Consent-Based Siting

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Sent: Saturday, July 30, 2016 12:52 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Response to IPC--Third set of public comments by Beyond Nuclear on DOE's proceeding to define the "Consent-Based Siting" of radioactive waste dumps

Response to IPC--Third set of public comments by Beyond Nuclear on DOE's proceeding to define the "Consent-Based Siting" of radioactive waste dumps

We do not consent!

THE RUSH JOB TO *DE FACTO* PERMANENT PARKING LOT DUMPS, FOR ALL THE WRONG REASONS

We do not consent to DOE rushing into parking lot dumps (so-called "centralized" or "consolidated interim storage," in order to expedite the transfer of title and liability from the nuclear utilities that profited from the generation of high-level radioactive waste, onto the backs of taxpayers.

We do not consent to "centralized interim storage" facilities becoming ***de facto* permanent surface storage parking lot dumps** for high-level radioactive waste.

We do not consent to "games" of radioactive Russian roulette, radioactive hot potato, and radioactive musical chairs being played, when it comes to high-risk, high-level radioactive waste shipments on the roads, rails, and waterways through most states.

We do not consent to the nonsense of shipping high-level radioactive waste to "centralized interim storage," when permanent disposal could well involve shipping those very same wastes, right back to, or through, where they came from in the first place, heading in the opposite direction.

We do not consent to the nuclear establishment's "return to sender" schemes with "centralized interim storage." Had the Private Fuel Storage, LLC (PFS) parking lot dump – its license for construction and operation at the Skull Valley Goshutes Indian Reservation in Utah rubber-

stamped by the U.S. Nuclear Regulatory Commission (NRC) a decade ago – actually opened, this nonsensical multiplication of transport risks could have occurred. PFS's plan was for the wastes to ultimately be dumped at Yucca Mountain, Nevada. But its Plan B, should Yucca not open, was to "return to sender." Yucca has been cancelled. Had the Maine Yankee nuclear power plant, for example, sent its wastes to PFS, they would have been "returned to sender." More than 50 containers of high-risk, high-level radioactive waste, shipped ***5,000 miles round-trip*** through numerous states, accomplishing absolutely nothing.

We do not consent to DOE's oldest trick in the book, of trying to divide and conquer, by attempting to play "orphaned" waste communities off against the rest of us – many "stranded" waste communities have stated explicitly that DOE's *de facto* permanent parking lot dump shenanigans are done "not in our name." DOE's stated purpose for prioritizing "stranded" waste export to parking lot dumps – to free up decommissioned nuclear power plant sites for "unrestricted," productive "re-use," is a non-starter. Decommissioning regulations are so inadequate, supposedly "cleaned up" sites are still significantly contaminated with hazardous radioactivity, making re-use of those sites risky for current and future generations.

FLOATING FUKUSHIMAS ON SURFACE WATERS

We do not consent to radioactive waste barge shipments on the lakes and rivers of this country, the fresh drinking water supply for countless millions, nor on the seacoasts.

We do not consent to "Floating Fukushimas." There are some 26 atomic reactors in the U.S. that lack direct rail access. Yet DOE has chosen the "mostly rail" shipping scenario of high-level radioactive wastes as its preferred policy. Rail shipping containers weigh more than 100 tons. These cannot go down the highways. They are designed to go down railways. But to get these giant, very heavy containers to the nearest rail head, either heavy haul trucks, or barges on waterways, would have to be used. Barges raise the specter of a high-level radioactive waste shipment sinking, with the potential for disastrous releases of high-level radioactive waste into drinking water supplies and fisheries, or even a nuclear chain reaction on the bottom of the surface waterway (there is enough fissile U-235 and Pu-239 present in high-level radioactive waste that, if a critical mass forms in the sinking disaster, and water infiltrates the container, a nuclear chain reaction could be initiated, worsening radioactivity releases to the water body, and making emergency response a suicide mission, given the fatal gamma -- and even neutron -- doses coming off the inadvertent chain reaction).

We do not consent to high-level radioactive waste shipments on the Great Lakes; one barge sinking could radioactively contaminate the drinking water supply for 40 million people in two countries – eight states in the U.S., and two provinces in Canada – as well as a large number of Native American First Nations. The Palisades reactor in southwest Michigan, and the Kewaunee and Point Beach nuclear power plants in Wisconsin, were revealed by DOE in 2002 to be potential barge shipment points of origin. The barges would ply the waters of Lake Michigan, headwaters for the rest of the Great Lakes downstream, and the direct drinking water supply for many millions of people, including the Chicago metro region.

We do not consent to high-level radioactive waste barge shipments from the Calvert Cliffs nuclear power plant in Maryland, to the Port of Baltimore on the Chesapeake Bay. A sinking could destroy decades of Bay restoration work in one fell swoop, putting countless watermen out of work forever, and wrecking the Bay's tourism and recreation industries, as well as its fragile, irreplaceable, vibrant, biologically diverse ecosystem. Property values along the Bay

shore would also be ruined.

We do not consent to high-level radioactive waste barge shipments from the Surry nuclear power plant in Virginia, to the Port of Norfolk on the James River. A sinking could ruin this historic river, and also impact the Chesapeake downstream.

We do not consent to Floating Fukushimas from the Salem/Hope Creek nuclear power plant in New Jersey traveling up the already badly polluted Delaware River to the Port of Wilmington.

We do not consent to Floating Fukushimas on the surface waters of New Jersey, New York, and Connecticut, surrounding the metropolitan New York City area, including: from New Jersey's Oyster Creek nuclear power plant, up the Jersey Shore, around Staten Island, New York, to the Port of Newark, New Jersey; from Indian Point nuclear power plant, down the Hudson River, past Manhattan, to the Port of Jersey City, New Jersey; and from the decommissioned Connecticut Yankee nuclear power plant site, down the Connecticut River, onto Long Island Sound, into the Port of New Haven, Connecticut. The very high security risks alone, of intentionally bringing ultra-hazardous high-level radioactive waste, into such close proximity to so many millions of people, is a non-starter.

We do not consent to Floating Fukushimas on Cape Cod Bay, Massachusetts Bay, and Boston Harbor, traveling from Pilgrim nuclear power plant to the Port of Boston.

We do not consent to Floating Fukushimas on the Mississippi River, traveling from the Grand Gulf nuclear power plant to the Port of Vicksburg in Mississippi.

We do not consent to Floating Fukushimas on the Tennessee River, traveling from the Browns Ferry nuclear power plant to Florence, Alabama.

We do not consent to Floating Fukushimas on the Missouri River, traveling from the Cooper nuclear power plant to the Port of Omaha in Nebraska.

We do not consent to Floating Fukushimas on the Pacific Coast, traveling from the Diablo Canyon nuclear power plant to Oxnard/Port of Hueneme in California.

We do not consent to Floating Fukushimas on south Florida's Atlantic Coast, traveling from St. Lucie nuclear power plant to Fort Lauderdale/Port of Everglades and/or from Turkey Point nuclear power plant to the Port of Miami.

We do not consent to Floating Fukushimas on any other surface waters in the U.S., whether they be fresh water drinking water supplies, or salt water fisheries.

We also do not consent to the alternative means of transporting these 100+ ton high-level radioactive waste containers to the nearest rail head -- heavy-haul trucks. Many locations could not accommodate heavy haul trucks, easily or at all. Curves in narrow roads could prove prohibitive, as in the vicinity of Indian Point, New York. Heavy haul trucks could involve a puller truck in front, and even a pusher truck in the back, with 200 wheels in between. They can only travel a few miles per hour. In this sense, they would be even more vulnerable to a terrorist attack, such as one involving an anti-tank missile, than legal weight trucks traveling up to 70 miles per hour, or trains traveling similar faster speeds.

