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LEADS

Gallagher, Carol

From: Steve Behling [steve@michiana.org]
Sent: Friday, November 16, 2012 1:52 AM
To: Gallagher, Carol
Subject: A profitable way to recycle spent nuclear fuel.

2012 NOV 16 AM 9:42

An extremely low cost way to recycle spent nuclear fuel, and bring fresh water to the west.

RECEIVED

Originated 4-15-07.

This paper describes a possible solution to several energy problems: Last update 9-23-12

The reason I wrote this paper, is because, for several years now there has been some trial balloons sent up in my area, and I am guessing by people living in the southwest regarding:

Building a pipeline from the great lakes to the southwest. Because of the water shortage in that area, there are more than a few people who have proposed a project of this sort. In my opinion, there is a lower cost way to solve this problem, with less legal and political considerations.

As strange as this may sound, the idea for this paper was given to me by a anti-nuclear environmentalist who in describing various reasons that nuclear power plants should not be built, informed me that some of these casks have "skin temperatures" of three hundred and fifty degrees. I have never been able to confirm this exact figure. The cask manufacturers themselves however, and there are several, advertise the fact that "their casks" can typically store spent fuel safely for one hundred years, while at the same time allowing the latent heat of the fuel rods to gradually cool.

I. This paper can be divided into two sections, if you wish. Nuclear and non-nuclear. For those of you that are nuke haters, simply ignore the nuclear aspect of it, and concentrate on the solar aspects of it.

II. Employing Death Valley, or any other similar suitable areas, to generate electricity at a profit, as well as rock salt, seafood, distilled water, and an ongoing tax base, as well as creating permanent jobs in the state of California. On a second level, which does not have to be incorporated into the overall concept, a possible solution to the problem of the disposal of spent nuclear fuel.

Keep in mind that the United States power grid is the worlds largest invention, employs over a million people, and is kept on line with billions of dollars in revenue on a yearly basis.

One major problem is the lack of fresh water in the west/southwest. The second is what to do with the old reactor cores, that nobody seems to want stored next door to them. Consider this:

I don't know if you are aware of the so called "Rad-waste-problem" or not. I submit to you that there is no serious problem. A while back I found out that these spent fuel containers or "dry casks," constructed around old reactor cores, have a skin temperature of up to 350 degrees. This is more than enough to boil water. Because of the politics involved, which I will not go into in this paper, the reactor owners are not allowed to ship the old cores to the Yucca flats burial area. Currently, the result is that the plant operators are encasing the old cores in concrete shells, and storing them out of sight behind the plants, so to speak. It seems plausible to me that boilers, or steam generators could be constructed using these old cores, and put them to good use, generating cash rather than trying to dispose of them.

These dry casks that are piling up all over the United States, and the rest of the world for that matter, which at the moment, nobody wants, could be configured into a low cost giant electrical power plant, or used to heat large buildings directly.

It seems obvious to me, that making an attempt to re-use these old cores would solve several problems at once..... Consider:

1. Cost of reprocessing spent nuclear fuel.
2. Solving the spent fuel burial problems.

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3. Providing "spot energy" for small users, as these units could be thought of as large water heaters.
4. Using spent fuel dry casks in conjunction with solar arrays to manufacture fresh water from salt water, in Death Valley.
 - 4.1. Generating hydrogen gas, which can be tanked and stored as an energy reserve.
5. Reducing the amount of transmission towers, and related problems of maintaining them.
 - 5.1 Transmission tower design.
6. Can be constructed with off the shelf items.
7. Billions of dollars in savings.
8. As safe or safer than a pebble bed reactor.
9. Are those cooling towers on nuclear plants really needed?
10. A word about coal fired plants.
 - 10.1 Two viewpoints on mercury emissions from coal-fired plants.
 - 10.2 A word about decreasing, reusing, or recycling carbon dioxide.
11. Where is all the water going that is melting off the polar ice caps?
12. Fighting fires in California.
13. Raising fish in Death Valley.
14. Dividing up, or parceling out sections of the flooded area to private companies that specialize in desalination.
15. Creating an inland water mecca.
16. A word on carbon credits.
 - 16.1 Panic mongers should be held responsible for any harm they do.
 - 16.2 A word about one of the panic mongers, Al Gore.
17. 60 Minutes report on the Death Valley water crisis.
18. This project would be immune to any type of solar flare, or any other negative type of solar energy that would disrupt or destroy power lines, satellites, phone lines, or cell phone towers.
19. Supporting evidence: If you observe photograph 1 at the end of this paper, you will notice

that the snow is absent around the base of the three casks. The latent heat output is great enough to boil off snow and water in the middle of winter!

19.-A. Supporting literature includes articles written by others on their viewpoints of nuclear power. Please note: These authors may or may not agree with my viewpoints.

20. Update on California's desalination projects.

Item number 1. The United States no longer reprocesses spent nuclear fuel to any great extent. This is because of bad planning, bad engineering, and human blunders that damaged and contaminated the processing plants, and made them unusable. Also, the liquid radioactive waste that has leaked out of on site storage tanks at Hanford hasn't helped matters much either. Overall, these problems were caused because the amount and types of radiation that is given off from freshly discarded cores, was greatly underestimated. This is because of the "daughter" elements that are created by the fission process. Some of the elements are short lived. For example, the polonium 210 that was used to kill the Russian reporter has a half life of only thirty days. The only way you can obtain this element, is to mine a reactor core. At any rate, if the cores are allowed to "cool off" for ten years or so, most of the hard radiation will be greatly reduced. I submit that by creating a "middle step" of harvesting heat from these cores, instead of burying them, will drastically reduce the cost of reprocessing spent cores. Another item that is not widely known, is that between ninety five to ninety seven percent of the energy of the original core is retained in the spent cores. This is what produces the latent heat output. With the price of nuclear fuel rising, it would make a substantial cost savings to reuse old cores.

Item number 2. Solving the spent fuel burial problems. As far as I know, not one single cask of spent nuclear fuel has been safely "buried" anywhere in the United States, or anywhere else in the world for that matter. Over a billion dollars has been spent on the Yucca mountains burial project, and has went nowhere. Also, the amount of spent fuel that has been created up to this point would more than exceed the tunnel space that has been excavated so far. By the way, have fun trying to convince all the people in the area, that it's a good idea to live down the street from a high level spent fuel dump. Reusing high level spent fuel would go a long way to solve this problem. The Yucca mountains people, might not have an objection to having "low level" waste being put into tunnels. Low level waste being, boots, gloves, clothing, respirator masks, and small quantities of short lived rad-waste products, such as hospital rad-waste discards.

