

Nuclear Power – Dirty, Dangerous and Dishonest

Nuclear power, like nuclear weapon production, has been and always will be a socialistic enterprise almost totally supported, insured and funded by taxpayer dollars.

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Now when we go back to using nuclear power, we are creating something which nature tried to destroy to make life possible... Every time you produce radiation, you produce something that has a certain half-life, in some cases for billions of years. I think the human race is going to wreck itself, and it is important that we get control of this horrible force and try to eliminate it... I do not believe that nuclear power is worth it if it creates radiation. Then you might ask me why do I have nuclear powered ships. That is a necessary evil. I would sink them all. Have I given you an answer to your question?

Admiral Hyman Rickover, On the hazards of nuclear power. Testimony to Congress (28 January 1982); published in *Economics of Defense Policy: Hearing before the Joint Economic Committee, Congress of the United States, 97th Cong., 2nd sess., Pt. 1* (1982)

Nuclear power is expensive, dirty, dangerous and environmentally destructive. It has been more than three decades since a new nuclear plant has been built in the United States. The industry gives the idea that nuclear power is safe and commercially competitive. Others disagree. In February, 1985, Forbes magazine rated the nuclear power industry as "the largest managerial disaster in business history." In August, 2012, the US Court of Appeals made a ruling that spent nuclear fuel stored on-site at nuclear power plants "poses a dangerous, long-term health and environmental risk" causing the Nuclear Regulatory Commission to freeze at least 19 final reactor licensing decisions.

After the Three Mile Island incident, Chernobyl and Fukushima, the public does not support building more nuclear power plants. Nevertheless, the nuclear lobby has shown its clout in persuading Congress to subsidize new plants. In the Energy Policy Act of 2005, eligible nuclear utilities can receive government backed loan guarantees for up to 80 percent of the new plants' cost.

The nuclear lobby argues that nuclear reactors do not generate carbon dioxide and therefore have a beneficial effect on global warming. However, like coal, uranium can only be mined by using fossil fuels. The uranium ore is then converted, enriched and transported.

Nuclear power plants must be built using fossil fuels for construction and manufacturing concrete, steel and other materials. Transporting and storing uranium requires fossil fuel.

Taking this into account, scientists at the Oko Institut in Germany maintain that nuclear power plants generate more greenhouse gas emissions than a

natural gas-fired cogeneration plant and more than renewable electricity from wind farms, solar and geothermal plants, hydroelectricity and biomass. What is worse is that the nuclear plants emit chlorofluorocarbon gas which is 10,000 to 20,000 times more efficient as an atmospheric heat trapper (greenhouse gas) as carbon dioxide. Chlorofluorocarbon gas, banned for commercial use, is an ozone layer destroyer.

The nuclear industry likes to brag about a safety record that does not exist. Sometimes radioactivity escapes the reactor or contaminated water spills. On any given day, there are three or four incidents at power plants throughout the country that are serious enough to report to the government. With some frequency, the operators have to shut down, as reported on the Nuclear Regulatory Commission web site (www.nrc.gov) under "Event Reports" and "Event Notification Report."

There is no safe radiation dose and radiation effects are cumulative. (This is a good reason to avoid all but the most necessary X-rays or CAT scans.)

Government regulations allow nuclear plants to several hundred thousand curies of radioactive gases and elements into the atmosphere every year. Condensers at the nuclear plants release about 100 cubic feet of radioactive gases per hour. All nuclear plants produce poisons like Cesium-137, Iodine-131 and Strontium-90.

American nuclear power plants generate an estimated 85,000 metric tons of toxic spent fuel rods that must be isolated for tens of thousands of years. A Nevada state agency reported that after 10 years out of service an unshielded spent fuel assembly would emit enough radiation to kill someone standing three feet away in fewer than three minutes.

The Nuclear Regulatory Commission allows planned "purges," flushing radioactive gases into the atmosphere by fan allowing maintenance workers to carry out their assignments in a less radioactive environment. Living near a nuclear plant is dangerous. Before constructing two nuclear reactors (the South Texas Project) in Matagorda County, death rates for infants and children were far below state rates. In the four years following the reactors' installation, infant and child death rates rose 60 percent and 33 percent, respectively, while state rates declined.

Little known to the public and not prominently advertized by the nuclear power lobby is the Price Anderson Nuclear Indemnity Act, which subsidized nuclear power from the beginning. When the power plants were about ready to come on line in the middle 1950s, the industry told the Congress that their liability insurance on the open market would be equal to all their operating cost.

The Act now obligates nuclear licensees to provide about \$12.6 billion in insurance coverage to compensate the public for a nuclear accident. A licensee must obtain \$375 million in liability insurance for each reactor. There is a second tier is an insurance pool in which each licensee pays a proportionate share of any loss that exceeds \$375 million, not to exceed

approximately \$12.6 billion. The US government assumes the responsibility to enact provisions to cover the public for losses exceeding the second-tier coverage (about \$12.6 billion). Congress has the option under the Price Anderson Act to require the licensees to cover losses exceeding \$12.6 billion. Since the insurance companies lacked the capacity and willingness to insure the public against a \$400 billion loss in 2005 dollars, the nuclear power business in the United States could not have started without socializing corporate costs. In all fairness, no other nation with nuclear power has any required insurance to protect the public. Those damaged in the Fukushima were on their own.

