers because the cause and effect are not directly observable.

The 1990 International Commission on Radiation Protection(ICRP) found that radiation risks had increased 7.5 times over the 1977 estimates.

6. Ionizing radiation is a threat to human health. It has been shown to induce genetic disease and deformity, spontaneous abortions, leukaemia, and cancer.

Sims says that these statements are misleading because they imply that the nuclear-industry generated *radiation poses* ***a threat to public health although it has never been shown to.***

The Soviet republic of Byelorussia recently requested international assistance "to relocate and give medical aid to more than two million people including 600,000 children affected by the 1986 Chernobyl nuclear accident.[30] Soviet scientists say that the situation in this republic of ten million where the citizens of twenty-seven cities and 2,600 towns and villages need to be moved is much worse than initially portrayed. Perhaps Sims thinks that the move in Byelorussia is just another ploy of that hard-to-pin-down anti-nuclear establishment. This tragedy is the latest instalment of a story about the threat that industry generated radiation poses to public health.

7. The problem of waste disposal has not been resolved. Wastes from the mining and milling of uranium produce a low-level radiation that poses a constant threat to health and the environment.

Sims ***states that "There is no problem associated with the mining and milling waste" because wastes have been managed safely for years and because "their level of radioactivity is so low that they do not produce any significant effect on health or the environment."***

The United Steel Workers of America Union representing Canadian uranium miners reported in 1988 that over 270 *miners* in northern Ontario had died from *lung* cancer due to radon expo-sure.[31] The United Steel Workers of America and Greenpeace called for a public inquiry into the proposed plans for Cigar Lake because of concern about radiation levels. Documentation of very

high cancer rates in Elliot Lake uranium mines in Ontario and the extremely high concentrations of radioactive ore at Cigar Lake are the bases for calling this inquiry.[32]

Even uranium mines that stayed within the old safety standards may not have been safe under new standards recommended by the ICRP and Beir V report. Levels of radiation may have been sufficient to produce significant health defects.

Neither Saskatchewan nor-the government of Canada has set limits on radon released into the atmosphere.

Contrary to Sims there are problems associated with mining and milling wastes. The environmental problems are created when radioactive materials are moved from rock underground to the earth's surface where they can enter the biosphere. Radioactive material is safe when undisturbed in the orebody underground because it is contained in rock .in chemically reducing conditions. When brought to the surface and crushed into a fine sand, radioactive substances become available to the atmosphere, water, and land. Each radioactive substance produces alpha, beta, and/or gamma radiation. These radioactive substances can enter the biosphere and affect human health. Radium, for example, is a highly toxic heavy metal which can be concentrated a thousandfold in aquatic plants, and a hundred times in terrestrial plants. It has a half life of 1600 years and is continually replenished by the radioactive decay of thorium. Therefore, the amount of radium in tailings will not diminish significantly over time. In the body it mimics calcium; going to the teeth, bones, and breast milk. The tiniest fraction of Radium 226, a substance almost as' toxic as plutonium, can cause bone cancer.

Radon gas is produced through the radioactive decay of radium. It has a half life of 3.8 days. During these three days, half of the radon disintegrates atomically into polonium, becomes a particle, and falls to the earth where it can be taken up by the food chain. For fourteen or more days, the remaining airborne radon gas continues to travel many miles in the wind as the half life decay continues. Radioactive substances can then enter the food chain far from a mine site. Mining more and higher levels of radioactive substances increases the amount of radioactive substances put into the atmosphere. Nevertheless, neither Saskatchewan nor the government of Canada has set limits on radon released into the atmosphere.

Different radioactive substances are taken up by various plants. Lichens and mosses accumulate five and ten times more radionuclides than shrubs and trees. Of the trees, Jack Pine picks up the most Uranium, and Paper Birch accumulates the most Lead (Pb-10) and Radium (Ra-226). Of shrubs, blueberry bushes accumulate the most Pb-10, and the Labrador Tee bush the most Ra-226. Lichens, which uptake radionuclides from their surfaces following deposition from the air, accumulate the highest radioactive Pb-10 and U1.[33]

More than 150 million tons of dangerous radioactive tailings are left over from uranium mining operations in Canada. Whenever uranium is mined, 85% of the radioactivity is left behind in finely crushed rock called tailings. These tailings are radioactive isotopes of thorium, protactinium, radium, bismuth, polonium, and lead. These tailings have an effective half-life of 76,000 years.

