Citizen Action New Mexico Comments
Blue Ribbon Commission
January 28, 2011

The Blue Ribbon Commission (BRC) is being used to unclog the back end of the nuclear fuel cycle to resume nuclear power production. Touting "America's Nuclear Future," the obvious weighting of the BRC panel members for promotion of nuclear power is disappointing. Bringing high level spent fuel to New Mexico as the second poorest state in the United States with a large, low income, minority population will probably be attempted despite decades long widespread public opposition. Environmental justice concerns and widespread radioactive contamination should preclude bringing more nuclear waste to New Mexico.

The two minute time allotted to public individuals for direct comment provided a pretense of public involvement to allow predetermined decisions made by powerful corporate and political interests that favor nuclear power development to go forward. The early start and early termination of the public comment period in Albuquerque was unnecessary and indicated poor judgment by the moderator.

Nuclear power generation is subsidized corporate welfare. No company will risk construction of a reactor unless the financial risk, the insurance risk and the spent fuel waste problems are subsidized. Because nuclear technology is the most expensive way to generate electricity and presents the greatest problems for waste disposal, corporate interests can benefit by holding the ratepayer and taxpayer captive to the highest rates possible.

The new construction of nuclear power plants will absorb funds that could otherwise be used for building alternative energy. Nuclear energy is far from being a clean source of energy as proponents claim. A five year old child won't get leukemia from living within five kilometers of a windmill. That child has an increased chance of leukemia living near a nuclear reactor.
http://rachel.org/lib/case-control_cancer_near_german_nukes.080115.pdf

A major nuclear accident can kill tens or hundreds of thousands of persons and render large areas uninhabitable. A comparable Gulf Coast accident still awaits the nuclear industry -- as if Chernobyl and Three Mile Island were not sufficient warning. Solar and wind generation may be expensive but at least the consequences for an accident are *de minimis* compared to the potential for a nuclear accident.

The Blue Ribbon Commission must consider the public opposition to nuclear power that continues to exist in the US. Seabrook, Shoreham, Diablo Canyon, Pebble Springs, Three Mile Island are notable past examples.

> "Since the accident at the Three Mile Island power plant in 1979, 60 percent of the American public has opposed and 35 percent have supported construction of new nuclear power plants, although the intensity of public opposition has lessened in recent years."
> … "[P]ublic opposition to nuclear power in the United States is due primarily to the public reaction to the concrete problems of the technology and the industry, notably concerns over safety, toxic waste, and poor economics. It is not surprising that the public is skeptical about a technology that has over promised."

Source: http://web.mit.edu/nuclearpower/pdf/nuclearpower-full.pdf

The Blue Ribbon Commission would do well to consider the cautionary tale of the new-generation nuclear reactor site at Olkiluoto, Finland with cost overruns of 50%, a price tag over $4 billion dollars and years of delay for startup.
http://www.nytimes.com/2010/07/02/business/global/02power.html.

Nuclear power proponents misrepresent that the radioactive wastes can be safely handled and that it is "clean energy, safe and cost effective." Many suggestions for nuclear waste disposal have been made for the past 50 years – shoot the waste into outer space on rockets, ocean disposal where the continental and ocean plates join together, salt mines, deep geologic disposal in granite and reprocessing spent fuel to burn in a reactor. US nuclear wastes are increasing by some 2500 tonnes per year with an inventory currently near 62,000 metric tones of HLW reactor waste.

