

# POSITION OF THE SASKATCHEWAN ENVIRONMENTAL SOCIETY REGARDING HIGH-LEVEL NUCLEAR WASTE DISPOSAL

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## 1. WHY SES OPPOSES NUCLEAR FUEL WASTE DISPOSAL IN SASKATCHEWAN

Nuclear fuel waste is the mixture of materials remaining in the fuel canisters after they are removed from a nuclear power reactor. It contains radioactive fission products, plutonium and unreacted uranium. At present, this waste material from Canadian reactors is stored above ground at each reactor site. Currently a site is being sought for a deep geological disposal facility to which all these wastes would eventually be transferred.

The Saskatchewan Environmental Society (SES) has long opposed the establishment of a nuclear power plant in Saskatchewan. We have concluded that Saskatchewan has much better electricity supply options, including large scale electricity efficiency (500 megawatts), co-generation of electricity (using natural gas), a wide mix of renewable electricity opportunities throughout the province, and hydro imports from Manitoba. We have also opposed nuclear power because of our concern with the intensely radioactive, long-lived wastes that are produced during the operation of nuclear reactors.

Although the Government of Saskatchewan has long rejected the idea of building a nuclear power plant in Saskatchewan, the provincial governments of Ontario, Quebec and New Brunswick have opted to build nuclear reactors for electricity generation. The high-level radioactive wastes created at nuclear power plants in these three provinces are now stored above ground at the reactor sites, where they are monitored on a regular basis. It is unsafe to leave these high-level radioactive wastes there indefinitely. They must ultimately be removed from the Earth's surface, and for many decades now

it has been assumed they will be disposed of underground. Wherever underground disposal occurs, the region in which the wastes are buried will face the risk of groundwater contamination by radioactive materials. Given the long lived nature of some of the elements in the radioactive wastes, that risk – and its associated health hazards - will be faced for thousands of years into the future. Radiation can randomly break molecular bonds and damage genetic information in living cells. This may result in cancer, abnormal development of a foetus, or genetic damage that may be passed on to children, grandchildren and great grandchildren. Some fission products in the fuel waste mimic normal body components. For example radio-active strontium-90 is chemically very similar to calcium and will be absorbed into the bones if it is ingested into the body.

Since Saskatchewan has wisely decided to reject a nuclear power plant, it is the position of the Saskatchewan Environmental Society that Saskatchewan does not have a moral obligation to manage the radioactive wastes that have been created at nuclear power plants in Ontario, Quebec and New Brunswick. The responsibility for disposing of those reactor wastes should lie with the three provinces that opted for nuclear power, knowing full well at the time they did so that high-level radioactive waste was a serious and unresolved problem. Also, the risks involved in transporting used fuel should be minimised by reducing the distance that they have to be moved. As all of the waste sources are far to the east of Saskatchewan, it does not make sense to unnecessarily expose communities along many hundreds of kilometres of public highway to the risk of transportation accidents.

The Saskatchewan Environmental Society therefore strongly opposes current attempts to locate a high-level radioactive waste disposal facility in the province of Saskatchewan. SES would support legislation to prevent the import of nuclear fuel wastes from other jurisdictions into Saskatchewan.

## **2. WHY SES FAVOURS GETTING HIGH-LEVEL RADIOACTIVE WASTES OFF THE SURFACE OF THE EARTH**

Once high-level radioactive wastes are created by the process of nuclear fission, all the options for their disposal are “bad ones”. There are simply no good choices available. Lest anyone underestimate the risks associated with disposing of high-level radioactive wastes, one need only look at the recent U.S. experience at Yucca Mountain, north of Las Vegas. For many years the federal government in the United States planned for high-level radioactive waste disposal at the Yucca Mountain site. More than ten billion dollars was spent on research and site preparation. Yet after all this work and expense, the Government of the United States has concluded that the Yucca Mountain site is not safe because of the significant risk that ground water will be contaminated. The United

States government has also had to face the reality that the people of Nevada are adamantly opposed to the site. In the face of better scientific understanding and strong public opposition, the Yucca Mountain site is being abandoned. At present this leaves the United States with no concrete plan for disposing of the radioactive wastes from over one hundred nuclear reactors.

The unpleasant reality is, however, that the radioactive wastes need to be removed from the surface of the Earth. In a Canadian context, SES holds the view that the first step is to plan for an end to the production of this waste material anywhere in our country. That means an end to nuclear power plant construction and a phase out of existing nuclear reactors in Canada in favour of a renewable energy future. Once a phase out of nuclear power gets properly underway, so should the construction of an underground repository for high-level nuclear waste.

