Nuclear Power - One of Humankind's Biggest Mistakes

Contributed by Jim Bell
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Nuclear Power was a mistake and remains a mistake. If the human family survives it, our descendants will wonder what we were thinking to justify leaving them nuclear power's toxic legacy -- a legacy they will be dealing with for hundreds if not thousands of generations.

And why did we do it? To power our lights, TVs, radios, stereos, air conditioners, etc. and the tools we used to make them.

Our creation of nuclear power will be especially difficult for our descendants to understand because they will know that in the nuclear era, we already had all the technologies and know-how needed to power everything in ways that are perpetually recyclable, powered by free solar energy and which leave zero harmful residues in their wake.

On its own, nuclear power's toxic radioactive legacy should be enough to give any thinking person sufficient reason to want to eliminate it as quickly as possible and do everything to protect our descendants from the radioactive wastes already created.

The human family has been at war with itself for the majority of its history. Human history is full of successful, advanced and sophisticated civilizations that utterly collapsed. To the informed, even our current civilization(s) don't feel very solid. Plus there are earthquakes, tsunamis, volcanoes, severe weather, terrorism, and just plain human error. This given, who can guarantee that anything as dangerous and long-lived as nuclear waste can be kept safe for even 100 years much less the hundreds to hundreds of thousands of years it will take before some of these wastes are safe to be around.

And even if an insurance company did guarantee its safety, what is their guarantee worth? What could they do to protect us and future generations if San Onofre's spent fuel storage pond lost its coolant water. If this happened an almost unquenchable radioactive fire would spontaneously erupt, spewing radioactive materials wherever the wind blew for weeks if not months -- rendering Southern California a dangerous place to live for thousands if not hundreds of thousands of years.

Notwithstanding the above, the nuclear industry is lobbying the public and the government to continue supporting them politically and economically so the industry can expand.

Its latest rational is that nuclear power will produce fewer greenhouse gases than what would be produced using fossil fuels to make electricity. This is true if one only looks at what happens inside a reactor. It's not true when accounting for all the fossil fuel energy consumed during nuclear power's fuel cycle, and what it takes to build, operate and dismantle plants when they wear out. Additionally, even if nuclear power was ended today,

fossil fuel energy must be consumed for millennia in order to protect the public from the radioactive residues that nuclear power has already generated.

An increasing number of former industry and non-industry experts are saying that at best nuclear power releases slightly fewer greenhouse gases to the atmosphere than if the fossil fuels embodied in it had been burned to make electricity directly.

In his 2002 book, Asleep at the Geiger Counter, p. 107-118, Sidney Goodman, (giving the industry the benefit of the doubt on a number of fronts and assuming no serious accidents or terrorism), concludes that the net output of the typical nuclear power plant would be only 4% more than if the fossil fuels embodied in it had been used directly to produce electricity. This means, best-case scenario, replacing direct fossil fuel generated electricity with nuclear generated electricity will only reduce the carbon dioxide released per unit of electricity produced by 4%. Goodman is a long practicing licensed Professional Engineer with a Masters Degree in Mechanical Engineering.

Other experts believe that nuclear power will produce about the same amount of energy as was, is, and will be consumed to create, operate and deal with its aftermath. This case was made in an article published in Pergamon Journals Ltd. Vol.13, No. 1, 1988, P. 139, titled "The Net Energy Yield of Nuclear Power." In their article the authors concluded that even without including the energy that has or would be consumed to mitigate past or future serious radioactive releases, nuclear power is only "the re-embodiment of the energy that went into creating it."

In its July/August 2006 edition, The Ecologist Magazine, a respected British publication, featured a 16-page analysis of nuclear power. One of the conclusions was that nuclear power does not even produce enough electricity to make up for the fossil fuels consumed just to mine, mill and otherwise process uranium ore into nuclear fuel, much less all the other energy inputs required This is not surprising given that typical U-235 ore concentrations of .01% to .02%, require mining, crushing and processing a ton of ore to end up with 1/2 oz to 1 oz of nuclear reactor fuel. To put this in perspective, the typical 1,000 MW nuclear power plants uses around 33 tons or over 1 million oz of nuclear fuel each year.

As a teenager I saw a TV program that showed a man holding a piece of metal in the palm of his hand. He was saying that if what he held was pure uranium it would contain as much energy as the train full of coal that was passing by him on the screen. I became an instant "true believer" in nuclear power. I thought if something that small can produce the same amount of energy as all that coal, there will be plenty of energy and therefore plenty of money to address any dangers that using it might pose.

Unfortunately, to get that level of energy from a small amount of pure or near pure uranium it would require that it be exploded as an atomic bomb. Of the uranium used in a reactor, only a fraction of the energy in pure uranium gets used. That's why we are left with depleted uranium and other long-lived wastes.

The nuclear industry says that nuclear power is safe, a big net energy producer, and that it will be cheap and easy to keep its wastes out of the environment and out of the hands of terrorists.

But if these claims are true, why has an industry that supplies only 8% of our country's total energy and 20% of its electricity consumed hundreds of billions of tax dollar subsidies since its inception? Now in 2009, the industry is lobbying for $50 billion in loan guarantees on top of the $18.5 billion already allocated by the Bush administration.

If nuclear power is so safe and wonderful, why does it require the Price Anderson Act? The Price Anderson Act puts taxpayers on the hook if the cost of a major radioactive release exceeds $10.5 billion. According to a Sandia National Laboratory analysis, this puts taxpayers on the hook for over $600 billion to cover the damage that a serious radioactive release would cause. Another Sandia Laboratory study focusing just on the Indian Point nuclear power plant in New York, concluded the damage caused by a serious release from that plant could cost up to a trillion dollars. Needless to say, any serious radioactive release from any U. S. plant would wipe out any net energy gain by nuclear power if -- there ever was one.

Realizing the potential cost of a serious radioactive release, manufacturers, insurers and utilities, were unwilling to build, insure or order plants. They only got seriously involved after the Congress assigned these cost to the taxpaying public. On page 7 of a report by the Institute for Energy and Environmental Research titled The Nuclear Power Deception, they included the following 1996 quote from then NRC Commissioner James Asselstine, "given the present level of safety being achieved by the operating nuclear power plants in this country, we can expect a meltdown within the next 20 years, and it is possible that such as accident could result in off-site releases of radiation which are as large as, or larger than the released estimates to have occurred at Chernobyl." Bear in mind, a meltdown is only one of several things that could happen with nuclear power to cause a serious radioactive release.

As I said in the beginning, nuclear power is a mistake. Especially considering we already have all the technologies and know-how needed to make us completely and abundantly renewable energy self-sufficient. Solar energy leaves no radioactive residues for our children or future generations. Additionally, although not completely environmentally benign yet, solar energy collection systems can be designed to last generations, be perpetually recyclable and leave zero toxic residues behind.
If San Diego County covered 24% of its roofs and parking lots with PV panels, it would produce more electricity than the county consumes. This assumes that 3 million resident use, on average, 10 kWh per capita per day after installing cost-effective electricity use efficiency improvements.

For ourselves, our children and future generations, let's move into the solar age.

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Jim Bell is an ecological designer, author, and lecturer. He ran for Mayor of San Diego in 1996, 2000, and 2004. His honors include: The Society of Energy Engineers' Environmental Professional of the year for the Southwestern States, a "Beyond War" award, and a City of San Diego Water Conservation Design Award. For details read his free books, visit jimbell.com

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