Problems with salt mine disposal are seen in Germany at Asse II where around 12,000 liters of groundwater leak into the mine every day. Some of it mixes with the radioactive waste. Brine collected in Asse II had traces of tritium and caesium 137. Asse II has also leaked groundwater since at least 1988 — meaning, at the very least, that decades of Cold War research conducted there failed to solve some of the most basic problems of nuclear storage. Sigmar Gabriel, Germany's environment minister, has called the mine "the most problematic nuclear facility in Europe." Experts say chemical reactions between the brine and the radioactive waste could soften the salt rock and lead to a partial collapse of Asse II by 2014. http://www.miller-mccune.com/science-environment/salting-it-away-3558/#

There are concerns over leaks at the WIPP site realized in 1988.
http://findarticles.com/p/articles/mi_m1200/is_n4_v133/ai_6343197/
Those concerns continue for the future:
http://www.cardnm.org/repository_a.html

> **The Wet Repository**
> The Salado salt was supposed to be dry but is, in fact, wet. (DOE calls it "essentially dry".) Water from the ancient sea that covered this area is locked into the salt crystals. This water seeps into the repository fairly quickly after the repository is mined. In addition, water is flowing into the Exhaust Shaft where the excavation makes connections to water-bearing formations. There are also many man-made connections to the clay seams and anhydrite beds above and below the repository which can leak water. It is actually not at all uncommon for salt mines to become inundated with water and mining experts in both Carlsbad and Germany have said that all salt mines eventually flood. Some leaks are small, but

some continue over a long period of time and cause a progressive flooding of the mine.

This water or brine has a huge potential to cause problems in the future since eventually parts of the repository may have large amounts of brine in contact with the waste. (Some parts of the repository are lower than the rest, so some rooms would collect brine sooner than others.) This would corrode the waste containers and the waste, and cause the waste to become mixed into a slurry which would be much more easily transported into the outside environment than dry waste would be. The brine also reacts with components of the waste and the steel waste containers to create gases which could affect the closure rate of the rooms or could push waste into the clay and shale layers.

Dry spent fuel storage at reactor sites is the de facto waste handling technology costing the taxpayer hundreds of millions of dollars from lawsuits filed by utilities against the federal government. Because of the perceived success of the Waste Isolation Pilot Plant (WIPP), the area of Carlsbad, New Mexico is currently under consideration for HLW disposal despite the conflicting use of the area for extensive petroleum and mining interests. New Mexicans were told if we took the high level waste from the military, reactor waste would not be brought to New Mexico. Similarly, Idaho agreed to take the Navy's spent fuel if reactor waste didn't go to Idaho.

For decades, supporters of nuclear power production have tried to make a distinction between nuclear weapons waste and nuclear reactor waste. The distinction is without merit with respect to the conundrum of where to place the wastes to keep them out of the environment for tens of thousands of years. No political or social organization in the US has had wherewithal to accomplish the task although government and the nuclear industry sponsors the illusion to keep the public at bay from protesting the continued enormous expenditures to benefit corporate interests. The $9,000,000,000 closure of Yucca Mountain represents both technological and political failure but still was a financial gain for the corporate contractors.

The Department of Energy (DOE) and nuclear industry boosters are grossly out of touch with the public desire, both in the United States and internationally, for alternative and sustainable safe and sane energy policies that can provide greater peace and prosperity in the world. Nuclear power and the problems associated with the back end of the fuel cycle do not meet the need for safe energy policies. Instead the DOE and the nuclear industry offer programs that fail to consider the significant liabilities/consequences of environmental, political and financial obstacles, proliferation of nuclear materials for terrorists and nations desiring nuclear weapons, transportation issues, release of enormous quantities of radioactive poisons to the communities and the world environment, uranium fuel shortages and ecological and human health consequences of uranium mining.

Transportation and terrorism

With respect to transportation of HLW in TRUPACT and other containers, the containers are not safe from massive car bomb or hand held missile attacks. A terrorist attack on

such containers in the midst of a major urban area would cause death, injury, illness, wreak economic havoc, generate enormous cleanup costs and contaminate a large area for future livability.