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Although waste management has improved since the abandonment of early mines in northern Saskatchewan, the more than five million tons of tailings discharged from the milling operations until 1960 have threatened the environment. A 1981 study shows the environment at two abandoned sites in northern Saskatchewan have been "impaired due to the release of radioactive and non-radioactive contaminants into the atmosphere, surface water, ground water, and ultimately, biota." [34] Reports of the Lorado site at Langley Bay showed:

> The impact of tailings in Langley Bay is of major concern.[35] The impairment at Lorado is due to acidic conditions and subsequent accelerated transport of heavy metals and radionuclides by surface and ground water.[36] Radionuclide levels are approximately one hundred times background levels, total dissolved solids are greatly increased and concentrations of some heavy metals (lead, zinc,cobalt, nickel) are an order of magnitude higher than background.[37,38]

The Gunnar mine site study revealed:

> Bio-accumulation of radionuclides in the aquatic food chain leading to human consumption, and tailings' surface instability resulting in contamination of the surrounding environment.[39]

A study of the water quality of the natural drainage system at Beaverlodge Lake where Eldorado Nuclear operated a mine until 1981 showed dissolved solids content at twelve to fourteen times control levels; arsenic levels at forty times the control level, and aluminium, cobalt,

Manganese, nickel, and selenium levels at five to ten times higher than control levels. Blackfly larvae from the upper portion of Tailings Creek had very high Radium 226 and Lead 210 levels and other insects are accumulating radio nuclides from tailings sediment.[40] And although some important mitigation measures have been taken at these abandoned sites, the adverse environ-Mental damage persists.

At Cluff Lake, Radium 226 and Thorium were separated from other tailings and were stored above ground in 3,000 two-and-a-half ton vaults. The vaults contained approximately 99% of the radium from the high-grade ore mined and milled during the mine's first phase. This method of storage differed from the permanent, stable underground containment and storage approved by the Cluff Lake Inquiry. Although the vaults were supposed to last into the next century, by the mid 1980s one hundred containers had cracked, five had fallen over and radon gas had built up in the storage building. In the mid-1980s, the government reversed the decision about putting high-level waste in tailings ponds that the Cluff Lake Inquiry had sought to avoid a decade earlier. The government gave Cluff Mining permission to, dilute these highly radioactive wastes with low grade waste then put them into a tailings pond. Tailings ponds in Ontario had proven to be an environmental hazard. As many as thirty tailing pond breaks at Elliot Lake in Ontario where the environment has been devastated demonstrate the limitations of this method for safety to the environment. The dams can break and radon gas continues to enter the atmosphere.

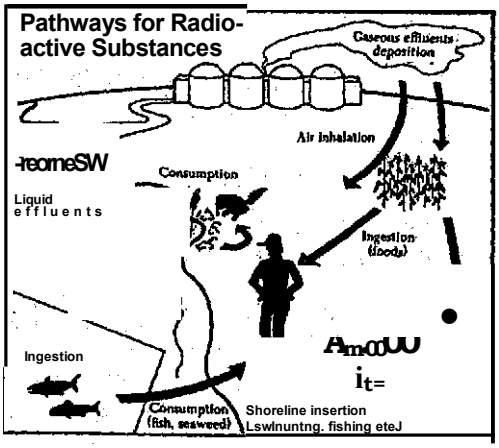
Although the industry offers assurances that the environment will not be contaminated from the three operating mines (Key Lake, Cluff Lake and Rabbit Lake), one hundred and fifty five radioactive spills have been recorded at Saskatchewan uranium mines. The potential for contamination at these mine and mill sites, which are much more protected than those of the 1950s, is a function of their dramatically higher capacity. The experimental approach given to each site which has unique conditions and processes and the basic hazard created by uranium milling and mining needs to be addressed. \

Environmental contamination will increase in the future as new mines increase tailings and as accidents occur at new mine sites. In northern Saskatchewan new uranium mines at various stages of consideration are proposed at McArthur Lake, Waterbury Lake, Midwest, Dawn Lake, Close Lake, Cigar Lake, and McLean Lake. What will be the overall environmental impact of uranium mining and milling in northern Saskatchewan in the next ten, twenty and thirty years as radioactive wastes enter the atmosphere, plants and animals? Uranium mining is naturally hazardouS to the environment because it brings large quantities of radioactive substances to the ground surface and transforms them so they can easily enter the biosphere. The legacy of old mines, the limited environmental safety of operating mines, and the proposed opening of several *new* mines justify concerns that environmental damage will only increase in the future.