Item number 3. Providing "spot energy" for small individual users, as these core units could be thought of as very large water heaters, or heat exchangers.... Another twist to the concept of reusing spent fuel, is that believe it or not, you do not have to use the radioactive material in the old cores to generate electricity, as a reactor does. You can simply place them in a given area to generate heat.

A nuclear power plant, once you remove all the bells and whistles, is simply a giant water heater. The reason why a reactor has to be refueled, is not because it will no longer boil water, its because it will no longer boil water at the design rate of the reactor. Putting it another way... A reactor may have a 100 megawatt design rating. Over time, the power output will fall below this rating as the fuel decays. At some point after this it must be refueled to stay at the 100 megawatt power level. At this point the spent fuel is removed, and placed in a cooling pond separate from the main reactor. This is why most reactors are located next to a river, large lake, or ocean. There is so much waste heat generated, just from these old cores, that to cool the reactor in an emergency, any municipal water source would be inadequate and overwhelmed. In the old days, the spent rods cooled for a time, in these ponds, and then were shipped to a reprocessing plant. As stated earlier, this proved to be a disaster. As a result, spent cores are now gathering dust, so to speak, at nuclear power plants all over the United States, as there is no longer a place to put them. The same river water that helps cool the reactor, cools these rad waste core ponds. The result of this whole mishmash, is that much useable energy is being wasted heating bodies of water instead of large buildings. This whole situation could be resolved if the spent fuel was containerized and used at factories or large buildings to provide heat. One other example come to mind. As everyone knows, ethanol and bio-fuel plants are springing up all over the United States. These companies use energy to separate alcohol from water to generate motor fuel. The boiling point of alcohol is about 175 degrees Fahrenheit. This is all the heat you need to complete the processing of ethanol. There are over one hundred ethanol plants in the U.S. alone. Currently, most of these ethanol plants use natural gas to provide the heat input. This not only uses valuable natural gas, it also adds to the overall cost of the ethanol. Using the heat from rad-waste however, changes the situation 180 degrees. In other words, motor fuel can be manufactured at a lower cost, using the dry casks of spent fuel that nobody else wants.

Item number 4. Using the spent fuel dry casks to manufacture fresh water from salt water, in Death Valley.

According to all the unsubstantiated gossip I have been hearing over the years, the state of California, as well as most of the southwest, is a drop or two short of fresh water, among other things. Seeing as how Death Valley is 198 feet below sea level, it would be a matter of simple physics to run a pipeline from the Pacific ocean to Death Valley and at least partially fill it with sea water. No pump would be needed, as gravity would provide the siphon action that would be needed. A solar powered desalinating plant, or many

plants, could be built at the site to provide distilled water to the rest of the state, and neighboring states. Also, a turbo generator, or more than one, could be placed in the pipeline to generate electricity as a by-product. It would be a simple matter to use conical mirrors to generate all of the heat that you would want, to boil all of the water that you would want, to obtain all of the distilled water that you would want.... And at night, the spent fuel dry casks would take over in place of the sun.

The reason why the desalinating plant should be built in Death Valley, as opposed to a plant on the west coast of California, is because it is located in a much safer area than on the coast. You see, there are no hurricanes in this area, as sometimes occur on the coasts. You may remember the oil rigs that were destroyed off the American coast by destructive tidal waves and hurricanes. The Fukushima damage was also caused by a giant tidal wave. I don't think you would have this problem in the valley. Also, the tree-huggers who live on the coast, would have just one more reason to complain about the scenery. Since relatively few people live near, or visit Death Valley anyway, and it is already on government land, and has an Army base close to it, I would say it would be in a safe location to recycle spent nuclear fuel, and build small structures to do so.

One other thing to be considered, is that the whole concept of flooding Death Valley with water can be made as variable proposition. The entire valley does not have to be flooded, for the system to work. As little as fifty feet of water would fill the bill. And before the aforementioned tree-huggers complain that diverting sea water to Death Valley would somehow be destructive to the environment in that area, please have someone in their gang explain to the general public, why the National Public Radio group, caused a documentary to be made about Death Valley, in which several tree-huggers were shown in a low lying area complaining that there wasn't enough rainfall in the Valley to support the native fish population! No kidding folks! To prove their statements, the camera showed several shots of dying fish flopping around in very shallow water. It seems that not one person in that group could solve that problem!

One last word on the tree-huggers: On one hand they complain when the farmers or other landowners fills in a acre or two of swampy land with clean fill to improve crop yield, or control mosquitoes, and then also complain when other developers going about normal earthmoving activities, create lowlands that retain water from time to time. Along these lines, I propose creating wetland credits, similar to the carbon credits relating to the so called global warming problem. For every mosquitoes infested swamp that is filled in by governmental or private agencies, an equal portion of Death Valley could be flooded as a counter measure. How does that sound? Also please describe a place anywhere on the planet, where a body of water is somehow destructive to the environment. I haven't found such a place yet!

By the way, here is an added bonus.... And a riddle. When I said the water could be delivered to neighboring states, this could be done for free, ignoring the pipeline costs, by using gravity, and ram pumps. Do you know what I am describing? I don't think too many people know what a ram pump is.

Item number 4.1. Expanding on the last concept, it would be possible to generate hydrogen gas at the same site. According to a Wall Street Journal article, issued on October 13 - 14, 2007, under the title --- Solar Miracle, on page A10 in the opinion page, Congressman Nick Rahall introduced a proposal in Congress for a pilot program to create "strategic solar reserves" on federal lands. These solar reserves would be created along the same lines as the Strategic Petroleum Reserve, which stores oil for future use. The article goes on to state that, and the following statement was copied from the Wall Street Journal --- Last we checked, however, storing solar energy was a slightly more difficult scientific proposition. "I have no idea how that would work," says University of Maryland physics professor Robert Park. "This is our greatest single problem with energy -- figuring out how to store electricity.