> "In addition to an explosion, the volatile material within a TRUPACT container can also ignite, causing the contents to more readily disperse and the particle size to be smaller, and therefore be more easily inhaled.
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> "Turning now to the RH TRU cask, we postulate here that an anti-tank weapon would be needed to open the cask and release a fraction of the contents. Devices such as the Milan Anti-Tank Missile and the US TOW 2 Anti- Tank missile have armor-penetrating capabilities greater than 1000mm (39.4 inches) and greater than 700 mm (28.5 inches), respectively, and are accurate up to a range of 1 km. The Soviet Kornet-E missile, used by Iraqi forces, is accurate up to 5.5 km and can penetrate 1.2 meters of steel. These missiles are widely available and could easily penetrate the RH-TRU cask. They also can be easily carried by hand or pickup truck.
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> "Source: *Risk Analysis of Transporting Radioactive Waste to Hanford* by Marvin Resnikoff, Ph.D. and Amanda Schneider for Heart of America Northwest July 2004
> http://www.hoanw.org/uploads/hoanw/Hanford%20Pdf%20Report%20RS.pdf

See also: http://www.citizen.org/documents/resnikoff.pdf

Delay

The Nuclear Regulatory Commission refused in 1978 to consider where nuclear wastes from the Trojan Nuclear Reactor would go because supposedly the U.S. Government would have a waste disposal site in 5 years. I raised the issue as an intervener before the NRC. Documents kept in the Oregon Department of Energy revealed that the Trojan site could have an earthquake that was twice the strength of what Trojan was designed to withstand. Documents showed an earthquake fault running beneath the spent fuel pool. The NRC told me they would not consider the new found documents under the legal doctrine of *res judicata* even though the documents had not been considered in earlier siting decisions for the geology of the site. The spent fuel rods are still in storage at the Trojan site next to the Columbia River.

The Humboldt Bay Nuclear Power Plant operated for 13 years (1963-1976) before seismic issues required decommissioning. The 390 spent fuel assemblies are in dry cask storage. The Humboldt site is below sea level in a region subject to earthquakes and tsunamis. In 2004 Pacific Gas and Electric Company announced that three nuclear fuel rods were unaccounted for due to conflicting records of their location. The fuel rods were never accounted for. The investigation is believed to have cost one million dollars.

The New Mexico public has opposed nuclear waste dumping, storage and transport for decades. Politicians eager to garnish corporate donations have betrayed the public by bringing programs for increased nuclear weapons production and increased nuclear contamination to Sandia National Laboratories and Los Alamos National Laboratory (LANL).

The DOE weapons labs have contaminated every site, surrounding communities and workers with nuclear wastes and toxic chemicals. DOE/LANL plans to leave some 21,000,000 cubic feet of hazardous, mixed hazardous and radioactive waste from nuclear weapons production buried at legacy waste dumps across LANL mesas. The groundwater monitoring program spent hundreds of millions of dollars building wells that are largely incapable of detecting contamination. The pathway for the contamination is through the vadose zone to the regional aquifer and from surface runoff contamination to the Rio Grande. Volcanic tuff underlies the LANL site and the seismic setting is not well understood. Nevertheless, DOE intends to continue operating facilities above the dangerous seismic setting and installing a facility for the production of plutonium bomb cores (CMRR).

At **Sandia National Laboratories** (Sandia) an eight year survey showed many workers dying at an average age of 50 with a 17 % cancer rate that has not been investigated. Sandia destroyed many worker health records and withholds data from surviving families and spouses to avoid payouts under RECA. Rather than give survivors information, Sandia asserts that the jobs their spouse held was secret so that no information can be given to discover the exposures.

Failure to Monitor and Dispose of Mixed Radioactive and Hazardous Wastes in New Mexico

The Sandia Laboratories' Mixed Waste Landfill dump is in a growing, urban area above the aquifer that supplies Albuquerque's municipal wells. The types of wastes in the Sandia MWL dump could never be disposed of in the present location by today's health and safety standards.

Although a dirt cover has been placed over the dump, it will not be effective for long term protection of the long lived wastes in the dump that can enter air and water. The New Mexico Environment Department sued Citizen Action to keep a 2006 TechLaw, Inc. report **secret** until late 2009. The TechLaw report reveals flaws in the dirt cover construction for long term protection and rejects Sandia's computer modeling for movement of the dump's wastes as a "black box" that should not be used.