155 radioactive spills have been recorded at Saskatchewan uranium mines.

8. Other steps in the nuclear fuel cycle, produce high-level radioactive wastes that require secure isolation for thousands of years.

Sims states that the Christian leaders' statement is inaccurate because high-level waste needs to be securely isolated for only five hundred years when it can be handled for short periods without undue hazard. He accuses the anti-nuclear establishment for creating the myth that wastes are hazardous for thousands of years.



It is true that most fuel bundles are especially hazardous for 500 years and remain hazardous for thousands of years because of the long life of radioactive materials in them. For this reason AECL is proposing a facility to keep them in "swum isolation" for up to 10,000 years not 500 years. In *Managing Canada's Nuclear Fuel Waste,* AECL points out: "Such elements could, be hazardous if they escape into our air, drinking water, or food. It is for this reason that used nuclear fuel should be permanently disposed of so that it will not reach our environment in sufficient quantities to harm people.[41] In the short term used fuel requires "shielding and containment" [42] and in the long term it requires "containment." It is not the Christian leaders who are propagating a "myth," it

is AECL which is proposing secure isolation beyond 500 years.

The fact that fuel wastes can be handled for "short periods of time with undue hazard" does not prove that they should not be isolated permanently. While workers could handle bundles remotely for short periods of time, AECL is concerned that fuel bundles be contained to ensure that the contaminated material does not reach people by air, food, or water.

9. It is not possible to give assurances of safety for this number of years into the future. Consequently, the burden of responsibility for assuring waste containment is placed on all future generations.

Sims says these two sentences are inaccurate because after five hundred years high-level waste is no more hazardous than high-level uranium ore deposits which are not considered dangerous, near which towns are built and which we do not consider a burden on future generations.

Although determining risk is a proper function for scientists, judging safety is properly undertaken by the public and various affected communities.

The Christian leaders' statement calls for a moratorium on uranium mining while the people of Saskatchewan "consider again the implications of uranium mining for our future." This statement essentially pre-dates and is confirmed by the 1988 federal all-party parliamentary report of the Standing Committee on the Environment and Forestry, *The Eleventh Hour,* which called for a moratorium on nuclear reactor construction "until the people of Canada have agreed on an acceptable solution for the disposal of high level nuclear waste."[43] The questions of the Christian leaders were partially based upon concerns, confirmed in the 1988 report, that "there is still no proven method for disposing of this highly radioactive material." [44]

Safety is a function of scientific assessment of risk, which measures potential hazard by relating probability of accident with severity of consequences; and it is a function of subjective judgement of the acceptability of that risk.[45] Although determining *risk is* a proper function for scientists, judging the *safety* is properly undertaken by the public and various affected communities. Subjective judgements reflect ethical considerations about society and human needs which the Christian leaders sought to have more fully developed.

Is five hundred years a short period or a long period, for example? Against the half-lives of some long-lived radioactive elements, scientists with their objective criterion may say it appears short. Taken within a judgement about the history of human affairs and the conduct of nations, 500 years is a substantial period of scientific, social, and political change.

Concerns about permanent waste disposal are based upon the high-level of toxicity of nuclear waste, the long period of time required to ensure its security and the need for judgements about whether there are more benign ways of developing energy. They also relate questions about changes in standards of radiation safety, criticisms of the concept of deep geological disposal, and the politics of locating nuclear waste sites. In view of previous nuclear failures, it is reasonable to question what errors there will be in the preparation, transportation, and storage of high-level nuclear waste.

The regulation of nuclear activities in Canada is another concern. By the time the Christian leaders made their statement in 1983, the Atomic Energy Control Board had been criticized for being too close to the industry that it regulates.