The relatively short distance shipment (just some tens of miles) of Big Rock Point's radioactive reactor pressure vessel in 2003 was instructive regarding the risks of heavy haul trucks. The shipping container weighed 290 tons -- a weight that could be reached by three rail-sized casks of irradiated nuclear fuel, for example. The very heavy weight of the Big Rock Point reactor pressure vessel likely contributed to the breaking of an axle broke as the heavy haul truck shipment passed over a bridge above a waterway. The shipment had to make an emergency pull over stop at the next gas station. That gas station happened to be a school bus stop, so young children were exposed to the gamma radiation emanating from the shipping container, at relatively short distance. When the shipment finally pulled into Gaylord, Michigan, the site of the rail head where it was transferred from the heavy haul truck, onto the train, a crowd of local residents gathered, to watch the spectacle at close range, again exacerbating public health damage due to exposure to gamma radiation at short range. Some local residents were even allowed to approach and touch the shipping container, maximizing their unwitting exposure to harmful ionizing radioactivity, due to the neglect by the shipping authorities to warn the public about the hazards, nor even to establish a no-go zone perimeter around the perimeter. The heavy shipment then damaged train tracks in both southeast Michigan, as well as the Carolinas, causing derailments of other trains in its wake. In a rail yard in Walbridge, Ohio, due to a paperwork snafu, the shipment was held overnight, again with no security perimeter established, allowing ready public access. Although considered "low" level radioactive waste, this reactor pressure vessel shipment -- due to its weight, as well as its gamma radioactivity -- is a cautionary tale for irradiated nuclear fuel shipments to come. A few casks of irradiated nuclear fuel, shipped on the same train, such as a designated one, will weigh as much, raising the specter of rail car damage, or failure of deteriorating railway infrastructure, such as the train tracks themselves, or even bridges -- falls from great heights onto unyielding surfaces below, as well as underwater submersion, could result. Irradiated nuclear fuel, however, is many orders of magnitude more radioactive, than the Big Rock Point reactor pressure vessel.

MOBILE CHERNOBYLS/DIRTY BOMBS ON WHEELS

We do not consent to high-level radioactive waste truck and train shipments through the heart of major population centers; through the agricultural heartland; on, over, or alongside the drinking water supplies of our nation. Whether due to high-speed crashes, heavy crushing loads, high-temperature/long duration fires, falls from a great height, underwater submersion, collapsing transport infrastructure, or intentional attack with powerful or sophisticated explosives, such as anti-tank missiles or shaped charges, high-level radioactive waste shipments, if breached, could unleash catastrophic amounts of hazardous radioactivity into the environment.

We do not consent to heavy haul trucks (monster truck in front and back, two hundred wheels on the trailer in between, traveling only 3 miles per hour) as an end run attempt to transport very heavy rail casks to the nearest rail head, while attempting to avoid controversial, high-risk barge shipments. (See the paragraph just above.)

We do not consent to Mobile Chernobyls, or Dirty Bombs on Wheels, traveling by railway through most states in the country under DOE’s “mostly rail” shipping scheme.

We do not consent to Mobile Chernobyls, Fukushima Freeways, or Dirty Bombs on Wheels, traveling by highway through most states in the country, even under DOE’s “mostly [but not entirely] rail” shipping scheme. (Casks designed for “legal-weight truck” shipments, as they

are called, are significantly smaller and less heavy than rail casks, and would travel on interstate highways, and connecting roadways.)

We do not consent to containers, in violation of quality assurance and quality control (QA/QC) standards, being used to ship high-level radioactive waste. Commonwealth Edison/Exelon whistle-blower Oscar Shirani, and NRC Midwest Region dry cask storage inspector, Dr. Ross Landsman, revealed major QA/QC violations with Holtec casks, 15 years ago. They questioned the structural integrity of Holtec casks *sitting still, going zero miles per hour*, let alone at 60 mph -- or faster -- on the rail lines. NRC has never adequately addressed these QA violations, so we have to assume they have continued right up to the present. Holtec containers have received an NRC rubber-stamp permit not only for on-site storage at more than a third of U.S. reactors, but also for rail/barge transport. To make matters worse, Holtec is the lead partner in the scheme to establish a parking lot dump in New Mexico. (The Private Fuel Storage, LLC parking lot dump targeted at the Skull Valley Goshute Indian Reservation, NRC rubber-stamped but later stopped despite this, would have utilized *4,000* Holtec casks, containing *40,000 metric tons* of irradiated nuclear fuel.) Holtec is not the only high-level radioactive waste container with QA/QC failures, however. NAC (Nuclear Assurance Corp.), VSCs (Ventilated Storage Casks), TN NUHOMS (TransNuclear), and others have violated QA/QC standards, as well. In fact, cask QA violations run rampant across industry, enabled by NRC complicity and collusion.

We do not consent to DOE's and industry's cynical attempt to "railroad" the American public on high-risk, high-level radioactive waste transport, by invoking the U.S. Constitution's Interstate Commerce Clause, to ram Mobile Chernobyls down our throats, through our communities. For starters, radioactive waste is not a commodity. It is a forever-deadly poison, with nowhere to go, and never belonged on our living planet to begin with. We must stop making it.

ENVIRONMENTAL INJUSTICE/RADIOACTIVE RACISM

We do not consent to the environmental injustice and radioactive racism of yet again targeting low-income Native American communities with the most hazardous substances ever created. From 1987 to 1992, DOE's Nuclear Waste Negotiator wrote to every one of the many hundreds of federally recognized Native American tribes in the U.S., offering relatively large (for the tribes, anyway) sums of money in exchange for them "just to consider" hosting high-level radioactive waste parking lot dumps (the amount of money was exceedingly small, as compared to DOE's annual budgets, and especially as compared to nuclear power industry profit margins). DOE's Nuclear Waste Negotiator focused on 60-some tribes in particular. Mescalero Apache in New Mexico, and Skull Valley Goshutes in Utah, went the furthest. But traditionals like Rufina Marie Laws and Joe Geronimo at Mescalero, and Margene Bullcreek and Sammy Blackbear at Skull Valley, blocked the parking lot dumps in the end, after fierce battles, that left very deep wounds in those communities, for which the nuclear establishment bears responsibility. This resistance was assisted by Grace Thorpe, who not only blocked the parking lot dump targeted at her own Sauk and Fox Reservation in Oklahoma, but assisted environmental allies at reservations across the country to do the same. President Obama honored Thorpe for her anti-dump work, as a "Woman Taking the Lead to Save Our Planet," alongside the likes of Rachel Carson of *Silent Spring* fame, in his March 2009 Women's History Month proclamation. And yet, President Obama's own Blue Ribbon Commission on America's Nuclear Future, as well as his DOE, are yet again including Native American reservations on the target list for parking lot dumps. This most disturbing internal Obama

administration contradiction has never been explained.

We do not consent to the targeting of nuclear power plant sites already heavily burdened with irradiated nuclear fuel to become parking lot dumps, importing other reactors' wastes. A study by Oak Ridge National (Nuclear) Lab, for example, has singled out the Dresden nuclear power plant in Morris, IL as a top target for a parking lot dump. But Dresden is already heavily burdened with around a whopping 3,000 metric tons of irradiated nuclear fuel, in the storage pools at three atomic reactors, in the "overflow parking" dry cask storage installations, as well as the immediately adjacent General Electric-Morris reprocessing facility "wet storage" pool. (The dry cask storage pads at Dresden also involved back foundation pours of concrete, but NRC yet again rubber-stamped an exemption from safety regulations, allowing them to be used nonetheless. Combined with the QA violations of the Holtec casks deployed on those defective pads, the risks are piled up at Dresden already.)

