

GREENPEACE REPORT



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ASSAULT ON FUTURE GENERATIONS

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ISAIAH'S VISION OF THE DESTRUCTION OF BABYLON.

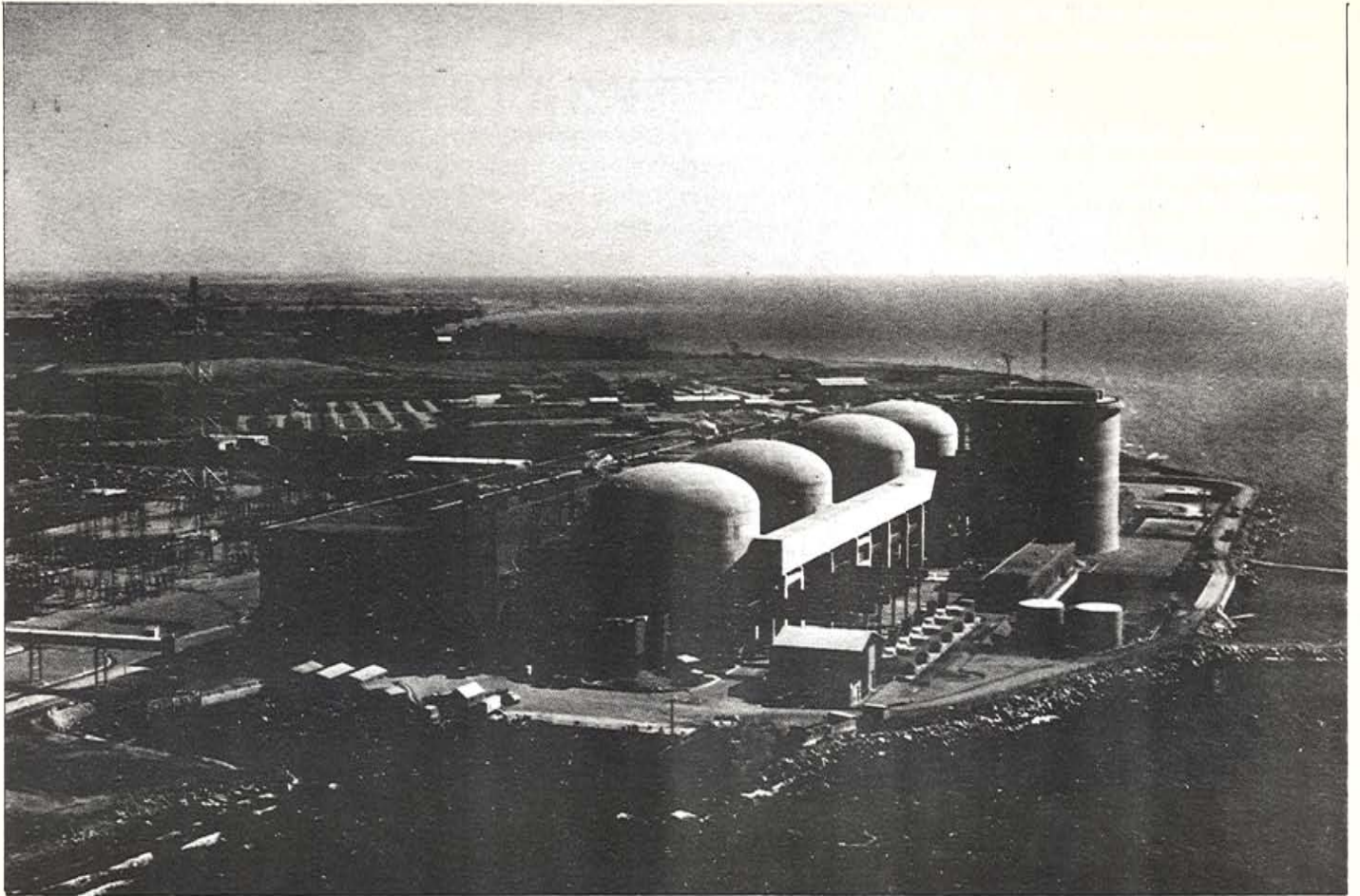
Nuclear powerplants are, next to nuclear warheads themselves, the most dangerous devices that man has ever created. Their construction and proliferation is the most irresponsible, in fact the most criminal, act ever to have taken place on this planet.

These are harsh judgements. This article is an attempt to substantiate them and to bring to the public a true understanding of the nuclear power issue.

Nuclear powerplants are, to put it simply, slow atomic bombs. Both are the result of the same process, the splitting of atoms, which is commonly called nuclear fission. In an atomic bomb the energy derived from nuclear fission is released almost instantaneously. In a nuclear reactor the release of this energy is slowed down and used to produce steam which runs steam turbines which in turn power electrical generators.

Uranium, the fuel that is used for nearly all the presently operating nuclear reactors, occurs in nature as a combination of two distinct isotopes, uranium-235 and uranium-238. For every atom of uranium-235 in a given sample of natural uranium there are over 100 atoms of uranium-238. It is the rarer of these, uranium-235, that is required for nuclear fission.

When the atoms of uranium-235 are split apart in an atomic bomb or a nuclear reactor the resulting bits and pieces are called fission products or nuclear waste. Among these are the well known strontium-90, cesium-137 and iodine-131, all of which have been proven to cause cancer. A single large nuclear reactor produces as much nuclear waste in one year as would result from the explosion of 100 Hiroshima-sized atomic bombs. This is why the few nuclear reactors now in operation have already resulted in millions of gallons of highly radioactive wastes which are buried in various locations around the world.