Personally speaking, this is a no-brainer as far as I am concerned. You do not have to store electricity directly. You can use the entire Death Valley area as a giant solar collector, to generate electricity, and use it to manufacture hydrogen gas. In Indiana, natural gas is stored in caves. I thought that everyone knew this. I guess not. At any rate, on this concept, it is possible to go two ways at the same time. The Death Valley power generating area, could create hydrogen gas that could be burned directly in power plants, and it could be mixed at the ratio of ten percent with natural gas, which could be used immediately in American homes. For those of you who wonder why I used the ten percent figure on the hydrogen-natural gas mix, I read this from a science report. According to the natural gas industry, one hundred percent pure hydrogen gas cannot be used in a "standard" gas stove without modifying the gas jets. By the way, this is a minor issue. If you lift the top of your gas stove, and look at the back end, you will find another set of jets. These jets are for liquid propane gas. The only further change that would have to be made to the same type of stove, is to include a second set of jets for nearly pure hydrogen gas.

Item Number 5. Reducing the amount of transmission towers, and related weather and maintenance problems to them. As you well know, it costs big bucks to transmit power from one place to another. A large amount of this power is used to keep buildings warm in cold weather. Centrally located bundles of rad waste dry casks could be located near cities to pipe steam to large buildings. This would reduce the loads on large transmission lines. Variations of this concept have already been tried. For example: The Ford auto plant in Detroit had its own coal fired power plant. In emergencies, the plant was able to supply the city with power, when the city had power problems with its own power systems.

Item Number 5.1. And while I am at it, the power companies could do a better job in designing high voltage transmission towers. It seems to me that with a slight design change, the same transmission towers could also support an anemometer type of windmill. For those of you who don't know what an anemometer is, it looks like three ping pong balls cut in half on three rods, rotating on a vertical axis, turning a generator. In other words, it would be very easy to build transmission towers to move power from one place to another, and generate power at the same time. Why haven't the power companies thought of this? After all, out west, power poles are being equipped with solar panels as an experiment to power street lights, and traffic signals. Why not add a small windmill too?

Along the same lines, according to the Wall Street Journal, in an article printed on 6-31-2009, page A5, the city of New Jersey is outfitting 200,000 utility poles with solar panels to capture solar energy. Also the state is pushing solar panels for industrial buildings with flat roofs. FedEx Corporation is installing solar panels on it's buildings, to the tune of 2.42 megawatts of electricity, which will supply about 30% of it's power needs. According to the same article, believe it or not, New Jersey is number 2 in the production in the production in solar power, right behind California!

Item Number 6. Can be constructed with off the shelf items. Furthermore, in a hit and miss fashion, this is already being accomplished. The electrical power system that exists in the United States, is the worlds largest invention. The current costs and payments run into billions of dollars per year. What I am proposing, amounts to cutting costs with no layoffs to power company employees. No new equipment has to be designed, or no different type of metal has to be forged. The nuclear power companies are already encasing the old cores in concrete shells, with no place to store them. Also, the turbo-generators that could be used in the Death Valley pipeline, would be little different then the units that are used in Hoover dam. Another rather large advantage would be small size of such heat generators. Each steam or hot water generator unit would be self contained. It, or they could be placed in remote locations, with little maintenance. Each unit or cluster of units could be used to create live steam or electricity.

Item Number 7. Billions of dollars in savings. First off, let's stop the thirty years of worthless talk of burying the rad waste in the Yucca mountain area. At a cost of ten billion to date.

This idea has went nowhere, and probably never will. According to Wall Street Journal articles on the subject, the amount of rad-waste sitting around nuclear plants, already exceed the amount of burial space created in the tunnels. The fact is, that this material generates heat, and it can be used for lower level heat sources. So why not use it!

So where are the savings you say? On Wednesday June 2, 2010, Rebecca Smith of the Wall Street Journal, published an article that stated in part, "Cask makers say their products can withstand a direct hit from a commercial jet, so long as they aren't hit by landing gear. The rest of the plane crumples on impact." No mention was made in the article about an airplane fuel tank burning on a cask.

As far as cask construction is concerned, regarding Rebecca article, "Used fuel is placed in helium filled containers with two to five inch thick steel walls welded shut. Those canisters are then wrapped in two feet or more of steel reinforced concrete. Until recently the casks were placed on reactor property in the back I would guess, as you don't seem to see them by the employee entrance. The article further states that "some utilities have taken steps to address safety. Entergy Corporation, the owner of several nuclear plants, has erected an earthen mound to block visibility of its storage area at its Vermont Yankee plant."

Big deal, these casks are still visible from the air. A much more robust solution to the problem of storing the spent nuclear material can be achieved by storing the casks under water. For proof of my claim, simply rent a movie on the war in the pacific during world war two. Every time a Japanese plane was shot down, it either bounced off the water, or went down about five feet before slowly sinking. In other words, water is better than armor from a cost standpoint! Also much less expensive to create and manipulate!

Another thing about airplane strikes. When any government declares a no fly zone for a particular area, like around a nuclear power plant, this decree assumes that a plane is in working order. If for any reason after takeoff, the plane becomes inoperable what then? The fact is, that a plane crashes every several days somewhere around the world. Currently, there around fifty cask storage sites in the United States. Either on, or close to a nuclear plant. From a terrorist point of view, that's fifty targets. From a security point of view, that's fifty places to guard. All that need be done is to place all of the casks in one area, and guard it carefully.

Another area of cost savings is the elimination of lawsuits, or the near elimination. So far close to one hundred lawsuits have been filed, generally speaking, for breach of contract. To start the budding nuclear industry off, the government promised to dispose of the waste. Well.... this never happened. So the nuclear industry adopted an interim measure of on site storage, and this is why we now have the cask storage problem. As far as I am concerned, this is not a problem, this is the end result. All that needs be done now is to bunch the casks together, and mine the heat.

As far as the nuke haters are concerned, not one has contacted me. From what I have read, they inflate the disposal costs much more than I would.

Item number 8. As safe or safer than a pebble bed reactor. For those of you people that may have come to the conclusion that this article does not make any sense, what I am proposing is exactly the same thing as the new generation of nuclear reactors, called the pebble bed reactors. In the pebble bed reactor, softball sized uranium pellets are installed in a empty reactor vessel until the proper heat output is obtained. To explain further, in a "standard reactor," uranium fuel rods are installed in the vessel, and the heat output is regulated, by raising or lowering the control rods. When the heat output drops below a certain level, the reactor has to be taken out of service until new fuel rods can be installed. In a pebble bed reactor, the softball sized spheres can be added until the heat output is at the design level of the reactor. As time passes, and the heat level of the spheres decrease, the old spheres can be removed, and new fresh spheres can be added, while the reactor is in operation. The big advantage of a pebble bed reactor, over a "standard" reactor is that the loss of coolant problem is eliminated. In a "standard reactor," a loss of coolant leads to a meltdown, in a pebble bed reactor, a loss of coolant causes no problem, as the spheres do not cause reactor floor melting.