SITES CURRENTLY AT THE VERY TOP OF THE TARGET LIST FOR *DE FACTO* PERMANENT PARKING LOT DUMPS

We do not consent to the targeting of DOE sites, already heavily contaminated with radioactivity and burdened with high-level radioactive waste, to become parking lot dumps for the importation of other sites' or reactors' wastes. The proposal to open a parking lot dump in Eddy-Lea Counties in southeastern New Mexico, near the Waste Isolation Pilot Project (WIPP), is a case in point. WIPP is the U.S. national dump-site, in a salt formation 2,000 feet below ground, for trans-uranic contaminated radioactive wastes from the U.S. nuclear weapons complex. Although DOE assured the public that WIPP could not possibly leak in the first 10,000 years, and would leak at most once in the first 200,000 years, WIPP suffered a trans-uranic radioactive waste leak to the environment in year 15 of its operations, on Valentine's Day, 2014. Nearly two-dozen workers at the surface suffered inhalation doses of ultra-hazardous, alpha-emitting substances, including plutonium. Trans-uranics also fell out downwind, to be further distributed by wind and rain over time. The burst of a single barrel 2,000 feet underground caused the radioactivity release. The root cause of the burst was a chemical reaction due to the mixing of chemically reactive nitrates and lead in with the radioactive wastes, which sparked the ignition. The fire was sustained by the inclusion of organic (meaning fibrous, plant-based) *kitty litter*, meant to absorb liquids. The burst of the single barrel has already shut down WIPP for two and a half years. DOE estimates the recovery cost at $500 million; the *L.A. Times* estimates one billion dollars.

We do not consent to a ***de facto*** permanent parking lot dump targeted at Waste Control Specialists, LLC (WCS) in Andrews County, Texas. WCS applied to NRC for a construction and operation license on April 28, 2016. WCS already dumps all categories of so-called "low" level radioactive waste – Class A, B, and C – into the ground, either directly above, or immediately adjacent to, the Ogallala Aquifer. The Ogallala Aquifer serves as a vital supply of drinking and irrigation water for numerous states on the Great Plains, from Texas to South Dakota. WCS effectively serves as a ***national*** dump-site for such radioactive wastes. (Several state environmental agency staffers resigned their career jobs in protest over the outrageous decision to allow WCS to open for "low" level radioactive waste dumping in the first place, endangering or even dooming the Ogallala, over time, to hazardous radioactive contamination.) WCS also accepted many scores of barrels from Los Alamos National (Nuclear) Lab in New Mexico, containing the same volatile mix as burst in the WIPP underground in 2014. Already, the potentially bursting barrels have sat out in the hot summer

sun at WCS in 2014, 2015, and now 2016, with no end in sight. Heat fueling a chemical reaction, igniting combustibles, and pressure build-up, is the entire problem with the burst risk. If one or more barrels burst at WCS, into the open air of the surface environment, the releases of plutonium and other ultra-hazardous trans-uranic radioactive wastes could be significantly worse, in terms of downwind and downstream fallout, than the 2014 WIPP release, which originated 2,000 feet below ground, and had to follow a long, circuitous path, through thousands of feet of horizontal burial caverns and tunnels, as well as thousands of feet of vertical ventilation shaft, to reach the surface environment, and fallout over a wide area downwind. The barrels at WCS are *at* the surface environment! WCS accepting these potentially explosive barrels in such a great big hurry in the first place, without even knowing the risks they were getting into, shows what a careless company it is, and the high risks they are all too willing to rush into, or blunder into, just to make a buck. It cannot and should not be trusted to store high-level radioactive waste, not even temporarily (although "interim" is a deception – the storage would become very long term, perhaps even permanent).

A second company, Advanced Fuel Cycle Initiative (AFCI), is targeting another west TX county for ***de facto*** permanent storage as well: Culberson. Given the large Hispanic American population in the area, as well as low-income levels, Environmental Justice concerns are raised, yet again, by these proposed west TX parking lot dumps. Much the same can be said regarding the populations in southeastern New Mexico, surrounding the proposed parking lot dump there.

Another parking lot dump target – Savannah River Site (SRS), South Carolina – also raises red flags about disproportionate impacts on people of color and low-income communities. SRS is already a very badly radioactively contaminated region, due to decades of nuclear weapons production, and other related nuclear activities (such as proposed mixed oxide plutonium fuel storage and fabrication, proposed civilian high-level radioactive waste reprocessing, etc.). SRS is now also "serving" as the "host" for high-level radioactive wastes being "re-imported" from multiple countries overseas. Germany pebble bed modular reactor irradiated nuclear fuel just "returned" to SRS, for example. Canadian ***liquid*** high-level radioactive waste is poised to be trucked to SRS (liquid high-level radioactive waste has never been transported in North American history; this unprecedented, high-risk scheme shows that DOE itself has thrown caution to the wind, and cannot be trusted to obey laws, such as the National Environmental Policy Act, Atomic Energy Act, and Administrative Procedure Act, leading to illegal, highly dangerous risk-taking, for no good reason). But in addition, the area also "hosts" the adjacent Barnwell, SC "low" level radioactive waste dump – a national dump (a total of 39 states dumped there) for decades on end, long leaking. To make matters even worse, the area "hosts" the largest – in terms of number of reactors – nuclear power plant in the U.S., Vogtle. Vogtle Units 1 and 2 have already operated for decades; Units 3 and 4 are currently under construction. The nearby community of Shell Bluff, Georgia is predominantly African American and low-income. Targeting the SRS area with a high-level radioactive waste parking lot dump would just compound the environmental injustice even worse.

HIGH-LEVEL RADIOACTIVE WASTE STORAGE POOLS

We do not consent to the nuclear power industry, with NRC's blessing, keeping high-level radioactive waste at high-risk, high-density "wet" storage in waste pools, for years or decades into the future. NRC decommissioning regulations, for example, allow pool storage for as long as 60-years post reactor shutdown (so, if the reactor had operated for 60 years, as NRC has permitted time and again, that would mean a total of 120 years of pool storage; NRC is

now actively considering allowing 80 years of operations at reactors, which would then add up to 140 years of pool storage.). Nuclear utilities seek to defer dry cask storage costs as far off into the future as possible, by maximizing pool storage for as long as possible. Pools are so densely-packed, they have approached operating reactor core densities. Especially considering degradation of neutron absorbing structures (such as Boraflex panels) in the pools, this risks potentially deadly and disastrous nuclear chain reactions in the un-shielded pool, which also happens to not be housed in a robust radioactive containment structure. But high-density storage also risks a sudden cooling water drain down, or a slower motion boil down. Either way, the worst case scenario would be a partial drain down, where irradiated nuclear fuel is partially exposed to air, with remaining pool water below blocking convection air currents, that would at least provide some (and perhaps still not enough) cooling to the overheating exposed irradiated nuclear fuel assemblies. Once exposed to air, the zirconium-clad fuel rods could reach ignition temperature within hours, initiating spontaneous combustion. The chemical reaction would turn exothermic, self-feeding, with the fire burning down the fuel rods, not unlike 4th of July sparklers. The pool would be unapproachable, due to lack of cooling water radiation shielding, with instantaneously deadly doses at close range. Thus, emergency responders would likely be blocked from intervening, making even suicide squad (those willing to sacrifice their lives for the greater good) interventions ineffective, due to the instantly deadly doses, preventing any effective action from being taken. The radioactive Cesium-137 releases alone, to the environment, would be catastrophic, due to such a pool fire. Up to 100% of the Cs-137 contained in the pool could escape in the smoke, to fallout over a vast region downwind. A hazardous radioactivity release, orders of magnitude larger than that released at Chernobyl, could result.