Witnesses for DOE/Sandia and the Environment Department erroneously testified at the public hearing in 2004 for the dirt cover remedy that there was "no evidence of contamination to the groundwater." The witnesses knew that the monitoring network was in the wrong location and incapable of detecting contamination and that the data from the wells was no good to make the remedy decision.

A $275,000 investigation (April 2010) by the Environmental Protection Agency Office of Inspector General found that EPA Region 6 staffers had concerns similar to Citizen Action's about the landfill's affect on groundwater and the lack of effective groundwater monitoring at the MWL dump. However, the Inspector General also found the *Oversight Report* of the EPA staff's MWL dump concerns are still being kept secret from Citizen Action and the public. http://www.fas.org/sgp/othergov/ig-epa-reg6.pdf

The MWL is: located near to a planned Mesa del Sol residential development for 80,000 to 100,000 people, near the Pueblo of Isleta lands and communities in the South Valley. The Mixed Waste Landfill (MWL), originally named the Sandia Radioactive Waste Dump, is a 2.6-acre dumpsite where 1,500,000 cu ft of radioactive and mixed

hazardous wastes from making nuclear weapons were carelessly dumped. *The wastes lie above Albuquerque's drinking water aquifer. Sandia officials cannot fully describe what is really in the MWL dump.* No reliable groundwater monitoring network has ever been in place to monitor the groundwater beneath the dump. Contamination is present now in the groundwater below the MWL dump.

A tritium plume is spreading deeper beneath the dump and 10 times the expected levels of tritium were found in a 2008 study. Tritium is an indicator of other contamination that has not been studied.

NMED, EPA and Sandia/DOE have known since 1991 that a well monitoring system that meets the requirements of federal law has never been in place at the MWL. **The agencies knew all along** that the monitoring wells were:

- installed in the wrong locations given the direction of the flow of groundwater.
- corroded well screens were hiding evidence of contamination.
- well screens were contaminated with Bentonite clay that HIDES contaminants that may be present in groundwater.

New wells installed in 2008 are too deep to monitor at the water table for any detection of contamination. Sandia, EPA and the NMED know that data from the well monitoring network is highly flawed. Nevertheless, Sandia continues to submit the erroneous data. NMED continues to accept the inaccurate data for decisions.

REPROCESSING

President Carter halted reprocessing in the US by executive order after India was able to build a nuclear weapon in 1974 from reprocessing "peaceful" spent fuel. North Korea has embarked on reprocessing spent fuel for nuclear weapons and recently tested a device.

The DOE is an abysmal failure at managing spent fuel and reprocessing wastes just for a time span of less than 70 years. There is no reason to believe that the DOE radioactive waste management performance will increase by any substantial margin. There is no magic technology that DOE possesses to prevent massive environmental contamination from reprocessing. All DOE can point to at this point in time are failed policies, failed or delayed cleanup, environmental contamination and vague promises of new technologies that do not exist and for which the costs are unknown.

Even if the DOE could somehow have zero releases and accidents from US reprocessing, the potential would greatly increase for accidents and releases from a growing international reprocessing industry. Reprocessing enhances the prospects for increased worldwide accidents.

Plutonium is a profoundly dangerous carcinogen, aptly named for the Greek god of the underworld. Other deadly radioactive wastes that are released from reprocessing such as Americium-241, Iodine-129, Carbon-14, Technetium-99, Cobalt-60, Krypton-85, Strontium-90, Cesium-134,-137 have no boundaries for global travel by air and water for poisoning the planet and humanity. The toxicity of these radionuclides is measured from hundreds up to millions of years of lethality. Resuming reprocessing in the United States and other countries will increase the volumes and dispersal of deadly radioactive poisons.

Reprocessing spent nuclear fuel for plutonium nuclear reactor fuel represents a Death Energy Policy. This Death Energy Policy is being pushed on the public by the Department of Energy fanning unnecessary fears about the future unavailability of fossil fuels. Congress and the Department of Energy have the capability to just as well implement a "Manhattan Project" for development and expansion of numerous alternative energy solutions that could be funded by the plus $500,000,000,000 that will otherwise be spent on the Death Energy Policy.