- The Organization for Economic Cooperation and Development criticized the board for "implicit conflict of interest."
- Canada's Institute for Research on Public Policy concluded that the board "has not achieved the appropriate degree of independence."
- The British Columbia Medical Association investigated the control board, and pronounced it "unfit to regulate."
- The Ontario Select Committee on Hydro Affairs made 15 specific and far reaching recommendations for reform of the Atomic energy control Board and the way it operates. [46]

An internal Atomic Energy Control Board report (November, 1990) concluded that its review of nuclear safety procedures was "too simplistic" and that it lacked the resources to do much about it.[47] Its request to double the staff of 267 was accompanied by concerns about the lack of resources to regulate major sections of the nuclear industry with the thoroughness and effectiveness that is needed to ensure industry is meeting its safety obligations, and that the Canadian public would expect.[48] The report also reported a backlog of maintenance required at Canadian nuclear plants, out of date operating documentation, incomplete inspections, deficiencies that may require design changes, shortcomings in the training of reactor operators and retraining, that is not up to the original standards, and a third of radio-isotope users inspected in 1987 "revealed unacceptable conditions." [49]

Saskatchewan uranium can enter the weapons program directly, through displacement or in the form of depleted uranium.

11. The most active investors in Saskatchewan's uranium industry are a provincial and a federal crown corporation. Low risk factors in the industry's royalty structure, as well as government support services for the industry, have attracted large private investors. Some of these (private) investors are actively involved in weapons production.

Sims says these statements are misleading and declares again that uranium has not been sold for weapons purposes since 1965 and Canada is most stringent with its safeguards to prevent goods from being used for nuclear weapons purposes.

Cogema, a French government corporation subsidiary of the French Commissariatc Energic Atomique which procures uranium for French military and civilian programs, operates in Saskatchewan with Cluff Mining and Cigar Lake.[50] Cluff Mining has had continuing contracts to provide French utilities with uranium.[51] The Australian report, *France: The Nuclear Renegade,* shows that at least sixteen French nuclear facilities serve both civilian and military purposes.[52] Saskatchewan uranium can enter the weapons program directly, through displacement or in the form of depleted uranium.

- By 1987, Finance approved a $87 billion re-armament plan to produce 950 new nuclear weapons by the mid 1990s including neutron bombs, new aircraft with air to ground missiles, a new nuclear-powered submarine, a nuclear-powered aircraft carrier, and new missiles with enhanced capability and more warheads.[53]

- France continues to ignore the opposition of every South Pacific government and tests nuclear weapons there. Since 1975, France conducted 114 underground tests which are to continue until 2000. [54]

- France has a notorious record of assisting developing countries to acquire nuclear weapons technologies. Only under pressure from the United States did France cancel three separate projects to, build reprocessing plants which would give Taiwan, Pakistan, and Korea nuclear weapons technology.

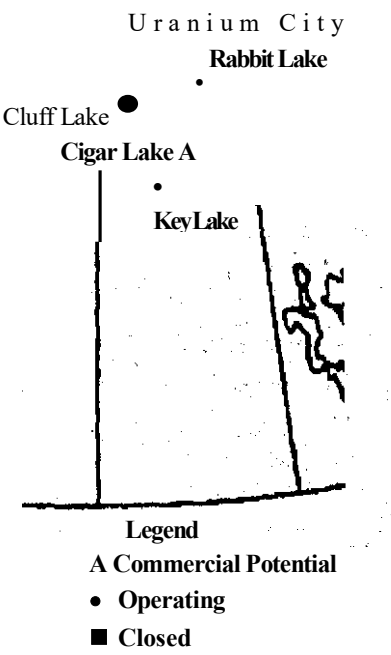
- France has refused to sign the Non-Proliferation Treaty and only signed the Euratom Treaty on Western European nuclear activities when it was amended to exempt France from verification inspections.[55]

France can withdraw any installation from Euratom control at any time. In spite of bilateral treaties, Saskatchewan uranium enters French nuclear weapons as depleted uranium and by dis placing French domestic uranium.

Concern about weapons related companies operating in Saskatchewan was raised in the early 1980s with documentation that Union Carbide and Wyoming Minerals, a subsidiary of Westinghouse, both linked corporately to nuclear weapons production, were in exploration joint ventures with the Saskatchewan Mining Development Corporation.[56] Since that time the entry of Saskatchewan uranium into US nuclear weapons has been documented on the CTV W-5. show "The Nuclear Fudge."