We do not consent to ongoing pool storage, due to pool leaks that, according to NRC in 2013, have already occurred at 13 pools across the U.S. This number can be expected to increase, with worsening age-related degradation at U.S. nuclear power plants. Such pool leaks harm soil, groundwater, surface water, and people and other living things downstream, up the food chain, and down the generations.

We do not consent to pools being dismantled during nuclear power plant decommissioning. Although the irradiated nuclear fuel stored in pools should be off-loaded into hardened on-site storage ASAP (see below), and kept unloaded, the pool structures, systems, and components themselves should be left intact, maintained, and not dismantled or allowed to fall into disrepair. Keeping functional pools extant, albeit empty until needed, would provide an emergency location for failed cask to new replacement cask transfers of irradiated nuclear fuel, with needed radiation shielding. If pools are dismantled at decommissioning nuclear power plant sites (as has been the standard approach thus far), any cask-to-cask transfers would have to be done on an *ad hoc* basis, perhaps under a worsening emergency situation. There is no reason to paint ourselves into such a corner. Pools can be maintained to provide an emergency back-up transfer option. Although they should no longer be used for regular waste storage, as they are took risky.

NEED FOR HARDENED ON-SITE STORAGE (HOSS)

We do not consent to NRC's status quo, allowing nuclear utilities to store irradiated nuclear fuel for as long as 120 years in vulnerable storage pools, and to store high-level radioactive waste in vulnerable dry casks. Many hundreds of environmental, public interest, and social justice groups, representing all 50 states, have called for Hardened On-Site Storage (HOSS) for 15 years. HOSS calls for emptying of irradiated nuclear fuel from vulnerable storage pools

into dry casks, but not into vulnerable status quo ones, as is currently done. This out of the frying pan, into the fire approach is unacceptable and dangerous. Dry casks must be designed and built well, with rigorous QA standards, to last not decades, but centuries. Dry cask storage must be safeguarded against leaks, accidents, natural disasters, and intentional attacks. Such health, safety, security, and environmental protections are not fulfilled by current, vulnerable dry cask storage permitted by NRC.

We do not consent to abandonment of high-level radioactive waste on the shores of the Great Lakes, on the banks of rivers, on the ocean coasts, etc., where it is currently stored. Such abandonment would lead to catastrophic releases of hazardous radioactivity over time, into the drinking water supplies for countless millions of people, into major fisheries, etc. This is especially true under climate chaos scenarios, with ever more frequent extreme weather events at such locations, and rising sea levels, causing major flooding. Many of these very same sites are also vulnerable to earthquakes, tsunamis, and other natural disasters. As environmental groups have long advocated, high-level radioactive wastes should be stored as close to the point of origin as possible, as safely as possible. Certain sites are not appropriate for HOSS, just as they were not appropriate for reactors in the first place. Prairie Island, Minnesota, is a case in point, home to the Prairie Island Indian Community, which never granted its consent to the construction and operation of the two atomic reactors there, nor to the generation and storage of high-level radioactive waste, just hundreds of yards from their community. While wastes need to be relocated from Prairie Island to higher ground, out of the flood plain of the Mississippi River, this should be done in the immediate area, as close as possible, as safely as possible. This is no justification to launch a national Mobile Chernobyl/parking lot dump campaign, creating a whole new set of potentially catastrophic risks elsewhere (including on the roads, rails, and waterways themselves, passing through most states). In fact, Prairie Island nuclear power plant's owner, Xcel Energy/Northern States Power, has been an infamous leader in such schemes, for decades, including the radioactively racist targeting of PFS at the Skull Valley Goshutes Indian Reservation in Utah.

We do not consent to NRC's science fiction fantasy of non-existent, unfunded "Dry Transfer Systems," and the absurd notion that these Dry Transfer Systems and dry cask storage installations, will be replaced, in their entirety, once every hundred years, whether the storage is at current nuclear power plant sites, or away-from-reactor locations (such as *de facto* permanent parking lot dumps). Dr. Mark Cooper of Vermont Law School has estimated that the first 200 years of irradiated nuclear fuel management in the U.S. – assuming a single repository, and a certain number of centralized interim storage sites – will already cost ratepayers, and/or taxpayers, $210 to 350 billion – effectively doubling the cost of nuclear-generated electricity, if accounted for (which it never has been, till Dr. Cooper did the calculations on his own initiative, on behalf of an environmental coalition intervening in NRC's Nuclear Waste Confidence/Continued Storage of Spent Nuclear Fuel proceeding). But 200 years is a drop in the ocean, compared to the million years, or longer, high-level radioactive waste remains hazardous (Iodine-129, present in high-level radioactive waste, for example, has a half-life of 15.7 million years, so a hazardous persistence of 157 to 314 million years). Irradiated nuclear fuel and high-level radioactive waste are a curse upon all future generations. They -- who got not one kilowatt-hour of electricity from the atomic reactors -- must now be burdened forevermore, to figure out how to keep the radioactive wastes from leaking out into the biosphere. If current and future generations fail in this burdensome, perhaps impossible task, the human health damage, and damage to other living things, will be incalculably large, in terms of cancer, birth defects, genetic damage, and other diseases. We need to stop making radioactive waste, by shutting down reactors and replacing

them with energy efficiency (as well as conservation) and renewable sources, such as wind power and solar photo-voltaics (PV). And we need to figure out how to keep the radioactive waste that already exists, isolated from the living environment, forevermore. As Arnie Gundersen, Chief Engineer of Fairewinds Associates, Inc., has put it: *"We all know that the wind doesn't blow consistently and the sun doesn't shine every day, but the nuclear industry would have you believe that humankind is smart enough to develop techniques to store nuclear waste for a quarter of a million years, but at the same time humankind is so dumb we can't figure out a way to store solar electricity overnight. To me that doesn't make sense."*

Yucca Mountain

We do not consent to the proposed dumpsite for high-level radioactive waste at Yucca Mountain, Nevada. It was wisely cancelled and de-funded by the Obama administration and DOE in 2010, as it should have been from the beginning, in the early 1980s. Obama and the Energy Secretaries serving under him declared Yucca "unworkable." Unfolding what "unworkable" means would have to include that the site is not scientifically suitable. It is a very active earthquake zone. It is a volcanic zone. It is saturated with water underground. It has highly corrosive chemistry in the rock, which, combined with the thermal heat of the waste, and the surrounding saturating moisture, would create the perfect storm for burial container failure in a relatively short period of time. If irradiated nuclear fuel were ever to be buried at Yucca, it would leak out massively over time. The catastrophic amounts of hazardous radioactivity would be carried by Yucca's groundwater to points downstream, including the Amargosa Valley agricultural region, one of Nevada's most productive, as well as Death Valley, home to the Timbisha Shoshone Nation.

Unworkable also means that Yucca is Western Shoshone Indian Nation land, by the "peace and friendship" Treaty of Ruby Valley of 1863, signed by the U.S. government, making it the highest law of the land, equal in stature to the U.S. Constitution itself. The Yucca dump is an unacceptable environmental justice violation, as well as being unconstitutional under U.S. law, since the Western Shoshone do not consent to radioactive waste dumping on their territory.