Item Number 9. Are those cooling towers on nuclear plants really needed? It seems to me that if there is enough "leftover" heat in the power generating process, that some of it has to be diverted to the atmosphere, there is enough left to generate more electrical power. One does not have to boil water to generate electricity. Other materials can also be used. Freon, for example, can also be used. There are also other elements, such as propane, but for this example, freon is used. There are many different types of freon, and all boil at temperatures of less than 212 degrees. Freon "steam" can also be harnessed to generate electrical power.

Item Number 10. A word about coal fired plants. I haven't the slightest idea why someone else in the power generation business hasn't thought of this, but you can greatly reduce the amount of smokestack particle discharge by simply mixing the stack exhaust gases with spare steam, or using a water injection system. Without going in to great detail, the steam would remove the fly ash, and do an excellent job of cleaning the discharge gases. The same thing happens when crud in the atmosphere gets caught in a thunderstorm. The water vapor condenses on the dust particles, and falls to earth. If this were not true, all of the dust that been put into the atmosphere since the beginning of time, would still be there.

Note: In response to a person who took the time to respond to my ideas by informing me that these cleaning units are called scrubbers, thank you I already realized that. What I was getting at, is the fact that less than one percent of all the smokestacks in the world have complex and expensive smoke scrubbing units. China, India, Pakistan, just to name a few. Steam/water injection into chimney gas is a low cost way to start.

You see I used to weld them together when I worked at Fabricated Steel Company in Michawaka, Indiana From 1968 to 1970. We also did repair work to the old panels. When I inspected the old panels, I noticed that in some cases, rain water had leaked into the scrubbing units. This caused extreme rusting of the panels and the support beams. The support beams were eighteen inch "I" beams one half of an inch thick! When I reported my observations to people from the Wheelabrator Fry Corporation, my comments were ignored! In other words, when I suggested that if the hot exhaust gases could be cooled by steam, or a fine water spray before the smoke entered the scrubbing units, to cut down on the corrosive effect of the gasses, which contain hydrochloric, and sulfuric acid, I was told that I was not old enough to know what I was talking about. Since that time, the Wheelabrator Fry Corporation went bankrupt. Oh well....

On September 13, 2010 the Wall Street Journal printed a energy section on energy investing. On the coal topic, three companies were mentioned with reference to scrubbers authored by Rebecca Smith. "In August, **Xcel Energy Inc.** based in Minneapolis, notified regulators it wants to close a coal-burning plant in Boulder, Colo., and convert four units at its Cherokee plant in Denver to burn natural gas instead of coal. Xcel says the changes would cost the company \$1.3 billion but still would be \$225 million cheaper than installing pollution-control equipment on the aging coal units.

Calpine Corp., Houston says it will convert to gas some of the coal-fired plants in Delaware and New Jersey that it is buying from **Pepco Holdings Inc.**, in a \$1.65 billion deal. The units are older plants that are in need of upgrades. Calpine says it can change the burners for less than it would cost to add pollution-control equipment like scrubbers.

Progress Energy Inc. of Raleigh, North Carolina, intends to close four coal burning plants and replace two of them with gas fired plants by 2017. The company says it's cheaper to build gas-fired plants than it is to outfit the coal units with the necessary pollution-control equipment."

I am not a rocket scientist, and I am not in the scrubber engineering loop. For the life of me, how come no one in those groups thought of a chimney water spray.

Item Number 10.1 Two viewpoints on mercury emissions from coal-fired plants.

From the South Bend Tribune Nov. 28, 2010

Study finds mercury extensive in Indiana.

MUNCIE, Ind. (AP) - One in eight fish taken from Indiana waterways and analyzed over a five-year period was tainted with the toxic metal mercury, according to federal scientists who last year reported that precipitation that falls near southeastern Indiana's coal-fired power plants harbors some of the nation's highest concentrations of atmospheric mercury.

The study led by U.S. Geological Survey hydrologist Martin Risch also showed that mercury contamination in both surface waters and fish across Indiana routinely exceeds levels recommended to protect humans and animals. Risch said the front cover of the mercury report includes photographs of an eagle and a boy holding a big fish.

"The young person needs to be told how many big fish he can eat to protect his health," Risch told The Star Press of Muncie.

Mercury released by coal-fired plants, metals industries and other sources enters the food chain and can accumulate in fish species that humans eat. Women who eat tainted fish during pregnancy or while breast-feeding can unknowingly lower their child's intelligence because mercury is a potent neuro-toxin that harms the developing brain and can cause other problems.

The study covered samples taken between 2001 and 2006c and was done in partnership with the Indiana Department of Environmental Management. It also found 96 percent of discharged wastewater sampled in the state contained mercury, most of which exceeded federal standards.

A map of Indiana in the report shows hundreds of red dots at river and stream sites across the state where sampling found mercury contaminated fish.

In 2005, coal-fired power plants were responsible for 58 percent of all mercury emissions into Indiana's air. The other largest contributors were steel mills and cement plants.

Note: Martin Risch will not respond to my E-Mails. No explanation given!

From the Wall Street Journal opinion page. 5-25-11

The Myth of Killer Mercury

By Willie Soon And Paul Driessen

The Environmental Protection Agency recently issued 946 pages of new rules requiring that U.S. power plants sharply reduce their (already low) emissions of mercury and other air pollutants. EPA Administrator Lisa Jackson claims that while the regulations will cost electricity producers \$10.9 billion annually, they will save 17,000 lives and generate to \$140 billion in health benefits.

There is no factual basis for these assertions. To build its case against mercury, the EPA systematically ignored evidence and clinical studies that contradict its regulatory agenda, which is to punish hydrocarbon use.

Mercury has always existed naturally in Earth's environment. A 2009 study found mercury deposits in Antarctic ice across 650,000 years. Mercury is found in air, water, rocks, soil and trees, which absorb it from the environment. This is why our bodies evolved with proteins and antioxidants that help protect us from this and other potential contaminants.

