Nuclear Power

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URANIUM FUELLED NUCLEAR REACTORS POSE THREAT

Nuclear power is produced by a controlled nuclear reaction called 'nuclear fission', in which an unstable atom (typically enriched uranium U235) splits into two smaller nuclei along with a few smaller neutrons, which produces a large amount of energy in the form of heat.

When fission is initiated in the uranium rods contained in reactor cores they heat up and boil the surrounding water, which drives steam turbines that produce electricity.

Enriched U235 can also be used to make a fission bomb. The simplest form of nuclear weapon is a gun-type fission bomb, where a sub-critical mass of fissile material (such as highly enriched U235) is shot at another sub-critical mass of fissile material. The result is a super-critical mass that undergoes fission at a rapid rate and creates the desired explosion, if enough neutrons are produced by the impact to initiate this uncontrolled chain reaction.

Implosion type fission bombs use plutonium P239 that is made from uranium in nuclear reactors, which are far safer than gun type fission bombs (which can be detonated by an electrical fault or lightening), and are used to detonate thermonuclear weapons called hydrogen bombs.

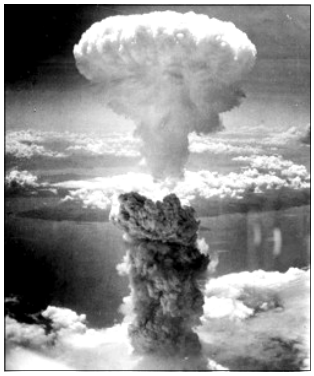
The implosion type fission bomb detonated at Nagasaki (pictured) was 21 kilotons (same as 21,000 tons of TNT), whereas a typical hydrogen bomb is 20 megatons (20 million tons of TNT).

Uranium mining advocates rightly point out that the Nuclear Non-Proliferation Treaty is farce, but that does not mean nations like Australia should sell uranium to nations like India that have not signed the NNPT, rather they should stop all uranium exports for use in power generating nuclear reactors just as most nations banned the manufacture and export of land mines, as there is a far safer alternative.

Thorium cannot melt down, is far more abundant than uranium and all the ore is used, whereas less than one per cent of uranium ore can be used (U235). Thus one kilogram of thorium ore will produce over 100 times more energy than one kilogram of uranium ore; but nobody wants thorium because it is not suitable for building nuclear weapons and thorium needs to be constantly primed in order to sustain a nuclear reaction, thus thorium fuelled nuclear reactors are more costly to build and maintain than conventional uranium fuelled nuclear reactors.

The only reason nations like Australia export uranium for use in the nuclear power industry is because governments and corporations will pay mining companies a great deal of money for it, the taxes from which substantially boost government revenues.

Apologists for the uranium mining industry downplay the Chernobyl and Fukushima disasters with disingenuous statements about the small number of deaths "directly linked" to them, conveniently ignoring the fact that most deaths are caused by the increased incidence of a wide range of cancers.



According to a 2006 World Heath Organization report into Chernobyl 9,000 people will die from cancer among the most-exposed citizens of Belarus, Russia and the Ukraine (many more victims will get cancer but survive).

That same year the Ukrainian health Minister stated that more than 2.4 million Ukrainians, including 428,000 children (some with terrible birth defects), suffer from health problems related to the Chernobyl disaster.

There is also the appalling psychological impact of knowing you and your children have been irreversibly damaged by radiation due to miscarriages, birth defects, skin discolorations and other abnormalities and disorders which cause pain or nausea that cannot be cured.

There is also the issue of high level radioactive waste that will remain lethal for tens of thousands of years, which poses a very real threat to future generations.

Summary of Findings

1. Power generating nuclear reactors fuelled with enriched uranium pose an unacceptable threat to public safety due to the possibility of a core melt down and explosion.

2. Power generating nuclear reactors fuelled with enriched uranium are an integral part of overt and covert nuclear weapons programs.

Recommendation

Political action to stop the use of uranium in power generating nuclear reactors.

Further Reading

Atomic accidents: a history of nuclear meltdowns and disasters : from the Ozark Mountains to Fukushima. Mahaffey, James. Pegasus Books (2015).

In Mortal Hands: A Cautionary History of the Nuclear Age. Cook, Stephanie. Black Inc. (2009).

The Myth of the Nuclear Revolution: Power Politics in the Atomic Age. Cornell Studies in Security Affairs (2020).

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