Unworkable also means that Nevada does not consent to the dump. It never has. Yucca Mountain, Nevada was singled out as the only site in the U.S. for further consideration as a potential dump-site, by the "Screw Nevada bill" of 1987, as it is most commonly referred to. This amendment to the Nuclear Waste Policy Act of 1983 was orchestrated by such powerful state congressional delegations as Texas and Washington State – other Western targets, which also happened to hold the U.S. House Speakership, and U.S. House Majority Leadership. Conspiring with such Eastern states as New Hampshire, these states successfully got themselves off the short list for the country's high-level radioactive waste dump, by "screwing Nevada." This turned a science-based comparative site search, including regional equity (a dump in the West, but also one in the East, where the vast majority of atomic reactors are located to begin with -- 75% of the reactors, and thus the irradiated nuclear fuel, is east of the Mississippi River; 90% of the reactors, and thus the irradiated nuclear fuel, is in the eastern half of the U.S.; and yet, over and over again, parking lot dumps and permanent burial dumps have been targeted at the West, a clear case of regional inequity -- and iniquity -- of East dumping on West), into a ram it down Nevada's throat case of raw politics (Nevada had only one U.S. Representative in 1987; Texas and Washington, by comparison, had three

dozen, and one dozen, respectively.) Despite this, the State of Nevada has successfully fought tooth and nail, expressing its non-consent to the Yucca dump, for 30 years now.

The Yucca dump is a non-starter, and must be removed from any further consideration.

Nuclear Power and High-Level Radioactive Waste Generation

We do not consent to the generation of irradiated nuclear fuel in the first place. Both the Blue Ribbon Commission on America's Nuclear Future, and now DOE's ONE (Office of Nuclear Energy), have cynically framed the radioactive waste problem as a minor one, to be solved as expeditiously – and seemingly flippantly – as possible, so that nuclear power can go on its merry way, making ever more forever deadly high-level radioactive waste, for which there is still no safe, sound solution, and may never be. As Dr. Judith Johnsrud of Environmental Coalition on Nuclear Power put it, radioactive waste may well be "trans-solutional," a problem we have created that is beyond our ability to solve. And as Beyond Nuclear board member Kay Drey has put it, the mountain of radioactive waste is now more than 70 years high, and we still don't know what to do with the first cupful.

Add your additional idea(s) here! Or use the ones above verbatim, or adapt them to your own words.

For more information, please see the following valuable sources, which provide references and citations for the points made above:

http://www.state.nv.us/nucwaste/trans.htm

http://www.nirs.org/radwaste/hlwtransport/mobilechernobyl.htm

http://www.nirs.org/fukushimafreeways/stopfukushimafreeways.htm

http://www.nirs.org/radwaste/atreactorstorage/atreactorhome.htm

http://www.nirs.org/radwaste/yucca/yuccahome.htm

http://www.nirs.org/radwaste/scullvalley/skullvalley.htm

http://www.nirs.org/radwaste/wasteconfidence.htm

http://www.nirs.org/radwaste//atreactorstorage/shiranialleg04.htm

http://www.nirs.org/radwaste/scullvalley/historynativecommunitiesnuclearwaste06142005.pdf

http://www.nirs.org/factsheets/nirsfctshtdrycaskvulnerable.pdf

http://www.beyondnuclear.org/radioactive-waste/

http://www.beyondnuclear.org/centralized-storage/

http://www.beyondnuclear.org/on-site-storage/

http://www.beyondnuclear.org/waste-transportation/

http://www.beyondnuclear.org/yucca-mountain/

http://www.beyondnuclear.org/waste-transportation/2016/1/20/doe-undertaking-logistical-planning-for-shipment-of-stranded.html

http://www.beyondnuclear.org/home/2012/1/18/a-mountain-of-waste-70-years-high-and-no-solution-in-sight.html

http://neis.org/2012-conference/

https://sanonofresafety.files.wordpress.com/2011/11/doe-designedtoleak2016-05-3sos.pdf

http://nonuclearwasteaqui.org/

http://ieer.org/wp/wp-content/uploads/2010/03/HOSS_PRINCIPLES_3-23-10x.pdf

http://www.sric.org/nuclear/wippleak2014.php

http://www.indianz.com/News/2015/019111.asp

Prepared by Kevin Kamps, Radioactive Waste Watchdog at Beyond Nuclear, and board member, Don't Waste Michigan, representing the Kalamazoo chapter.

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Beyond Nuclear aims to educate and activate the public about the connections between nuclear power and nuclear weapons and the need to abandon both to safeguard our future. Beyond Nuclear advocates for an energy future that is sustainable, benign and democratic.

Consent-Based Siting

From: Kevin Kamps [mailto:kevin@beyondnuclear.org]
Sent: Saturday, July 30, 2016 11:03 AM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Response to IPC--Public comments by Beyond Nuclear on DOE's proceeding to define the "Consent-Based Siting" of radioactive waste dumps

1. **Stop making it.** The only truly safe, sound, just solution for the radioactive waste problem, is to not make it in the first place. Electricity can be supplied by clean, safe, affordable renewable sources, such as wind and solar, and demand decreased significantly by efficiency, rather than generating radioactive waste via dirty, dangerous, and expensive nuclear power.
2. **Expedite the transfer of irradiated nuclear fuel from densely-packed "wet" storage pools into Hardened On-Site Storage (HOSS) dry casks**.
3. Store irradiated nuclear fuel in HOSS dry casks, **as safely and securely as possible, as close to the point of generation as possible, in a monitored, inspectable, retrievable manner.**
4. Given the unavoidable risks of high-level radioactive waste truck, train, and/or barge shipments on roads, rails, and/or waterways (Mobile Chernobyls, Dirty Bombs on Wheels, Floating Fukushimas), **transport irradiated nuclear fuel only once**, such as straight to a (suitable, acceptable, just) geological repository, **not to so-called centralized interim storage** (*de facto* permanent parking lot dumps, such as those currently targeted at Waste Control Specialists, LLC in Andrews County, west Texas; at Eddy-Lea Counties, near the Waste Isolation Pilot Plant in southeast New Mexico; Native American reservations; nuclear power plants, such as Exelon's Dresden in Morris, IL; etc.).
5. **Geological repositories** must be **scientifically suitable** (capable of isolating the hazardous high-level radioactive waste from the living environment forevermore), **socially acceptable** (genuinely consent-based), and **environmentally just**. Note that no such suitable/acceptable/just geologic repository has yet been found, in more than half a century of looking. DOE has admitted it can't open *any* repository (even an unsuitable/unacceptable/unjust one) till 2048 at the earliest, more than a century after Enrico Fermi, in 1942, generated the first high-level radioactive waste, in the world's first reactor, as part of the Manhattan Project to build atomic bombs; and more than 90 years years after the first "civilian" atomic reactor began generating waste at Shippingport, PA.
6. **Do not reprocess** (extract fissile plutonium and/or uranium from) irradiated nuclear fuel. Not only would this risk **nuclear weapons proliferation**, and be **astronomically expensive**; it would also very likely cause **environmental ruin downwind and downstream** of wherever it is carried out, as has been shown at such places as Hanford Nuclear Reservation in Washington; Savannah River Site, South Carolina; West Valley, New York; Sellafield, England; La Hague, France; Kyshtym, Russia; etc.
7. **Preserve and maintain "wet" storage pools – albeit *emptied* of irradiated nuclear fuel -- as an emergency back up location for cask-to-cask HOSS transfers**, when old HOSS casks deteriorate toward failure, and need to be replaced with brand new HOSS casks. That is, do not dismantle pools as part of nuclear power plant decommissioning post-reactor shutdown.