Another defense comes from selenium, which is found in fish and animals. Its strong attraction to mercury molecules protects fish and people against buildups of methyl mercury, mercury's biologically active and more toxic form. Even so, the 200,000,000 tons of mercury naturally present in seawater have never posed a danger to any living being.

How do America's coal-burning power plants fit into the picture? They emit an estimated 41-48 tons of mercury per year. But U.S. forest fires emit at least 44 tons per year; cremation of human remains discharges 26 tons; Chinese power plants eject 400 tons; and volcanoes, sub sea vents, geysers and other sources spew out 9,000-10,000 additional tons per year.

All these emissions enter the global atmospheric system and become part of the U.S. air mass. Since our power plants account for less than 0.5% of all the mercury in the air we breathe, eliminating every milligram of it will do nothing about the other 99.5% in our atmosphere.

In the face of these minuscule risks, the EPA nevertheless demands that utility companies spend billions every year retrofitting coal-fired power plants that produce half of all U.S. electricity.

According to the Centers for Disease Control's National Health and Nutrition Examination Survey, which actively monitors mercury exposure, blood mercury counts for U.S. women and children decreased steadily from 1999-2008, placing today's counts well below the already excessively safe level established by the EPA. A 17 year evaluation of mercury risk to babies and children by the Seychelles Children Development Study found "no measurable cognitive or behavioral effects" in children who eat several servings of ocean fish every week, much more than most Americans do.

The World Health Organization and U.S. Agency for Toxic Substances and Disease Registry assessed these findings in setting mercury-risk standards that are two to three times less restrictive than the EPA's.

The EPA ignored these findings. Instead, the agency based its "safe" mercury criteria on a study of Faroe Islanders, whose diet is far removed from our own. They eat few fruits and vegetables, but they do feast on pilot-whale meat and blubber that is laced with mercury and polychlorinated biphenyls (PCBs)-but very low in selenium. The study has limited relevance to U.S. populations.

As a result, the EPA's actions can be counted on to achieve only one thing-which is to further advance the obama administration's oft-stated goal of penalizing hydrocarbon use and driving a transition to unreliable renewable energy.

The proposed standards will do nothing to reduce exaggerated threats from mercury and other air pollutants. Indeed, the rules will worsen America's health and well-being-especially for young children and women of child bearing age. Not only will they raise heating, air conditioning and food costs, but they will scare people away from eating nutritious fish that should be in everyone's diet.

America needs affordable reliable electricity. It needs better health and nutrition, It needs an EPA that focuses on real risks, instead of wasting hard-earned taxpayer and consumer dollars fabricating dangers and evidence.

Mr Soon, a natural scientists

at Harvard, is an expert on mercury

and public health issues. Mr.

Driessen is senior policy adviser

for the Committee For A

Constructive Tomorrow.

Note: According to the Wikipedia entry on mercury, one of its characteristics is that it evaporates. If this is in fact true, then it may be possible to place, say a ton of wet coal ash in a vacuum kiln and pump a vacuum to it and observe if any mercury can be removed, and if it is worth the time and effort. This experiment can be done on a small scale. So no large cash outlay is required. Just a thought.

Item Number 10.2 This paper does not address the issue of the so called "carbon dioxide buildup" on the earth, because I don't believe in the global warming crap in the least. Moreover,

nuclear, hydroelectric, or solar power plants produce no carbon dioxide. To address the issue of carbon dioxide buildup on the planet, from what I have been reading in various science magazines, there are people who have been creating biomass algae generators, that in the end, create ethanol motor fuel. According to the people who are developing these biomass fuel generators, they work most effectively if pure carbon dioxide is fed into the algae tanks, rather than room air. The end result is motor fuel, and oxygen. Let me make a suggestion at this point:

To the people that can gather and store carbon dioxide, to the people that can use carbon dioxide to generate motor fuel.....Please contact each other.... Done

Also, this is how our present deposits of peat, oil, and gas, got there in the first place. Most schoolbooks teach that decaying dinosaurs, over the ages, created oil pockets. This is only partially true. Most of the oil was created by the decay of plants and algae.

Item Number 11. For those of you younger people, who are not grounded in history, during World War Two, among other things, the U.S.A. employed an island called Midway, to help in the battle against Japan. The first thing that we did was bulldoze the island flat. The next thing we did, was to build a weather station on one edge of the island. In doing so, a yardstick was put in the water to measure the sea level. As far as I know, no one in the global warming crowd has never mentioned this. At any rate, when the construction was finished for the aircraft base, the entire island was just a few feet above sea level. The point is, if the water in the oceans is rising, how come this island is not below sea level? Along the same lines, it occurs to me that if any increase of the water level in the ocean, would lead to a corresponding increase in the world's groundwater supply. Just a thought.

Item Number 12. It occurs to me, that it would be easier to fight fires in California, if there was a more reliable water supply. From my point of view, fires have been burning out of control since 2007. This problem could be reduced by at least a small degree, by having a secure, and protected water supply. A pipeline from the ocean to Death Valley would help out here too. After all you do not have to put fresh water on a fire, sea water would do just fine.

Item Number 13. Although the PBS corporation did a very poor documentary on Death Valley, which I caught by accident in 2008, a young woman in the documentary was describing the problems that the fish were having in the valley. This caught my attention, because up to that time, I was not aware of any standing water in the valley. As the show went on however, I found out that from time to time, there is an occasional thunderstorm, which results in flash flooding. In the end, what little water there is, flows into a low area which helps the local fish population, as well as other creatures. The problem is, when the water dries up, so do some of the fish. Flooding the area would solve this problem, and the state could receive some revenue from the boaters and fisherman.

Item Number 14. As a general rule of thumb, Death Valley is twenty five miles wide, and one hundred twenty five miles long. Assuming that the valley was flooded to one hundred feet, this would result in an inland lake about a thousand square miles in size, generally speaking. There are also many companies that specialize in the desalination of sea water. What I propose is, that the area could be divided into lots, and the private companies could compete with one another to see which one could produce the most water, at the lowest cost.

Item No. 15. Creating an inland water mecca. Can anyone imagine how much money would flow into the California state coffers if an inland lake were to be created in Death Valley? As I said earlier, a one thousand square mile lake --- Read, giant hot tub --- Would give everybody a lot of elbow room. Private business, and public use could operate side by side.