The historical record for past and current reprocessing operations shows the United States, Europe, Russia and Japan have released huge quantities of radionuclides to the environment. Sellafield (UK) and La Hague (France) released a cumulative total of 1,440 Kg (250 curies) of radioactive Iodine-129 alone. That is 32 times more than the quantities released from all atmospheric testing of nuclear weapons. La Hague and Sellafield's radioactive contamination of the ocean reaches all the way to the Arctic seas contaminating fish and shellfish. Seaweed used for fertilizer is putting radionuclides into the food chain. Childhood leukemia shows evidence of significant increase. Iodine-129 has a half-life of 16,000,000 years and can cause thyroid cancer. An accidental release from the liquid waste inventory at Sellafield could dwarf the Chernobyl accident by 50 times just for Cesium alone. Hundreds of kilos of plutonium contaminate the Irish sea.

Corrupt management can be problematic, such as at the Sellafield reprocessing facility where the reprocessed fuel was rejected for use:

> …"The crisis at British Nuclear Fuels Ltd (BNFL) began to emerge last September after the *Independent* newspaper published reports that staff at its Sellafield plant had falsified data relating to MOX fuel pellets. The Japanese, German, Swedish and Swiss governments all subsequently banned imports from Sellafield. A subsequent report by the usually tame Nuclear Installations Inspectorate was heavily critical of the Sellafield management's safety record."
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> …"The end of the Cold War radically altered the demand for military plutonium. BNFL conceived of MOX fuel production at Sellafield as a means of unloading its stockpile of plutonium onto potentially lucrative markets worldwide. BNFL also attempted to court new markets in waste storage and management.
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> "On winning office in 1997, Labour took forward plans to sell off BNFL. Now both wings of its nuclear privatisation strategy are collapsing at once. Outside of Japan, nobody wants MOX fuel and Japan is presently unable to accept it. Moreover, waste storage at Sellafield is becoming too expensive. The facility is increasingly seen as a liability. Even without new environmental disasters, the facility's estimated decommissioning costs run to tens of billions of pounds.
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> "In addition, numerous reports document the spread of radiation originating in Sellafield."

http://www.wsws.org/articles/2000/apr2000/nuc-a03.shtml

In 1957 a waste tank at the Soviet Union's Mayak reprocessing facility near Kyshtym exploded contaminating almost 6,000 square miles. The release from this explosion was the largest in a whole series of discharges of all forms of radioactive waste to the environment in this area. The releases of radioactive poisons from Sellafield and La Hague on an annual basis equal the accidental release from the Soviet Union accident. Russian operations for reprocessing and reactor operations such as Chernobyl have been notoriously sloppy.

On September 30, 1999, the Tokai nuclear fuel plant in Japan had a criticality accident in converting uranium hexafluoride to uranium dioxide for nuclear fuel. The accident killed two workers and contaminated members of the public. The Tokai, Japan facility will be dismantled and there are $136,000,000 for 7,000 damage claims from citizens. That does not count the costs for loss of the plant.

The Department of Energy reprocessing activities at Hanford WA, Idaho National Laboratory ID, and Savannah River SC sites have been notable for their normal operating and accidental releases of enormous quantities of radionuclides into air, water and soil. West Valley NY was a commercial reprocessing failure and only reprocessed one year's worth of reactor fuel and left a contaminated site with 600,000 gallons of radioactive waste.

In 1964, criticality was reached at a commercial nuclear fuel processing plant near Charlestown, Rhode Island. That plant is no longer in operation. A worker died after being exposed to 1,000 times the lethal dose of radiation when he accidentally set off the reaction by pouring liquid uranium into a tank." (San Jose Mercury News, Oct. 1, 1999).