Sims misses the point of the Christian Leaders' comment. The leaders raise questions about the participation of investors in weapons production. National churches criticized Canada's par-

Uranium mines in Saskatchewan 1990



ticipation in the nuclear arms race and peace research groups have identified how the arms race is strongly driven by the economic interests of companies in weapons production. To invite these corporations into the province, participate with them in joint corporate ventures, provide them provincial infrastructure, and offer them research facilities and services does not reflect a critical moral stance but rather implicates the province in the arms race.

Research groups have identified how the arms race is strongly driven by the economic interests of companies in weapons production.

12. The industry depends on capital intensive technology which creates few jobs in comparison with alternative possibilities. Moreover, the uranium market is filled with uncertainty.

Sims states that this "silly" criticism is misleading because it "arises from a lack of comparison with, other industries." He also claims that the uranium market is more predictable than most others although. Canada's share is not known accurately.

Sims' comment is itself misleading. To say that the uranium market is more predictable than other unpredictable markets does not deny its unpredictableness. Evidence contradicts suggestions that the market is very predictable or that market players are not able to assess these predictors wisely. The provincial government predicted that the merger of SMDC and Eldorado Nuclear into Cameco would be followed by a boom that would allow for the privatization of the company and sale of stocks on the open market. Since these predictions, the market has receded and privatization plans have not proceeded.

Nor is uncertainty created simply because "Canada's share is not accurately known." Uncertainty is created by strategies of corporations to stockpile large quantities of uranium to ensure future supply and to offer these supplies for sale thus affecting the market. Uncertainty is created by changing government policies and public sentiment with regard to the source of energy supply, particularly in view of concerns about the environment and control of resources. And uncertainty is created by the limited value of industry predictions about future energy consumption. In the 1970s, not even the lowest industry predictions about energy use in the world matched the real growth rate. No one predicted that in the 1980s US energy consumption patterns would level off while the GNP would continue to grow. What has been predictable about uranium mining is that, when the market is poor, the government is prepared to subsidize uranium mining companies with taxpayer money by establishing stockpiling programs.

13. Uranium mining does not provide a viable future for communities. The people of northern Saskatchewan are directly affected but have very little input into the development of the industry. Alternatives to a uranium based economy in the north must be developed.

***Sims** states that this is misleading because it ignores: (a) that Saskatchewan's uranium mines do not have attendant communities which can become ghost towns when the mines are closed; instead, miners are flown to the mines from various communities in Saskatchewan; (b) that public inquiries ensured that northerners had an input into deliberations; (c) that uranium mining has been, beneficial to northern Saskatchewan; and (d) that alternative industries should add to but not replace uranium mining.*

Few native northerners in the predominantly native northern communities are employed at the mines.

Uranium mining does not provide a viable future for northern communities because comparatively few native northerners are employed at the uranium mines. Sims' observation that Saskatchewan uranium mines do not have attendant communities which can become ghost towns is simply beside the point. The point is that few native northerners in the predominantly native northern communities are employed at the mines. This number has decreased over the years *as*

