Nuclear Power:
Closer To Home Than You Think

Editor's Note: Though it took an extended period of time, THE HIGHACRES COLLEGIAN has gathered the information on the nuclear power question. Unfortunately the evidence for the pro-argument had to be taken from various pamphlets distributed by the Susquehanna Power Plant and the Atomic Energy Commission, because a convenient time for a meeting with a nuclear power official could not be arranged. We would like to express our thanks to Dr. Frankel and Mr. Keifer for their help in collecting the evidence for the con-argument.

There can be no final judgment whether nuclear power is good or bad; only time will tell. But for us, the next generation, nuclear power is closer to home than you think.

Nuclear Power: Pro

Nuclear power is rapidly becoming as much a part of modern day energy production as the coal was in the past. But whereas coal was a relatively clean form of fuel, nuclear fuel cannot be handled and can contaminate our environment. This hands-off feature of nuclear power has confused and frightened many people.

At the present time, nuclear power supplies 7 percent of the country's electric generating capacity. There are 55 nuclear power plants operating in the country, and plans are being made to build many more. In spite of this, most of the populous does not know how a nuclear power plant produces energy. This process is explained in this excerpt from a pamphlet distributed by the Atomic Industrial Forum Inc.:

"Electricity is produced at all power plants by spinning the shaft of a huge generator, in which coils of wire and magnetic fields interact to create electricity. In most plants (thermal or steam-electric stations) this spinning is done by high pressure steam blowing the propeller like blades of a turbine connected to the generator shaft. Heat to boil water into steam at these plants is produced in either of two ways; by burning coal, oil, or gas—the fossil fuels—in a furnace or by splitting certain atoms of uranium in a nuclear reactor. Nothing is burned or exploded in these power reactors. There fuel consists of many tons of ceramic pellets made from an oxide of uranium or other fissionable metal. The cylindrical pellets, each about the size of your little finger, are carefully organized in long, vertical tubes within the reactor. Inserted throughout bundles of these fuel tubes are many control rods. These rods regulate a process that results in atoms invisibly flying apart, or fissioning. As the atomic pieces plow through the fuel pellets, they generate heat by a kind of friction, something like the heat you generate when you rub your hands together.

The atoms involved are those of uranium metal within the ceramic fuel. As the nucleus of each atom fission, it shoots out particles called neutrons, which cause mire fissions when they hit the nuclei of other uranium atoms. This sequence of one fission triggering others, and those triggering still more is called a chain reaction.

A nuclear power plant, then, is nothing than a steam-electric generating station in which a nuclear reaction takes the place of a furnace and the heat comes from the fissioning of uranium fuel rather than from the burning of fossil fuel.

The knowledge of the use and production of radioactive particles has created many fears within the population. The fears of nuclear accident, unmanageability of nuclear wastes, nuclear blackmail, and radioactive contamination are stigmas connected to nuclear power.

As for nuclear accidents, or in other words the fallout of nuclear particles due to a failure of some system at the power plant, the nuclear community assures protection of the public by a philosophy known as defense-in-depth. The protection begins in the designing of a nuclear power plant. The nuclear engineer designs the plan for accidents. They are made to withstand 300 mph tornados, the most severe earthquake, and the probable maximum flood. Only test proven equipment is used in the construction of the plant. "A typical reactor in filled with hard, dense ceramic full pellets which cling stubbornly to radioactive waste products within zereonium alloy tubes half an inch in diameter contained in a 750 ton pressure vessel with still walls four to nine inches thick surrounded by a primary containment structure of six-foot thick reinforced concrete lined with more steel, enveloped by the steel and concrete

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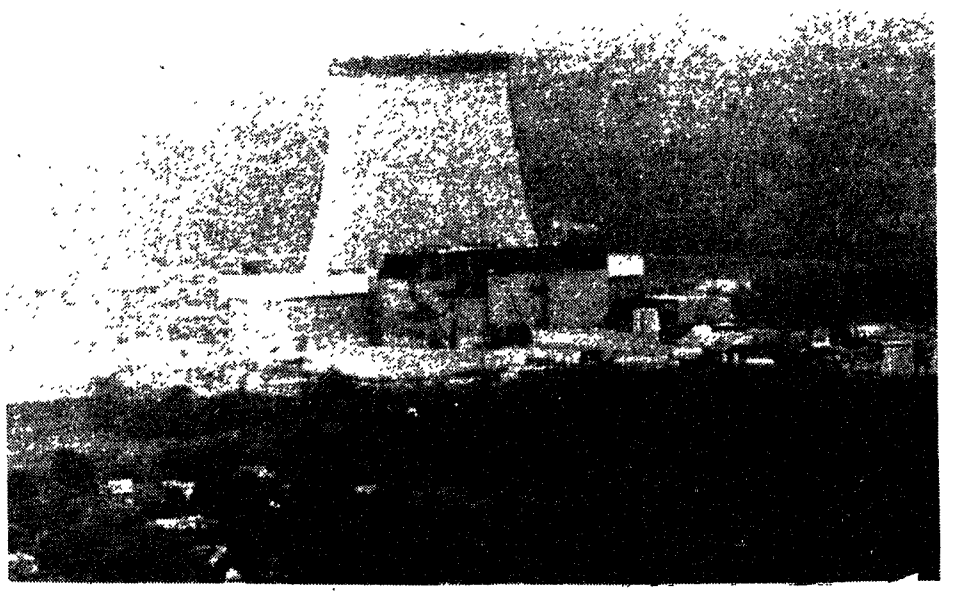