A single major accident at a US reprocessing plant would probably result in the facility being closed as occurred at Three Mile Island after an accident. The result of a reprocessing accident in the US would also mean a huge loss of financial development capital in addition to any casualties or injuries. No nuclear plant has been built in the US since the TMI accident. The DOE greatly underestimates the public's fear and panic in the face of nuclear accidents.

Reprocessing releases large quantities of radiation to the environment. Noble gases such as Krypton-85 have greatly increased by nuclear reprocessing and weapons testing since 1945. Krypton-85 has irreparable effects on human health as a beta and gamma emitter. The long half-life (10.7 yr), allows the gas to mix thoroughly in the atmosphere. Ionization caused by krypton-85 increases the electrical conductivity of atmospheric air. Increases in conductivity will produce uncertain effects on atmospheric phenomena. The meterological consequences for releases of Krypton-85 in relation to climatic instability is not well understood. *Meteorological Consequences of Atmospheric Krypton-85* Boeck Science 16 July 1976: 195-198.DOI:10.1126/science.193.4249.195. The potential effect for contribution to climate change should be investigated. This may include "Increases conductivity of lower atmosphere, with possible implications for earth's electric field and

precipitation from convective clouds." http://stephenschneider.stanford.edu/Climate/Climate_Science/PrincipalHumanActivities.html "Questions have been raise about the effect of krypton-85 from extensive reprocessing necessary for a breeder reactor system on cloud formation and hence potential climate change. However, krypton-85 can be removed from exhaust gases by cyrogenic cooling." http://www.ieer.org/ensec/no-1/comffnp.html

Citizen Action opposes plans for reprocessing of spent fuel in New Mexico and elsewhere for numerous reasons:

- Creation of massive volumes of nuclear waste
- Radioactive waste contamination of Earth's air, soil and water for millions of years
- The long-term cumulative effects of environmental contamination that will result from ordinary operational releases
- The long-term damage to planetary life that has already been caused and will occur in the future just from the existing reprocessing operations. Excessive costs for electric consumers and taxpayers for the federal subsidies that will be committed in the designing, building, operating and environmental consequences of reprocessing facilities. Studies by Harvard and MIT and by the French and Japanese government indicate much higher costs for reprocessing than spent fuel storage.
- The failure to consider the dose effects of reprocessing operations on the world population as a whole
- The potential catastrophic environmental effects from accidental releases whether due to human error, equipment malfunction, explosions or terrorist activities
- The long storage times for high and low level radioactive wastes and the inability of human institutions to maintain political, economic and/or environmental protection for hundreds to thousands of years
- The demonstrated failure of all DOE reprocessing, and foreign reprocessing facilities to prevent the widespread contamination of air, soil and water through their operations
- The encouragement of research and development of reprocessing technology in non-weapon states and the reduction of costs and acceleration of time to convert from civilian use of spent fuel to nuclear weapons production
- The undermining and violation of the Nuclear Nonproliferation Treaty and START
- Increased availability of commercial plutonium stocks for nuclear weapons and terrorists
- The growth of an international crime network that will traffic in nuclear weapons grade materials and nuclear wastes
- Larger number of nuclear waste repositories that will be necessary and the political delays and costs for siting the repositories
- The uncertainty regarding the actual reprocessing technologies to be used
- The availability of cheaper, safer, more viable, and proliferation free options for managing spent fuel, including but not limited to, dry storage

- The placement of reprocessing facilities in the United States will be in low-income and ethnic communities least able to withstand the environmental effects and provide adequate health care to residents or emergency provisions.
- Reprocessing may lead to nuclear war
- Reprocessing may lead to resumed nuclear testing by nations that obtain plutonium from reprocessing operations and build nuclear weapons
- The availability of non-nuclear technologies for world energy needs and the need for economic resources to be devoted to those alternative technologies
- Reprocessing and the revival of nuclear economies that bring the risk of accidents and nuclear war will create a worldwide climate of destabilizing tension between nations and perpetual fear for the annihilation of entire populations, panic during accidents, relocations of peoples where catastrophic accidents may occur and deterioration of the health and genetic viability of humans
- Insurance subsidies to reprocessing operators that will limit the public right to damages in the event of accidents (If it's so safe, why won't they insure it?)