A meltdown at a nuclear plant can easily generate losses hitting \$400 billion. The Sandia National Laboratory made a report assessment showing consequences from a class-9 or worse case scenario in 1982 (<http://www.beyondnuclear.org/storage/CRAC%20%20chart.pdf>) Consequences of Reactor accident Report. The same report gave an assessment for every active reactor in the United States in 1982.

The worse case for a meltdown at unit 1 at the South Texas Project had property losses at \$112 billion, peak early casualties of 18,000, peak early injuries of 10,000 and peak cancer deaths of 11,000. The consumer price index has doubled since then.

Ralph Nader points to institutional incentive to underreport damages and deaths from nuclear disasters. The International Atomic Energy Agency (IAEA) has a conflict of interest because it promotes atomic energy and monitoring safety at the same time. The IAEA's estimate that 4,000 died at Chernobyl between 1986 to 2011 jars with another estimate that a million have died. Mr. Nader point a compilation with 5000 scientific studies, mostly in the Slavic languages edited by Alexey Yablokov, Vassily Nesterenko and Alexey Nesterenko titled *Chernobyl: Consequences of the Catastrophe for People and the Environment*. This study is available online, <http://www.strahlentelex.de/Yablokov%20Chernobyl%20book.pdf>. The "corporate scientists" and "regulatory apologists" (Nader's terms) have totally ignored the report. Considering the precautionary principle and the nuclear establishment's inability to speak candidly, I accept the one million estimate until there is a rigorous investigation.

The American Nuclear Insurers is a joint underwriting association with about 50 member companies. An annual task is to determine premium rates, which vary by safety record, operational performance and population density of the surrounding area. The average annual premium per reactor site is \$903,000.

There are estimates that the public subsidizes the insurance premiums by \$3.5 million to \$33 million per reactor site per year. Since there is no actuarial history for a major accident, the American Nuclear insurers make judgment premiums for the first- and second-tier insurance. Since nuclear

power is a mature industry in operation since 1957, I advocate that they become competitive without subsidies. Many theoretical exercises are possible to determine the premium they should pay to the US Treasury to make their insurance expense measurable with other utilities but the acid test is to require the nuclear plants to obtain an additional \$30 billion per year until the coverage reaches \$400 billion per reactor, a low estimate for a massive loss.

The Price Anderson Act's good side is that nuclear facilities are required to have liability insurance for their actions. The Act has features unique to the US insurance industry and perhaps the world. This insurance covers virtually any loss related to nuclear power.

For other utilities, the public bears the costs directly and is fortunate to receive some assistance. For example, when the Teton Dam in Idaho failed in 1976 and caused over \$1 billion in property damages, the only compensation the victims received was about \$350 million. Also, when a nuclear accident's losses exceed the first tier, the other nuclear power plants pay an additional premium, even though they did not incur an accident.

A major step in protecting the public would be to require non-nuclear utilities and petrochemical plants to have sufficient insurance to cover a catastrophic loss. The petroleum companies receive subsidies amounting to \$4 billion per year from the federal government. In the 1948-1998 period, the US government spent \$111.5 billion in on energy research and development. Seventy billion (60 percent) went to nuclear research.

The nuclear plants are notorious for cost overruns. The first projected costs for the Comanche Peak plant in Somerville County, Texas were \$750 million. The final cost was \$12 billion.

The nuclear industry has not solved the waste disposal problem. A 1,000 megawatt nuclear power plant generates 30 tons of radioactive water per year, plutonium and spent fuel rods. This waste remains radioactive for tens of thousands of year. Most nuclear waste is stored in cooling pools and dry casks on the reactor site.

According to Helen Caldicott, in Nuclear Power Is Not The Answer, there are places in the US and different countries "where huge quantities of reprocessed toxic material waste are left unconfined, leaking and seeping through soils into aquifers, lakes and seas, where it enters and concentrates in the food chains of plants, fish, animals and humans."

In 1982, Congress passed the Nuclear Waste Policy to relieve the nuclear power industry from nuclear waste responsibility. There was a major effort to make Yucca Mountain, Nevada, a repository for all waste in the US. Since there were numerous discovered difficulties such as potential earthquake activity, Yucca Mountain is on the back burner but not abandoned.

Heavy investment in alternative fuels and nuclear power elimination would make the world safer from nuclear terrorists and nuclear proliferation. It only takes 8 kilograms of reactor grade plutonium to make an atom bomb –

a point not lost on those concerned about countries with the ability to generate nuclear power that are at the same time resent US foreign policy. Since civilian facilities generate about 1,500 tons of plutonium per year, there is much security required to make sure that none falls into terrorist hands. There are no similar problems with alternative fuels.

Renewable energy is quick, easy to build, safe and environmentally friendly.

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