8. **Carefully pass information** about storing irradiated nuclear fuel as safely as possible, as close to the point of generation as possible, **from one generation to the next, à la the concept of "Rolling Stewardship"** described by the Canadian Coalition for Nuclear Responsibility.
9. **Address the shortfall in funding for forevermore storage of high-level radioactive waste**. Dr. Mark Cooper of Vermont Law School has estimated the first 200 years of commercial irradiated nuclear fuel storage (assuming just a single repository, although at least two will be required!) will cost $210 to $350 billion, even though there is only some tens of billions of dollars remaining in the now-terminated Nuclear Waste Fund, collected from nuclear power ratepayers.
10. **Environmental justice**, in keeping with Bill Clinton's 1994 **Executive Order 12898, demands that Native American communities and lands, as well as those of other low income and/or people of color communities, never again be targeted for high-level radioactive waste parking lot dumps or permanent burial sites, a shameful form of radioactive racism dating back decades in the U.S.**

Sincerely,

Kevin Kamps, Radioactive Waste Watchdog, Beyond Nuclear, and Don't Waste Michigan, board member representing the Kalamazoo chapter

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Consent-Based Siting

From: Kevin Kamps [mailto:kevin@beyondnuclear.org]
Sent: Saturday, July 30, 2016 11:17 AM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Response to IPC--Second set of public comments by Beyond Nuclear on DOE's proceeding to define the "Consent-Based Siting" of radioactive waste dumps

Response to IPC

Second set of public comments by Beyond Nuclear

on DOE's proceeding to define the "Consent-Based Siting" of radioactive waste dumps

We Do Not Consent!

THE RUSH JOB TO *DE FACTO* PERMANENT PARKING LOT DUMPS, FOR ALL THE WRONG REASONS: We do not consent to DOE rushing into *de facto* permanent parking lot dumps (so-called "centralized" or "consolidated interim storage"), in order to expedite the transfer of title and liability from the nuclear utilities that profited from the generation of high-level radioactive waste, onto the backs of taxpayers.

FLOATING FUKUSHIMAS ON SURFACE WATERS: We do not consent to radioactive waste barge shipments on the lakes and rivers of this country, the fresh drinking water supply for countless millions, nor on the seacoasts. In addition to a disastrous radioactive release if the shipping container is breached, infiltrating water could spark a nuclear chain reaction, if a critical mass forms, due to the fissile U-235 and Pu-239 still present in the waste.

MOBILE CHERNOBYLS/DIRTY BOMBS ON WHEELS: We do not consent to high-level radioactive waste truck and train shipments through the heart of major population centers; through the agricultural heartland; on, over, or alongside the drinking water supplies of our nation. Whether due to high-speed crashes, heavy crushing loads, high-temperature/long duration fires, falls from a great height, underwater submersion, collapsing transport infrastructure, or intentional attack with powerful or sophisticated explosives, such as anti-tank missiles or shaped charges, high-level radioactive waste shipments, if breached, could unleash catastrophic amounts of hazardous radioactivity into the environment.

ENVIRONMENTAL INJUSTICE/RADIOACTIVE RACISM: We do not consent to the targeting, yet again, of low-income, Native American, and other communities of color, with

high-level radioactive waste parking lot dumps. It is most ironic that President Obama's Blue Ribbon Commission on America's Nuclear Future, and his DOE, have yet again targeted Native Americans. Obama honored Sauk and Fox environmental activist Grace Thorpe for defending her reservation in Oklahoma against a parking lot dump, and then assisting allies at dozens of other reservations being targeted by DOE's Nuclear Waste Negotiator. Obama praised Thorpe as a "Woman Taking the Lead to Save Our Planet," alongside the likes of Rachel Carson of *Silent Spring* fame, in his March 2009 Women's History Month proclamation. Similarly, Yucca Mountain, Nevada is Western Shoshone Indian land, as the U.S. government acknowledged by signing the "peace and friendship" Treaty of Ruby Valley in 1863. In addition, Yucca is not scientifically suitable. It is an active earthquake zone, a volcanic zone, and water-saturated underground. If waste is ever buried there, it will leak massively into the environment. And the State of Nevada has never consented to becoming the country's high-level radioactive waste dump.

SITES CURRENTLY AT THE VERY TOP OF THE TARGET LIST FOR *DE FACTO* PERMANENT PARKING LOT DUMPS: We do not consent to the targeting of nuclear power plants, radioactive waste dumps, or DOE sites, already heavily contaminated with radioactivity and burdened with high-level radioactive waste, to become parking lot dumps for the importation of other sites' or reactors' wastes. DOE, NRC, and industry's top targets include Waste Control Specialists in Andrews County, TX; Eddy-Lea Counties, NM, near DOE's Waste Isolation Pilot Plant; DOE's Savannah River Site, SC; Dresden nuclear power plant in Morris, IL; the list goes on.

RISKS OF HIGH-LEVEL RADIOACTIVE WASTE STORAGE POOLS, AND NEED FOR HARDENED ON-SITE STORAGE (HOSS): As just re-confirmed by the National Academies of Science, and Princeton U. researchers Von Hippel and Schoeppner, pools are at risk of fires that could unleash catastrophic amounts of hazardous Cesium-137 into the environment over a wide region. Since 2002, a coalition of hundreds of environmental and public interest groups, representing all 50 states, has called for expedited transfer of high-level radioactive waste from vulnerable pools into hardened dry casks, designed and built to last not decades but centuries, without leaking, safeguarded against accidents and natural disasters, and secured against attack.

NUCLEAR POWER AND HIGH-LEVEL RADIOACTIVE WASTE GENERATION: The mountain of radioactive waste in the U.S. has grown 70 years high, and we still don't know what to do with the first cupful. Radioactive waste may well prove to be a "trans-solutional" problem, one created by humans, but beyond our ability to solve. The only safe, sound solution for radioactive waste is to not make it in the first place. Reactors should be permanently shut down, to stop the generation of high-level radioactive waste for which we have no good solution. The electricity they supplied can be replaced with renewable sources, such as wind power and solar power, or displaced via efficiency and conservation.