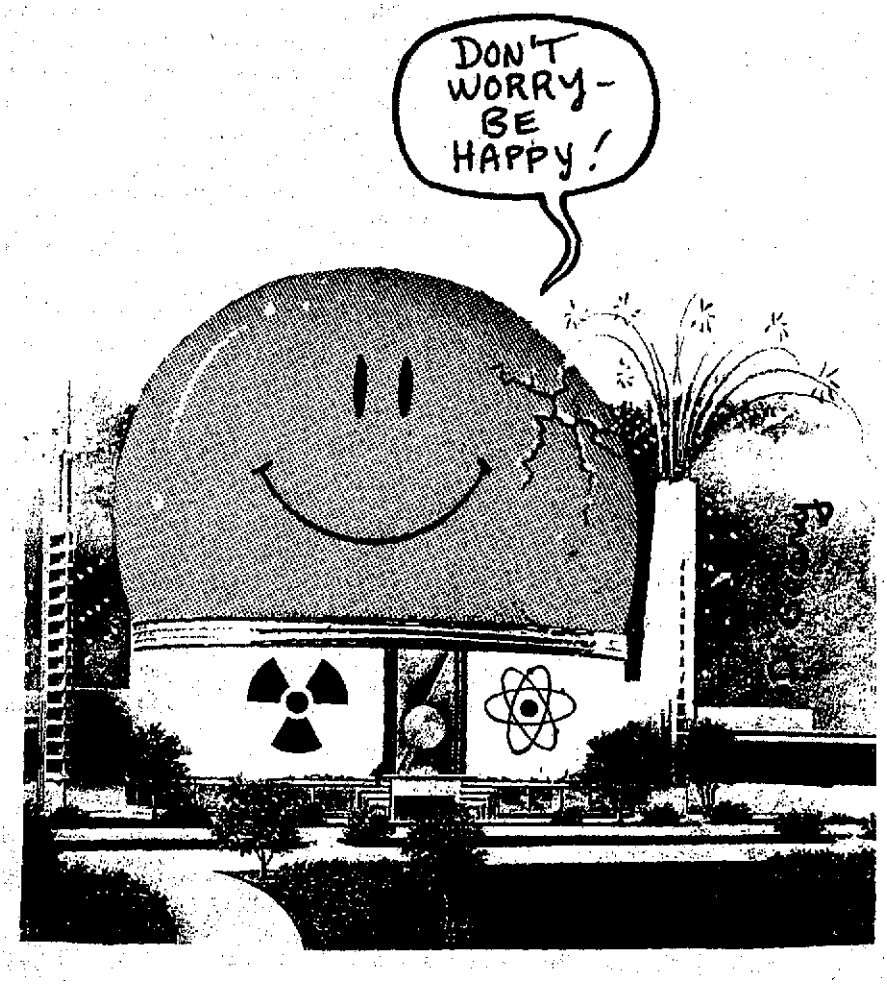
mine construction projects and operations, have slowed down because of weak uranium markets: and as construction and, operations workers come from outside the north. Most northern Saskatchewan communities continue to have very high rates of unemployment; meanwhile, research, financial, management and other economic development resources are used to advance the interests of the nuclear industry rather than the interests of Aboriginals.

The affirmative action' clauses to employ and train northern native people' have been unenforced.

The affirmative action clauses to employ and train northern native people have been unenforced, and, in 1989, the provincial government negotiated removal of these clauses.[57] In the initial lease agreement signed between Key Lake Mining and the government in 1981, an affirmative action component had been established to ensure hiring quotas for "northern residents." [58] The plan required the following: training programs for northerners of Indian ancestry in apprentice-able trades, employment quotas for northerners were to be set at 50% at the operations start up with 60% to be achieved by the second year, not less than 60% of new, hirings were to be northerners with monthly reports to be sent to the Minister of Northern Affairs, within six months of start up the employer was to have a detailed employment plan for each year of operation, the employer was to submit a plan of how to achieve quotas in all phases to the human rights commission, and a six member monitoring committee was to be struck of union, native government, and company representatives to ensure effectiveness in governing the agreement.

Since the Progressive Conservatives formed the government in 1982, "the Human Rights Commission has never received a single report regarding the progress of the employer." [59] The union's affirmative action committee at Key Lake has *never* been involved in monitoring affirmative 'action plans for the agreement, has never received any statistics gathered by the company as required under the lease, and has never received copies of required annual reports.[60]

> The certified union at Key Lake maintains that the required quotas specified under the affirmative action plan were never adhered to. Nor did the employer establish an appropriate training plan to minimize turnover and allow natives and other visible minorities to become indentured or have journeyman status, and be promoted to managerial positions at Key Lake.[61]



In 1988 the government and Key Lake Mining entered into a new agreement without public hearings, or an opportunity for the Human Rights Commission or the union to act as intervenor. This agreement redefined "northerner" in a manner that clearly weakens the objectives of the initial agreement, removed hiring quotas for native people, and was designed to allow the "maximum degree of flexibility" to the employer. Although the corporation sends an annual report to the federal government under the Employment Equity Act, this report makes no provision for hiring northerners.

> Key Lake simply has not developed an infra-structure to train northerners of Indian ancestry to move into trades and management positions. This indicates that since the change of government in 1'982 the employer had no real commitment to comply with affirmative action plans as approved by the provincial Human Rights Commission, according to Hugh Kack (President of the Key Lake *Mining* union local) [62]

Even if quotas were re-established, mining would offer very few jobs compared to what is required to address native employment needs. It

is quite clear that uranium mining will not provide a viable future for northern communities. And although mining has provided some benefits to northern Saskatchewan in terms of the construction of roads, and other infrastructure for mine development, northerners have paid a high price in terms of health, social disruption, and political control.

