

The promises and perils of nuclear power

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The Promises and perils of Nuclear power s “ Nuclear poweris the power (generally electrical) produced from controlled (i. e., non-explosive) nuclear reactions and commercial plants use nuclear fission reactions” (Ahuja & Ahuja, 2012) in which elements like Uranium are split up in a nuclear power reactor and the energy released is utilized to produce steam. This steam is then made to turn turbines which produce electrical energy. The strong interactive forces existing in the nucleus i. e. the nuclear power can be used to produce electricity because these forces are one of the greatest forces in nature and their potential energy can be transformed to other forms of energy, in this case electrical energy. Fission being a dangerous process needs to have controlling rods or moderators, to control the energy release. Without the presence of these controls, the process may go out of hand leading to a nuclear explosion. These rods are made up of cadmium and hafnium which are elements that are neutron-absorbing in nature and help control the rate of reaction. The elements used for nuclear power production are radioactive in nature; these elements include Uraniumm-235, Plutonium-239 and Uranium-238. Nuclear power has certain advantages as well as disadvantages. Nuclear power production decreases pressure on fossil fuels. Though the initial costs of setting up a nuclear plant is more owing to the elemental costs, the cost of transportation is relatively less. The most significant disadvantage of nuclear power production is the production and elimination of nuclear waste which involves high costs too. The nuclear power reactor market in the United States after the early 1960s can be seen as the tail end of an increasing returns process (Cowan, 1990) but it depreciated thereafter . Japan, is one of the leading countries that depends on nuclear power for electricity production. 30% of Japan’s electricity comes

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from nuclear reactions. Compared to Japan's skyrocketing use of nuclear power, U. S has decreased its use over time. While Japan keeps on building more plants the U. S government have stalled the construction of new plants. Since production of nuclear power is clean and economical, there is a race among many countries to increase their nuclear power (Mahaffey, 2012) and continue to produce their electricity using nuclear reactions. In the past, some extreme nuclear calamities have affected lives worldwide. Through these calamities we have learnt about the extreme nature of nuclear power and its dangerous capabilities. We have learnt to use modern generation II and generation III designed reactors for safe generation (Blandford & May, 2012). These calamities have taught us the need for increased studies on such events, need for increased sharing of information between countries on safety standards and enhancing the ability to recognize calamity precursors as warnings.

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