Prepared by Kevin Kamps, Radioactive Waste Watchdog at Beyond Nuclear, and board member, Don't Waste Michigan, representing the Kalamazoo chapter

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Consent-Based Siting

From: gericolle@aol.com [mailto:gericolle@aol.com]
Sent: Friday, July 15, 2016 6:50 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Response to IPC

1. **Stop making it.** The only truly safe, sound, just solution for the radioactive waste problem, is to not make it in the first place. Electricity can be supplied by clean, safe, affordable renewable sources, such as wind and solar, and demand decreased significantly by efficiency, rather than generating radioactive waste via dirty, dangerous, and expensive nuclear power.
2. **Expedite the transfer of irradiated nuclear fuel from densely-packed "wet" storage pools into Hardened On-Site Storage (HOSS) dry casks**.
3. Store irradiated nuclear fuel in HOSS dry casks, **as safely and securely as possible, as close to the point of generation as possible, in a monitored, inspectable, retrievable manner.**
4. Given the unavoidable risks of high-level radioactive waste truck, train, and/or barge shipments on roads, rails, and/or waterways (Mobile Chernobyls, Dirty Bombs on Wheels, Floating Fukushimas), **transport irradiated nuclear fuel only once**, such as straight to a (suitable, acceptable, just) geological repository, **not to so-called centralized interim storage** (*de facto* permanent parking lot dumps, such as those currently targeted at Waste Control Specialists, LLC in Andrews County, west Texas; at Eddy-Lea Counties, near the Waste Isolation Pilot Plant in southeast New Mexico; Native American reservations; nuclear power plants, such as Exelon's Dresden in Morris, IL; etc.).
5. **Geological repositories** must be **scientifically suitable** (capable of isolating the hazardous high-level radioactive waste from the living environment forevermore), **socially acceptable** (genuinely consent-based), and **environmentally just**. Note that no such suitable/acceptable/just geologic repository has yet been found, in more than half a century of looking. DOE has admitted it can't open *any* repository (even an unsuitable/unacceptable/unjust one) till 2048 at the earliest, more than a century after Enrico Fermi, in 1942, generated the first high-level radioactive waste, in the world's first reactor, as part of the Manhattan Project to build atomic bombs; and more than 90 years years after the first "civilian" atomic reactor began generating waste at Shippingport, PA.
6. **Do not reprocess** (extract fissile plutonium and/or uranium from) irradiated nuclear fuel. Not only would this risk **nuclear weapons proliferation**, and be **astronomically expensive**; it would also very likely cause **environmental ruin downwind and downstream** of wherever it is carried out, as has been shown at such places as Hanford Nuclear Reservation in Washington; Savannah River Site, South Carolina; West Valley, New York; Sellafield, England; La Hague, France; Kyshtym, Russia; etc.
7. **Preserve and maintain "wet" storage pools – albeit *emptied* of irradiated nuclear fuel -- as an emergency back up location for cask-to-cask HOSS transfers**, when old HOSS casks deteriorate toward failure, and need to be replaced with brand new HOSS casks. That is, do not dismantle pools as part of nuclear power plant decommissioning post-reactor shutdown.

8. **Carefully pass information** about storing irradiated nuclear fuel as safely as possible, as close to the point of generation as possible, **from one generation to the next, à la the concept of "Rolling Stewardship"** described by the Canadian Coalition for Nuclear Responsibility.
9. **Address the shortfall in funding for forevermore storage of high-level radioactive waste**. Dr. Mark Cooper of Vermont Law School has estimated the first 200 years of commercial irradiated nuclear fuel storage (assuming just a single repository, although at least two will be required!) will cost $210 to $350 billion, even though there is only some tens of billions of dollars remaining in the now-terminated Nuclear Waste Fund, collected from nuclear power ratepayers.
10. **Environmental justice**, in keeping with Bill Clinton's 1994 **Executive Order 12898, demands that Native American communities and lands, as well as those of other low income and/or people of color communities, never again be targeted for high-level radioactive waste parking lot dumps or permanent burial sites, a shameful form of radioactive racism dating back decades in the U.S.**

From: Bonnie [mailto:51940@aeroinc.net]
Sent: Saturday, July 30, 2016 7:01 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: "Response to IPC" [Invitation for Public Comment]

WE DO NOT CONSENT!

Beyond Nuclear's Top Ten List for Comments to DOE re: Irradiated Nuclear Fuel (High-Level Radioactive Waste)

1. **Stop making it.** The only truly safe, sound, just solution for the radioactive waste problem, is to not make it in the first place. Electricity can be supplied by clean, safe, affordable renewable sources, such as wind and solar, and demand decreased significantly by efficiency, rather than generating radioactive waste via dirty, dangerous, and expensive nuclear power.
2. **Expedite the transfer of irradiated nuclear fuel from densely-packed "wet" storage pools into Hardened On-Site Storage (HOSS) dry casks**.
3. Store irradiated nuclear fuel in HOSS dry casks, **as safely and securely as possible, as close to the point of generation as possible, in a monitored, inspectable, retrievable manner.**
4. Given the unavoidable risks of high-level radioactive waste truck, train, and/or barge shipments on roads, rails, and/or waterways (Mobile Chernobyls, Dirty Bombs on Wheels, Floating Fukushimas), **transport irradiated nuclear fuel only once**, such as straight to a (suitable, acceptable, just) geological repository, **not to so-called centralized interim storage** (*de facto* permanent parking lot dumps, such as those currently targeted at Waste Control Specialists, LLC in Andrews County, west Texas; at Eddy-Lea Counties, near the Waste Isolation Pilot Plant in southeast New Mexico; Native American reservations; nuclear power plants, such as Exelon's Dresden in Morris, IL; etc.).
5. **Geological repositories** must be **scientifically suitable** (capable of isolating the hazardous high-level radioactive waste from the living environment forevermore), **socially acceptable** (genuinely consent-based), and **environmentally just**. Note that no such suitable/acceptable/just geologic repository has yet been found, in more than half a century of looking. DOE has admitted it can't open *any* repository (even an unsuitable/unacceptable/unjust one) till 2048 at the earliest, more than a century after Enrico Fermi, in 1942, generated the first high-level radioactive waste, in the world's first reactor, as part of the Manhattan Project to build atomic bombs; and more than 90 years years after the first "civilian" atomic reactor began generating waste at Shippingport, PA.
6. **Do not reprocess** (extract fissile plutonium and/or uranium from) irradiated nuclear fuel. Not only would this risk **nuclear weapons proliferation**, and be **astronomically expensive**; it would also very likely cause **environmental ruin downwind and downstream** of wherever it is carried out, as has been

shown at such places as Hanford Nuclear Reservation in Washington; Savannah River Site, South Carolina; West Valley, New York; Sellafield, England; La Hague, France; Kyshtym, Russia; etc.

7. **Preserve and maintain "wet" storage pools – albeit *emptied* of irradiated nuclear fuel -- as an emergency back up location for cask-to-cask HOSS transfers**, when old HOSS casks deteriorate toward failure, and need to be replaced with brand new HOSS casks. That is, do not dismantle pools as part of nuclear power plant decommissioning post-reactor shutdown.
8. **Carefully pass information** about storing irradiated nuclear fuel as safely as possible, as close to the point of generation as possible, **from one generation to the next, à la the concept of "Rolling Stewardship"** described by the Canadian Coalition for Nuclear Responsibility.
9. **Address the shortfall in funding for forevermore storage of high-level radioactive waste**. Dr. Mark Cooper of Vermont Law School has estimated the first 200 years of commercial irradiated nuclear fuel storage (assuming just a single repository, although at least two will be required!) will cost $210 to $350 billion, even though there is only some tens of billions of dollars remaining in the now-terminated Nuclear Waste Fund, collected from nuclear power ratepayers.
10. **Environmental justice**, in keeping with Bill Clinton's 1994 **Executive Order 12898, demands that Native American communities and lands, as well as those of other low income and/or people of color communities, never again be targeted for high-level radioactive waste parking lot dumps or permanent burial sites, a shameful form of radioactive racism dating back decades in the U.S.**

Consent-Based Siting

From: Susan Armistead [mailto:scubasuemd@gmail.com]
Sent: Thursday, July 14, 2016 7:32 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Response to IPC

The only truly safe, sound, just solution for the radioactive waste problem, is to not make it in the first place. Electricity can be supplied by clean, safe, affordable renewable sources, such as wind and solar, and demand decreased significantly by efficiency, rather than generating radioactive waste via dirty, dangerous, and expensive nuclear power.