The Christian leaders released their statement on uranium mining after Aboriginal criticism of government use of the inquiries, hearings, and review processes to legitimate uranium mining pr6jects. The statement reflects concern about the limits of the Cluff Lake Inquiry, the Key Lake Hearings, and the down-graded review process to consider new mines.

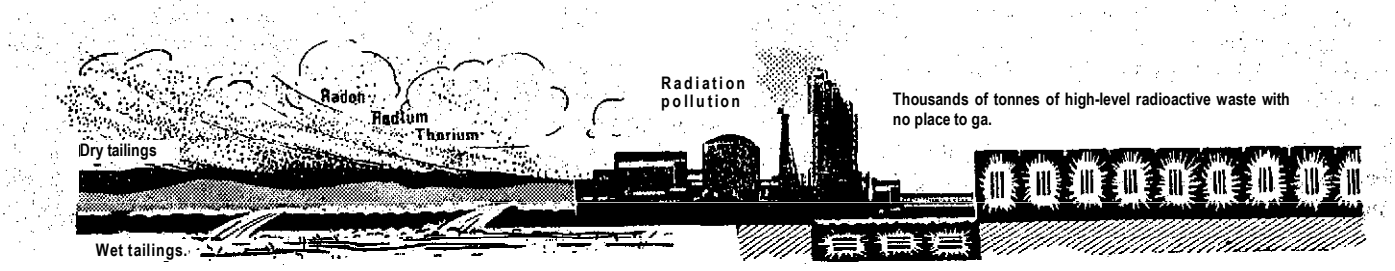
The Cluff Lake Board of Inquiry in 1977 examined the proposal to construct the Cluff Lake uranium mine and mill and to determine if uranium mining should proceed in the province.[63] In response to a call for a two year moratorium and an inquiry into uranium mining in the province, the NDP Convention in 1976 promised hearings.[64] Inquiry terms of reference were narrower than the NDP convention of 1976 called for. Commissioners were carefully chosen and the inquiry was put on an incredibly tight schedule. Less than six weeks after the inquiry started, the government announced that the mine was "committed" and would go ahead. Furthermore, the provincial budget allocated funding for uranium exploration, and the lakes were beginning to be drained in preparation for mining. [65] Church and several other groups boycotted the inquiry when the commissioners refused to extend the time for the hearings so participants could undertake research, consult constituencies, and prepare briefs,[66] and the inquiry refused to provide funds for groups to prepare briefs although it funded pro-nuclear witnesses.[67] The commission rejected outright the united appeal of the Association of Metis and Non-Status Indians, the Northern Municipal Council, and the Federation of Saskatchewan Indians to deal with Aboriginal rights.

Public interest groups boycotted the Key Lake Inquiry in 1980 and the Collins Bay Hearings in. 1981 because the mandate to examine the conditions under which the mine should open was too narrow to hear their concerns, and because they were viewed as instruments for legitimating uranium mining. After the Collins Bay hearings, environmental assessments for uranium mines were downgraded to 30 day "review processes." At a press conference, the Saskatchewan Association of Northern Local Governments, an association representing thirty communities in northern Saskatchewan, called the review process "unjust." They said their communities which had received the dozen technical documents including the social-economic impact studies, did not have sufficient time, expertise, or money to employ professionals to interpret and analyze the studies and prepare submissions.[68] While the review process offered the public appearance of participation they have been criticized for limiting substantive participation.

If uranium mining leads to environmental pollution over the next ten to thirty years, if uranium continues to go into weapons, if northern unemployment remains unaffected, and if political control and participation of northern affairs moves into the hands of global corporations whose primary interest is profit rather than the welfare of northerners, then replacing uranium mining may be a reasonable option.

Conclusion

Sims does not offer a thoroughgoing or rigorous examination of the thirteen statements. lie does not clarify the substance of positions. He does not probe assumptions nor arbitrate contentious issues. Nor does he reconstruct a framework for examining the statement for analysis other than to suggest the work of an "anti-nuclear establishment." Nor does he make an effort to "reach an understanding" from which to engage in debate. Instead, Sims uses the book as, a vehicle to advance the conventional wisdom of the nuclear industry. He reformulates the Christian leaders' position into straw arguments, distorts the leaders' intent, plays on equivocal meanings of words, does not support his accusations,
and advances pro-nuclear explanations and information rather than deal with contentions.



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