Item No. 16. Zero carbon emissions. Although I don't believe in the carbon credit crap game being created by whoever, this entire concept would produce zero carbon emissions. All one has to do, is calculate the amount of fossil fuel that would be used to desalinate however much water that all the solar arrays and rad-waste containers managed to generate in a certain amount of time. This would of course, give the state of California a negative carbon footprint, at least in that area. One last thing on carbon dioxide: Without it, there would be no life on Earth. Plants absorb it to produce food and oxygen. Without plants there would be no higher animals. How easy is that to understand?

Item 16.1 First of all the anti nuclear panic-mongers should get one thing straight from the beginning. The reason there is life on the planet Earth in the first place is because of nuclear energy. In other words, the Sun. The Sun is powered by hydrogen fusion. The waste products of this action, i.e. heat and other different spectrums of light, is what has created all of the fossil fuels on this planet, to say nothing of all the life. For whatever nutty reason, the eco-panic-mongers fail to see this issue.

It occurs to me that legal action should be brought against anyone who knowingly manufactures false evidence, or makes false statements against *any* legal product. Including nuclear reactors. The constant calling of more studies on reactor safety is redundant to the extreme, and is costing the rest of us more capitol for no reason. What the legal system should do is have the eco-nuts *prove* that a certain aspect of reactor design is unsafe. As far as I know any corporation has the same rights as an individual human being, and is entitled to the same legal protections. Would it be incorrect to state that the eco-panic-mongers are costing the world untold trillions of dollars based on - Lost Wages - Phoney claims - Worthless lawsuits - and New ideas that are not pursued because of the fear of lawsuits by the eco-panic-mongers. Example: The panic over childhood vaccinations that were stopped by frightened parents because of A SINGLE QUACK PSUDO DOCTOR, that stated that the same vaccinations caused autism. It was discovered later that all the claims made by the fake doctor were false. Also, along the same lines a female panic monger claimed that DDT was killing human off life on this planet. Again the opposite turns out to be true. DDT is not harmful to humans or higher animals, just insects.

The environmental movement is responsible for much of the mess that the world finds itself in today.

Another lie promulgated by the eco-panic-mongers was that Michigan apples were unsafe to consume because they were sprayed with the insect spray Alar. The same group soon lumped *all* apples grown in the United States, with no negative health proofs whatsoever. It was later established that Alar was safe as an insect spray. The money that was lost by the apple growers was never replaced by the

eco-panic-mongers. Note to the crooked lawyers union: Can't one of you people find a way to make a *honest* buck by defending innocent people from scurrilous lies from uneducated eco-panic-mongers.

For the record, the first environmental complaint that made national news regarding nuclear energy was created by Walter Reuther, who was at the time, president of the United Auto Workers Union, Detroit Michigan. The complaint was filed in August of 1956 in Detroit Michigan. Mr. Reuther was trying to stop what was called at the time, "The Fermi Project". As it turned out, the tiny breeder reactor partially melted down, and ended that breeder project, or any other commercial breeder project in the U.S. to this day. Along the way, two other AFL-CIO unions also joined his group. The United Paper Workers of America, and the International Union of Electrical Workers.

Although Walter and his followers were unable to stop the first breeder project in the U.S., another group called the Joint Committee on Atomic Energy, talked the Atomic Energy Commission into making a study on what would happen if a reactor melted down. The following study was named the WASH-740 report, or the Brookhaven Report. In a nutshell, the report stated that: In the event of a nuclear meltdown, there would probably be 3,400 deaths, 43,000 injuries, and 7 billion dollars of property damage, PER EVENT!.... Keep in mind as far as property values went, as this was figured in 1950's dollars.

Now here is an observation for you. Since the construction of the first nuclear reactor, millions of people have died of disease, war, auto accidents, and drug overdoses, and speaking of drug overdoses, this would be a big concern in the San Francisco bay area. Especially aids ridden homosexual drug dealing. As opposed to this Godless perversion, almost no one has died of radiation poisoning. There is one other thing. These same people who complain about nuclear power, use this same power to grow drugs! According to Lars Larson, 1% of all energy used in the United States, or five billion dollars a year, are used to grow and process illegal drugs.

According to my accounting, we have now had our fourth meltdown. Chernobyl, Three Mile Island, and at least two reactors in Japan. According to the eco-panic-mongers, many thousands of us should be dead by now, and large sections of our planet should be a barren wasteland. Hey guess what? We're still here!

According to what information I have gathered on ALL energy plants operating in the U.S., almost every time that the plant operators have tried to upgrade whatever equipment they have had at hand, the eco-panic-mongers try everything possible to make things more difficult. This includes coastline windmills, or windmills out in the water, that have to be seen with binoculars. Also the reactors in Japan were scheduled to be replaced in January of this year. I.E. 2011. This process had to be delayed because of paperwork generated by the eco-nuts that prevented third generation reactors from being constructed in ANY nation.

One notable exception has been the Solazyme corporation. This company uses algae to produce motor fuel, cosmetics, and food. The company is moving out of California to Pennsylvania. Gee I wonder why? Wild guess...TAXES...REGULATIONS, and the ever present eco-panic-mongers. This group, at one time or another, have been against solar, wind, nuclear, coal, wood, and I guess body heat too!

According to the eco-panic-mongers, during a reactor melt down, internal parts of a reactor can be turned into missiles that can slam into other parts of the reactor, thus causing a greater runaway. As of our fourth melt down...Not one part in any reactor has turned into a missile, since the beginning of nuclear power plants.

To show how dangerous, the eco-panic-mongers are, you may recall one of the space shuttle accidents. The one that caused the burn up before re-entry. The only reason that the shuttle burned up is because the eco-nuts convinced NASA that the old adhesive that was used to glue the heat tiles to the shuttle was killing the environment. Specifically, the ozone layer. Sooooooooooooo.....Stupid NASA switched adhesives to comply with a non-existent climate killer plan. The tiles fell off and the shuttle burned up. Can anyone point out to the rest of us, where the old adhesive was harmful to the planet. Or as harmful as the shuttle burning up?

Duke Energy has developed an incinerator/power plant that reduces a mixture of coal and common garbage into harmless ash, while generating electricity at the same time, and with almost no stack emissions. A few years back David Duke tried to build a unit close to South Bend. Of course the eco-panic-mongers stomped on the idea. David Duke helped the eco-panic-mongers in this area. David just blew into South Bend one day and without any warm up, told everyone assembled in the County City building, that his company was going to build a power plant in the area, thank you very much. Now on with the vote! Needless to say this technique did not go over very well, and David was told to go somewhere else.