The Final Report for the STOA Study Project on POSSIBLE TOXIC EFFECTS FROM THE NUCLEAR REPROCESSING PLANTS AT SELLAFIELD (UK) AND CAP DE LA HAGUE (FRANCE), Mycle Schneider et al, August 2001 states:

> "For nuclear waste management policies, an important issue is the degree to which dry storage may be considered a viable long-term option for managing spent fuel. Dry storage in inert gas presents relatively few theoretical or practical difficulties. The IAEA has concluded after reviewing national experiences of dry storage that it is an acceptable waste management option for the storage of spent fuel for periods of 50 to 100 years [IAEA, 1996]. By this time heat rates will have declined by about two orders of magnitude. The anticipated longevity of dry stores (50 to 100 years) is expected to exceed that of wet stores [Schneider and Mitchell, 1992a]. It is concluded that passive dry storage systems appear to be an acceptable means of managing spent nuclear fuel in the medium to long term.
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> "When reprocessing and dry storage are compared, large differences in costs become apparent: the former are clearly greater than the latter. US/Canadian storage systems are less expensive than European systems: US dry storage systems for PWR fuel are estimated to be 8 to 20 times less expensive per tonne than reprocessing [Supko, 1995; Wisconsin PSC, 1994]. Dry stores are considerably less expensive to construct and to operate than wet stores: annual costs are about a factor of 4 lower. Dry stores also seem to have a much higher acceptability than any other spent fuel management option. Environmental and local groups in some countries have not opposed dry storage developments. This was evidenced by the 1987 agreement among major UK environmental groups, supported by over 40 regional and local groups, to a collective strategy of long-term on-site storage. During the 1992-1994 UK public inquiry into Scottish Nuclear's dry storage plans [Hickman, 1994], no environmental group made representations against the plans."

The energy alternatives to nuclear power production and associated reprocessing clearly outweigh the environmental damage, economies and proliferation dangers.

> "The biggest problem with the ultimate storage of nuclear waste is its incredible persistency. Storage facilities need to be secure from 15,000 years for low-level radioactive waste to 200,000 years for spent fuel. This sheer time span makes safe disposal impossible in the eyes of critics. After the Second World War, the U.S. sank radioactive waste in deep spots in the Pacific. Research in those areas revealed mutations on plants and animals, because the water corroded the storage casks. In Germany, the storage in salt deposits was considered a safe option until unsolved problems surfaced during the first pilot: the salt deposits Asse and Gorleben are not protected by an impermeable rock formation and water leaks into them. The storage casks corrode if in contact with salty water thus contaminating this water, which can reach the surface. Also, the deposits have been or are in danger of collapsing due to water ingress and seismic activities, with unknown consequences. Theoretically, nuclear waste could be left in intermediate storage in castors for at least 2,000 years before they become brittle, which would command repackaging of the waste. In Germany it is allowed to store 180 kilograms of spent fuel in one castor. Still, one hour next to such a container leads to a tenth of the usual yearly dose of radioactivity in Germany. One castor costs about 1.5 million euros – storing the spent fuel of a 1GW nuclear power plant of one year safely this way would cost 22.5 billion euros."

Source: http://www.turkishpolicy.com/dosyalar/files/105-115.pdf

The problems associated with nuclear waste disposal from nuclear weapons production legacy waste highlights the inadequacy of solutions for high level waste disposal. The sighting of Yucca Mountain proved to be both a technological failure for choice of location and a political failure. $200,000,000,000 is planned for nuclear weapons modernization and matching up delivery systems over the next ten years. There are no ethical concerns left in the country when spending of that magnitude is planned given the social needs that are not being provided for in the United States. The history of nuclear waste handling/disposal from military and national laboratory operations have been dismal -- contaminating air, water and soil and bringing death and disease to surrounding communities. The labs and military often behave as if surrounding low income communities don't matter.

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