THE PICKERING GENERATING STATION OF ONTARIO HYDRO, CANADA'S FIRST FULL SIZE COMMERCIAL PLANT WAS COMPLETED IN 1973 AND HAS FOUR NUCLEAR REACTORS.

Due to the slow rate of decay of many of these poisonous nuclear wastes it is necessary that they be kept isolated from the environment for many thousands of years. The rate of radioactive decay of these nuclear wastes cannot be speeded up by any known means. Thus we are confronted with the problem of trying to construct gigantic storage tanks that must not leak for thousands of years. This is only part of the problem that will be inherited by hundreds of generations to come as a result of nuclear technology.

The promoters of nuclear energy are always reluctant to address themselves to the problem of nuclear waste and its implications for future generations. Instead, they concentrate on the less difficult and more manageable problems of thermal pollution (waste heat) and the possibility of an atomic explosion in a nuclear reactor. This is only a clever way of avoiding the real issues. It should be remembered that there are employed in the nuclear industry some very high-powered public relations organizations. One can no more trust them to tell the truth about nuclear power than about which brand of toothpaste will result in the sexiest smile.

It would be bad enough if poisonous nuclear wastes were the only long-term problem to result from nuclear power generation. This fact alone is enough to call for a total moratorium on reactor construction until such time as a solution is found to this apparently insoluble problem.

But a far more serious result of nuclear fission is the production of a substance known as plutonium. This element is created in atomic bombs and in nuclear reactors as a result of the fission reaction's effect on uranium-238. Plutonium, aptly named after the Greek god of Hell, is an inevitable by-product of nuclear powerplant operation. It is the most dangerous material on the face of the earth. A list of some of plutonium's properties will illustrate this fact:

- 1) Plutonium has a half-life of 25,000 years — this means that it takes 250,000 years for the total decay of this radioactive element.
- 2) Plutonium is the most toxic chemical known to man. A piece of this element the size of a grapefruit is enough to poison every person on earth.

3) Plutonium is highly radioactive and the ingestion of even the most minute particle can cause cancer.

4) Plutonium can be used as a fuel for nuclear reactors. Plans for future nuclear powerplants call for the production of many hundreds of tons of plutonium to be used in 'fast-breeder reactors'. It is inevitable that some of this material will find its way into the environment and thus into our air, water and food. Even a very small amount could result in an increase in the incidence of cancer.

5) Plutonium can be used to make atomic bombs. Virtually all the atomic bombs in the world's nuclear arsenals are made from this substance. All the plutonium in these bombs has been produced by nuclear reactors.

It is this last point which must be dealt with at length in order to appreciate the truly insidious nature of the nuclear power industry.

Plutonium does not occur naturally on the surface of the earth. It was therefore non-existent until nuclear fission was discovered. As a result of nuclear reactor operations there are now hundreds of tons of this element on the earth, some of it posed atop nuclear missiles, the rest of it stored away in various locations throughout the industrialized world.

It is far easier to construct a nuclear weapon from plutonium than from uranium-235. In order to build a uranium bomb it is necessary to separate the uranium-235 from the more abundant uranium-238. This is a very difficult and costly operation and requires a great deal of technology and expertise. At this time only a few countries have constructed the facilities necessary for this separation.

The construction of a plutonium bomb, however, is very simple in comparison. The key ingredient for the production of such a weapon is the waste from a nuclear powerplant. It is not difficult to separate the plutonium from the rest of the elements present in nuclear waste. Once this separation is made and the plutonium is collected it is then possible, for a few thousands of dollars, to construct a workable nuclear bomb. The true connection between nuclear powerplants and nuclear weapons becomes clearer.

Dr. Edward Teller, one of the fathers of the hydrogen bomb, has estimated that there are over 100,000 people today who have enough knowledge to build an atomic bomb. Yet this same man, in an article printed in the Vancouver Sun of August 16, 1975, page 6, has come out strongly in favour of a massive increase in nuclear power as the only solution to our "energy crisis". In this article he does not once mention the problem of nuclear waste disposal or the more serious problem of Plutonium production. Instead he only assures us that the reactors themselves will not blow up and therefore there is no cause for concern. Dr. Teller has been working with nuclear technology for over forty years. He is well aware of the serious problems I have so far outlined in this article. One can only hope that this arguments represent a last desperate thrust by an industry whose own scientists are fast becoming aware of the monster they have created.

The Canadian nuclear industry has consistently stated to the public that our heavy-water reactor, (CANDU), is safer and more efficient than the United States' light water reactor.

In truth the CANDU reactor produces three times as much plutonium in its waste than does a comparable U.S. reactor. This is because the fuel used in the CANDU reactor does not have to be enriched to the same degree, i.e. there is a higher percentage of plutonium-producing uranium-238 in the Canadian reactor fuel.

Last year India became the sixth nation in the world to explode a nuclear bomb. Canada was directly responsible for supplying the plutonium for the production of this weapon. It was a Canadian nuclear reactor, sold to India, which produced the necessary plutonium. It was simply left for the Indian scientists to extract the plutonium from the reactors' waste.

Prime Minister Trudeau has stated that it is Canada's "moral responsibility" to supply the technology for nuclear power generation to the under-developed nations of the world. Does he not realize that this is the same as saying it is Canada's "moral responsibility" to supply nuclear weapons to the whole world? The two acts are at this time inseparable.

Canada is now in the process of selling nuclear reactors to South Korea and Argentina, both of which are run by extremist military dictatorships. This is nothing short of a serious international crime on the part of the Canadian government and the Canadian nuclear industry.

Nuclear powerplants must soon go the way of SST's, DDT, and (hopefully soon) whaling fleets if we are to maintain an environment that is suitable for human habitation. The stock-piles of nuclear waste and plutonium are growing daily. The time to stop this crime against ourselves and countless future generations is now.