Ready for the topper? When a local South Bend hospital wanted to upgrade it's services by installing a third floor helicopter flattop landing pad at it's own expense, believe it or not, the same type of crybabies descended on the County City building to try and stop construction. They had the dumbest arguments you ever heard. Excessive noise, declining property values, and aircraft safety, crying to no end. Needless to say, I wasted no time getting down to the hall to rebut the nut cases opinions. First of all, under the excessive

noise category: The nut cases compared a typical rescue helicopter exhaust noise to a jet plane exhaust noise. I simply pointed out the fact that a lawn mower will drown out the noise of a helicopter, but not a jet plane, both flying at the same altitude. The next point was declining property values. I asked the people assembled where anywhere in the United States where more infrastructure was established caused property values to drop! Again no reply. As far as aircraft safety was concerned, I informed the people at the hall if they thought that rescue by helicopter was too dangerous, the city could pass an ordinance stating that anyone that does not want to be rescued by a helicopter can wear a bracelet stating so. Along the same lines of a diabetic alert bracelet. Again no takers. To generally sum up the situation: These are the same people who want the very best in medical care, while by their actions, are trying to deny the same to everyone else.

While I was writing this addition to my paper, I was listening to the radio to a person who was taking donations for blood cancers. What would happen if the very first scientist or doctor trying to cure a disease had no success for years on end, and was targeted by the eco-panic-mongers about the time, money and energy that was being spent on research. I'll tell you, what would happen, the world would be a much sadder place to live in today. The fact is, one early medical success led to another, and gave many brilliant people incentive to lay waste to one disease after another.

16.2 Notable & Quotable...From the Wall Street Journal 8-23-11 Op Ed Page.

Columnist Jack Kelly writing Aug. 22 in the Pittsburgh Post-Gazette:

Former vice President Al Gore went on a profanity-laced tirade at the Aspen Institute Aug. 4 against the rising number of Americans who are skeptical about man-made global warming.

According to a Harris poll in July, only 44 percent of us now believe carbon dioxide emissions are warming the Earth, down from 51 percent in 2009 and 71 percent in 2007.

Global temperatures peaked in 1998. People have noticed winters are getting colder.

When evidence emerged in 2009 that scientists affiliated with the Climate Research Unit of the University of East Anglia in Britain were "hiding the decline" by fudging the data, few journalists paid much attention.

But a lot of Americans did, apparently. In a Rasmussen poll Aug. 3, 69 percent of respondents said it was at least somewhat likely scientists have falsified research data. . . .

Mr. Gore's alarmist predictions have proved false. Polar ice caps are larger. So is the polar bear population (and the scientist upon whom Mr. Gore relied for his claim that the polar bear is endangered is facing accusations of scientific misconduct). The rise in sea levels-which has been going on since the end of the last ice age-is slowing down.

Mr. Gore can respond only with curses, and ever more hysterical predictions of imminent doom. His credibility is in tatters. In the public mind, he's gone from Nobel Prize winner to Chicken Little.

Anthropogenic (man-made) global warming is a "contrived phoney mess that is falling apart of it's own weight," said Texas Gov. Rick Perry, a candidate for president. It's the most harmful hoax in history, because President Barack Obama bases job-killing policies on it.

Item No. 17. According to 60 minute report aired on 12-27-09, there is a plan afoot to spend 40 billion dollars to solve the water problem in California. Of this, eleven billion will be spent on the creation of new dams, and the rest....That is 29 billion, is to be spent repairing levies and other things. The show also filmed people building a pipeline. I hope the people who are planning that project realize that for it to work, rain water must fall in the first place. Since I live in In Indiana, instead of California, I am not familiar with the annual rainfall in that area. Rather than building pipelines and dams, and then sitting back and praying for rain. Why not flood Death Valley? I don't think it would cost 40 billion dollars to run a pipeline from the Pacific ocean to Death Valley. Do you?

Item No. 18. Unlike conventional nuclear, coal, or gas power plants, this system would be immune to any electro-magnetic pulse, or negative solar activity.

Item No. 19A.

The following article was written by William H. Tucker.

From the opinion page of The Wall Street Journal. 3-29-10

There Is No Such Thing as Nuclear Waste

"White House Buries Yucca," read the headlines last week after Secretary of Energy Steven Chu said the proposed storage of nuclear waste in a Nevada mountain is "no longer an option."

Instead, Mr. Chu told a senate hearing, the Obama administration will cut all but the most rudimentary funding to Yucca and be content to allow spent fuel rods to sit in storage pools and dry casks at reactor sites "while the administration devises a new strategy toward nuclear waste disposal.

Nevada Senator Harry Reid, a longtime opponent of the repository, was overjoyed. Environmental groups were equally gratified, since they have long seen Yucca Mountain as a choke point for asphyxiating nuclear energy. Greenpeace immediately called for an end to new construction of nuclear power plants, and for all existing reactors to be closed down.

So is this really the death knell for nuclear power? Not at all. The repository at Yucca Mountain was only made necessary by our failure to understand a fundamental fact about nuclear power: There is no such thing as nuclear waste.

A nuclear fuel rod is made up of two types of uranium: U-235, the fissionable isotope whose breakdown provides the energy; and U-238, which does not fission and serves basically as packing material. Uranium-235 makes up only 0.7% of the natural ore. In order to reach "reactor grade," it must be "enriched" up to 3%--an extremely difficult industrial process. (To become bomb material, it must be enriched to 90%, another ballgame altogether.)

After being loaded in a nuclear reactor, the fuel rods sit for five years before being removed. At this point, about 12 ounces of U-235 will have been completely transformed into energy. But that's enough to power San Francisco for five years. There are no chemical transformations in the process and no carbon-dioxide emissions.

When they emerge, the fuel rods are intensely radioactive--about twice the exposure you would get standing at ground zero at Hiroshima after the bomb went off. But because the amount of material is so small--it would fit comfortably in a tractor-trailer--it can be handled remotely through well established industrial processes. The spent rods are first submerged in storage pools, where a few yards of water block the radioactivity. After a few years, they can be moved to lead-lined casks about the size of a gazebo, where they can sit for the better part of a century until the next step is decided.