A view of the new Susquehanna Nuclear Plant as seen from the Council Cup Overlook shows the great size of one of the two cooling towers to be built at the site near Berwick. The plant is expected to be in operation by 1980. (Photo by David Kraft)

Nuclear Power: Con

It is the complex combining of fear of the unknown, misunderstanding of available information, and the suspicion that the Atomic Energy Commission is lying about certain aspects of nuclear energy, with the real danger of nuclear fuel has led to the public's confusion and subsequent outcry against nuclear power.

The nuclear power industry, in cooperation with the Atomic Energy Commission has tried to ease the public mind by publishing pamphlets about all phases of the nuclear power plants and providing tours of established plants. But, for every item of proof of the safety of nuclear power that the nuclear industry provides, opposing forces have an equally logical detrimental reason. Thus, the confusion continues.

Dr. Frankel, biology professor at Highacres is one individual who is opposed to the use of nuclear power. "I'd rather see us get by for the next 30 years, or however long it'll take to develop an efficient power source, on coal than on nuclear power." Frankel has several reasons upon which his opinion is founded.

The Atomic Energy Commission cites as one of the reasons for the development of nuclear power the fact that the fossil fuels such as coal and oil are "running out". Nuclear power plants use uranium as its fuel source and Frankel asserts, "In the long run, it's not going to last. It uses depletable resources and eventually will have to be replaced." Presently, uranium is stockpiled across the nation waters for use but not too long ago tons of coal were waiting underground.

The fear of radioactive contamination from a nuclear power plant explosion is prevalent in the public mind and Frankel admits this is one of his fears, too. "The Atomic Energy Commission is checking for safety, but how safe is that?" comments Frankel. Government agencies have been known to fail in their duties before as evidenced in the collapse of grain silos a few months ago.

Atomic weaponry is featured in the "arms race" issue and the possibility of using the fuel used in nuclear plants and the wastes produced by them to create weapons worries Frankel and other opponents of nuclear power. "Any country that has peaceful nuclear power plants also has the possibility of making nuclear weapons," states Frankel.

Even if and perhaps, worse, if the nation did not want the nuclear elements for use in weapons, someone else may. "There is no way to contain the proliferation of nuclear power," according to Frankel. If the President of the U.S. can be attacked and killed with security guards all around why can't a pile of nuclear elements be stolen?

Frankel's main reason for opposing nuclear power is that "there is no satisfactory way of disposing of nuclear wastes. They will be around for millions of years with dangerous radioactivity. There is only so much ground the government can bury wastes under until there is no more space.

Another opponent of nuclear power, who is mainly concerned with the environmental aspect is Robert Keifer, a microbologist who resides in Hazleton. Keifer was a student at Highacres four years ago and was president of the Biology Club (now the Outings Club) and presented a case against nuclear power bases on evidence he found by testing the water in the Susquehanna near the power plant. He is mainly concerned with the effect the dumping of hot water, used to cool radioactive wastes, will have on the river life. He is afraid the bacteria already in the water because of pollution will multiply faster because of the rise in water temperature and thus, speed up the pollution of the river.

Also he feels that the small amount of radioactive particles the plant officials claim will escape may be enough to cause mutations in the fish that inhabit these waters. If these fish are eaten or the water used by people downstream who knows what will happen to them?

Keifer feels that the use of the river by the plant "will affect the river faster and differently than they say."

He feels they should have done more and better preliminary testing and have kept the people informed as to what is happening. "My attitude would change if they would have meetings for people and show concrete results of tests. If I saw an Atomic Energy Commission, federal government, and state sanctification of a plant I might learn to live with that."

If the nation does not develop nuclear power what should it do? Some alternatives given by these two gentlemen were to continue to use coal with the best environmental controls possible while the money currently used for nuclear power is used to produce hydrofusion reactors and solar power. Or, if nuclear power is to be developed the public should be kept informed of how things are going, whether they are happening as predicted or if changes will have to be made.