Why does SES believe these wastes should be deposited and monitored underground rather than on the Earth's surface? Simply put, because surface storage presumes social stability and peace, not war. While the high-level radioactive wastes can be relatively safely stored beside nuclear power plants during peaceful times if careful monitoring is regularly done, this is not the case during times of war or civil unrest. Even a conventional bomb striking an above ground nuclear waste storage facility could release into the environment an amount of radioactive material equivalent to that released by hundreds of Hiroshima bombs. The health and environmental effects would be catastrophic, especially because most of the waste material in question is in storage locations adjacent to lakes and close to heavily populated urban centres.

It is for this reason that SES believes the wisest course of action is some form of underground disposal, either deep below the Earth's surface or, for an interim period, in a shallower repository, with continuous monitoring well into the future and with the option of removing the radioactive wastes if serious problems are encountered. Proximity to large water bodies should be avoided.

### **3. PLUTONIUM REPROCESSING IN CANADA SHOULD NOT BE PERMITTED**

One of the many risks facing any region that accepts a high-level nuclear waste disposal facility is the possibility that once such a facility is established, a plutonium reprocessing plant could be built nearby. A reprocessing plant would dissolve the high-level radioactive waste in nitric acid and separate out the plutonium from the rest of the waste material. The Saskatchewan Environmental Society rejects plutonium reprocessing because it creates atomic weapons grade material in a readily useable form. While the national government would no doubt declare that the plutonium would be used only as fuel in nuclear reactors, the reality would be that, at any point in

the future, the plutonium from the reprocessing facility could also be used for either state-sanctioned or illegal atomic weapons production. It is therefore the view of the Saskatchewan Environmental Society that no plutonium reprocessing facility should be allowed in Canada. In fact, plutonium reprocessing should not be permitted in any country because of the nuclear weapons proliferation risk.

#### **4. THE NUCLEAR WASTE MANAGEMENT ORGANIZATION SHOULD BECOME AN ORGANIZATION THAT IS LESS CONTROLLED BY THE NUCLEAR INDUSTRY AND MORE REPRESENTATIVE OF PUBLIC OPINION IN CANADA**

Since an underground facility for high-level nuclear waste disposal does ultimately need to be established in Canada, it is very important that the Canadian government set up an organization to undertake the work in which the general public has confidence. The current makeup of the Nuclear Waste Management Organization (NWMO) is unacceptable because it is entirely controlled by the utilities that run the nuclear reactors - the very people who produced the radioactive waste problem in the first place.

If the Canadian public is to have confidence in the decision making process of the Nuclear Waste Management Organization, NWMO's makeup must reflect the values of the Canadian public. Therefore, a broad mix of public representatives should be added to the NWMO board, representing a wide variety of occupational and political perspectives. These public representatives should hold a majority of the seats on the NWMO board. Simply put, the NWMO should be reconstituted as an arms-length organization that has a significant degree of independence from both the nuclear industry and the Canadian government.

#### **5. PROVINCIAL GOVERNMENT APPROVAL SHOULD BE REQUIRED PRIOR TO SELECTION OF A WASTE REPOSITORY SITE**

For some time now the Nuclear Waste Management Organization has endorsed the principle that no community that hosts an underground high-level nuclear waste facility should do so under pressure. Rather, the host community should be a willing (and well-informed) host. However, the impacts of a waste repository extend far beyond the particular community that seeks to host the facility. Impacts on ground water may well prove regional in nature. Dozens of communities could be affected by transportation impacts. It is therefore the view of the Saskatchewan Environmental Society that, while any decision to host an underground waste disposal facility should require the consent

of the local community where the facility is built, it should also require the consent of the government of the province in which it is located.

## **6. NO IMPORTATION OF NUCLEAR WASTE**

Once the NWMO Board and the Government of Canada give final approval to the opening of a nuclear waste disposal facility, it should be used only for the disposal of nuclear wastes that have been produced from the operation of Canadian nuclear reactors. The timing of the opening of the facility should roughly correspond to the final closure of Canada's nuclear reactors.

SES estimates it will take 30-40 years for all of the high-level waste from Canada's existing nuclear reactors to be transported to the waste disposal facility. After that the need to transport wastes will end, as long as no further reactors are built in Canada and as long as no waste is imported from the United States or other countries.

SES holds the view that the Government of Canada should assure communities along the transport route that the time frame during which transport takes place will be kept as short as possible. A binding contract should be signed between Canada and the host community guaranteeing that no nuclear waste will be brought to the waste facility from the United States or other parts of the world.

## **7. BUILDING A BETTER SOURCE OF REVENUE FOR NORTHERN COMMUNITIES**

Finally, we recognize and acknowledge the desperate need for a sustainable economic base for northern communities that currently suffer high levels of poverty and unemployment. This makes them vulnerable to the apparent benefits that hosting a waste site would seem to offer. We suggest that a far more appropriate way of approaching this need is by providing a much more equitable sharing of the wealth generated by our resource industries.

***This statement was adopted by the Board of Directors of the Saskatchewan Environmental Society on January 25<sup>th</sup>, 2011.***