So is this material "waste"? Absolutely not. Ninety-five percent of a spent fuel rod is plain old U-238, the nonfissionable variety that exists in granite table-tops, stone buildings and the coal plants to generate electricity. Uranium-238 is 1% of the earth's crust. It could be put right back into the ground where it came from.

Of the remaining 5% of a rod, one-fifth is fissionable U-235--which can be recycled as fuel. Another one-fifth is plutonium, also recyclable as fuel. Much of the remaining three-fifths has important uses as medical and industrial isotopes. Forty percent of all medical procedures in this country now involve some form of radioactive isotope, and nuclear medicine is a \$4 billion business. Unfortunately, we must import all our tracer material from Canada, because all of our isotopes have been headed for Yucca Mountain.

What remains after all this material has been extracted from spent fuel rods are some isotopes for which no important uses have been yet found, but which can be stored for future retrieval. France, which completely reprocesses its recyclable material, stores all the unused remains--from 30 years of generating 75% of its electricity from nuclear energy--beneath the floor of a single room at La Hague.

The supposed problem of "nuclear waste" is entirely the result of a decision in 1976 by President Gerald Ford to suspend reprocessing, which President Jimmy Carter made permanent in 1977. The fear was that agents of foreign powers or terrorists groups would steal plutonium from American plants to manufacture bombs.

That fear has proved to be misguided. If foreign powers want a bomb, they will build their own reactors or enrichment facilities, as North Korea and Iran have done. The task of extracting plutonium from highly radioactive material and fashioning it into a bomb is far beyond the capacities of any terrorist organization.

So shed no tears for Yucca Mountain. Instead of ending the nuclear revival, it gives us the chance to correct a historical mistake and follow France's lead in developing complete reprocessing for nuclear material.

Mr. Tucker is author of "Terrestrial"

Energy: How Nuclear Power Will

Lead The Green Revolution and End

America's Long Energy Odyssey"

(Bartleby, 2008).

The following article was written by Laura Harnish

From the opinion page of The Wall Street Journal.

It's not about fish, it's about market fairness. In California's water rights system, farmers on one side of the Central Valley pay less than \$10 for an acre-foot of water (enough water to cover an acre one-foot deep), while those on the other side are forced to pay up to 60 times more--\$600 an acre-foot--to keep trees alive.

What is needed is a new and fair set of market-based rules, created by water stakeholders and California's government, that can spawn new industries and new job, while intelligently allocating the state's water to serve agriculture, cities and suburbs, recreational users and nature.

Laura Harnish

Regional Director

Environmental Defense Fund

San Francisco

The following email was mailed to me on 10-16-2007, in response to the email I sent to the governor of California during the previous week. Keep in mind that his response was referring to an earlier draft of this paper, which was less detailed, but essentially the same.

Thank you for emailing and sharing your views. California was built by the ingenuity and hard work of people who had the courage to put pen to paper and ideas into action. Our great State continues to thrive because of the involvement and commitment of its people. As your Governor, I greatly appreciate receiving input from my constituents. Taking the time to communicate your opinions and offer suggestion is essential to good government. Your concern shows that California's people are engaged in the issues that affect the well-being of our State. Sincerely, Arnold Schwarzenegger. 10-16-2007-7:57 P.M. received.

20. California's water desalination projects. Reprinted from the South Bend Tribune.9-23-12.

In the central California costal town of Marina, a 7 million desalination plant that can turn salty ocean waves into fresh drinking water sits idle behind rusty locked doors, shuttered by water officials because rising energy costs made the plant too expensive.

Far to the north in well heeled Marin County, plans were scrapped for a desalinization facility despite two decades of planning and millions of dollars spent on a pilot plant.

Squeezing salt from the ocean to make clean drinking water is a world wide phenomenon that has been embraced in thirsty California, with its cycles of drought and growing population. There are currently 17 desalination proposals in the state, concentrated along the Pacific where people are plentiful and fresh water is not.

But many projects have been stymied by skyrocketing construction costs, huge energy requirements for running plants, regulatory delays and legal challenges over environmental impacts on marine life. Only one small plant along Monterey bay is pumping out any drinking water.

From Marin County to San Diego, some water districts are asking themselves: How much are we willing to pay for this new water?.

Note: Observe the picture below. It would seem that the Atomic Energy Commission, the Nuclear Regulatory Commission, as well as all the nuke haters, and their lawyers, seem to think that the way the casks are constructed, as well as their storage on a concrete slab, are safe enough. Or at least, they cannot drum up enough scientific evidence to prevent the construction of more of them. So lets say that the casks are placed in an uninhabited area, enclosed in a steel container, six casks to a container, and they be allowed to generate steam. This steam after condensing will be distilled water. No energy input is needed. Two problems are solved at once. The casks have a safe storage area, and the entire area has a unlimited supply of fresh water.

In summation, what I am proposing, is a alterative to the idea of running a pipeline from the great lakes to the southwest. At a lower cost, a pipeline could be run from the Pacific ocean to Death Valley. An area that is currently being mostly unused. A badly needed tax base could be created, by creating a inland lake. Electrical energy could be created, as well as hydrogen gas, rock salt, and a fishing industry. And if anybody is concerned about it, old rad-waste cores could be stored there, at a profit.

Thank you for your attention.

Steve Behling,

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Note: As of 10-31-07, The National Academy of Sciences has blocked my E-Mails, no explanation, no response, no debate. And here I thought a scientific organization, welcomed new ideas!

As of 1-30-10, the so called 60 Minutes T.V. show has not responded to my paper.

As of 3-25 10, the Serra Club has not responded to my letter.

As of 3-27-10, the Union of Concerned Scientists has not responded to my letter.

As of 3-31-10, Greenpiece has not responded to my letter.

As of 5-30-10, Energy Secretary Steven Chu, has not responded to my letter.

Anyone can send a copy of this article to anyone they want, so long as there is no editing of the copy. And remember, I have the only master copy!

Photograph 1

Stop and think about this photograph. How much do you think it would cost you on a yearly bases, to heat three concrete slabs warm enough to melt snow, and to evaporate the water. And this is just the heat that is seeping into the concrete slabs from the bottom of the

casks. Don't forget, the whole cask is the same temperature, and the rest of the heat is simply heating up the atmosphere for no good reason!