Expedite the transfer of irradiated nuclear fuel from densely-packed "wet" storage pools into Hardened On-Site Storage (HOSS) dry casks.

Store irradiated nuclear fuel in HOSS dry casks, **as safely and securely as possible, as close to the point of generation as possible, in a monitored, inspectable, retrievable manner.**

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radioactive waste parking lot dumps or permanent burial sites, a shameful form of radioactive racism dating back decades in the U.S.

Consent-Based Siting

From: Ellen Atkinson [mailto:jeanne184490@gmail.com]
Sent: Thursday, July 14, 2016 11:35 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: "Response to IPC" [Invitation for Public Comment]

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Sincerely,
Ellen Atkinson
Reno, NV

Consent-Based Siting

From: Ellen Atkinson [mailto:jeanne184490@gmail.com]
Sent: Thursday, July 28, 2016 6:28 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: "Response to IPC" [Invitation for Public Comment]

We do not consent to DOE rushing into parking lot dumps (so-called "centralized" or "consolidated interim storage," in order to expedite the transfer of title and liability from the nuclear utilities that profited from the generation of high-level radioactive waste, onto the backs of taxpayers.

We do not consent to "centralized interim storage" facilities becoming ***de facto*** **permanent surface storage parking lot dumps** for high-level radioactive waste.

We do not consent to "games" of radioactive Russian roulette, radioactive hot potato, and radioactive musical chairs being played, when it comes to high-risk, high-level radioactive waste shipments on the roads, rails, and waterways through most states.

We do not consent to the nonsense of shipping high-level radioactive waste to "centralized interim storage," when permanent disposal could well involve shipping those very same wastes, right back to, or through, where they came from in the first place, heading in the opposite direction.

We do not consent to the nuclear establishment's "return to sender" schemes with "centralized interim storage." Had the Private Fuel Storage, LLC (PFS) parking lot dump – its license for construction and operation at the Skull Valley Goshutes Indian Reservation in Utah rubber-stamped by the U.S. Nuclear Regulatory Commission (NRC) a decade ago – actually opened, this nonsensical multiplication of transport risks could have occurred. PFS's plan was to dump the wastes at Yucca Mountain, Nevada. But its Plan B, should Yucca not open, was to "return to sender." Yucca has been cancelled. Had the Maine Yankee nuclear power plant, for example, sent its wastes to PFS, they would have been "returned to sender." More than 50 containers of high-risk, high-level radioactive waste, shipped *5,000 miles round-trip* through numerous states, accomplishing absolutely nothing.

We do not consent to DOE's oldest trick in the book, of trying to divide and conquer, by attempting to play "orphaned" waste communities off against the rest of us – many "stranded" waste communities have stated explicitly that DOE's *de facto* permanent parking lot dump shenanigans are done "not in our name." DOE's stated purpose for prioritizing "stranded" waste export to parking lot dumps – to free up decommissioned nuclear power plant sites for "unrestricted," productive "re-use," is a non-starter. Decommissioning regulations are so inadequate, supposedly "cleaned up" sites are still significantly contaminated with hazardous radioactivity, making re-use of those sites risky for current and future generations.

FLOATING FUKUSHIMAS ON SURFACE WATERS

We do not consent to radioactive waste barge shipments on the lakes and rivers of this country, the fresh drinking water supply for countless millions, nor on the seacoasts.

We do not consent to "Floating Fukushimas." There are some 26 atomic reactors in the U.S. that lack direct rail access. Yet DOE has chosen the "mostly rail" shipping scenario of high-level radioactive wastes as its preferred policy. Rail shipping containers weigh more than 100 tons. These cannot go down the highways. They are designed to go down railways. But to get these giant, very heavy containers to the nearest railhead, either heavy haul trucks, or barges on waterways, would have to be used. Barges raise the specter of a high-level radioactive waste shipment sinking, with the potential for disastrous releases of high-level radioactive waste into drinking water supplies and fisheries, or even a nuclear chain reaction on the bottom of the surface waterway (there is enough fissile U-235 and Pu-239 present in high-level radioactive waste that, if a critical mass forms in the sinking disaster, and water infiltrates the container, a nuclear chain reaction could be initiated, worsening radioactivity releases to the water body, and making emergency response a suicide mission, given the fatal gamma doses coming off the chain reaction).

We do not consent to high-level radioactive waste shipments on the Great Lakes; one barge sinking could radioactively contaminate the drinking water supply for 40 million people in two countries – eight states in the U.S., and two provinces in Canada – as well as a large number of Native American First Nations. The Palisades reactor in southwest Michigan, and the Kewaunee and Point Beach nuclear power plants in Wisconsin, were revealed by DOE in 2002 to be potential barge shipment points of origin. The barges would ply the waters of Lake Michigan, headwaters for the rest of the Great Lakes downstream, and the direct drinking water supply for many millions of people, including the Chicago metro region.

We do not consent to high-level radioactive waste barge shipments from the Calvert Cliffs nuclear power plant in Maryland, to the Port of Baltimore on the Chesapeake Bay. A sinking could destroy decades of Bay restoration work in one fell swoop, putting countless watermen out of work forever, and wrecking the Bay's tourism and recreation industries, as well as its fragile, irreplaceable, vibrant, biologically diverse ecosystem.

We do not consent to high-level radioactive waste barge shipments from the Surry nuclear power plant in Virginia, to the Port of Norfolk on the James River. A sinking could ruin this historic river, and also impact the Chesapeake downstream.

We do not consent to Floating Fukushimas from the Salem/Hope Creek nuclear power plant in New Jersey traveling up the already badly polluted Delaware River to the Port of Wilmington.

We do not consent to Floating Fukushimas on the surface waters of New Jersey, New York, and Connecticut, surrounding the metropolitan New York City area, including: from New Jersey's Oyster Creek nuclear power plant, up the Jersey Shore, around Staten Island, New York, to the Port of Newark, New Jersey; from Indian Point nuclear power plant, down the Hudson River, past Manhattan, to the Port of Jersey City, New Jersey; and from the decommissioned Connecticut Yankee nuclear power plant site, down the Connecticut River, onto Long Island Sound, into the Port of New Haven, Connecticut. The very high security risks alone, of intentionally bringing ultra-hazardous high-level radioactive waste, into such close proximity to so many millions of people, is a non-starter.

We do not consent to Floating Fukushimas on Cape Cod Bay, Massachusetts Bay, and Boston Harbor, traveling from Pilgrim nuclear power plant to the Port of Boston.

We do not consent to Floating Fukushimas on the Mississippi River, traveling from the Grand Gulf nuclear power plant to the Port of Vicksburg in Mississippi.

We do not consent to Floating Fukushimas on the Tennessee River, traveling from the Browns Ferry nuclear power plant to Florence, Alabama.

We do not consent to Floating Fukushimas on the Missouri River, traveling from the Cooper nuclear power plant to the Port of Omaha in Nebraska.

We do not consent to Floating Fukushimas on the Pacific Coast, traveling from the Diablo Canyon nuclear power plant to Oxnard/Port of Hueneme in California.

We do not consent to Floating Fukushimas on south Florida's Atlantic Coast, traveling from St. Lucie nuclear power plant to Fort Lauderdale/Port of Everglades and/or from Turkey Point nuclear power plant to the Port of Miami.

We do not consent to Floating Fukushimas on any other surface waters in the U.S., whether they be fresh water drinking water supplies, or salt water fisheries.

MOBILE CHERNOBYLS/DIRTY BOMBS ON WHEELS

We do not consent to high-level radioactive waste truck and train shipments through the heart of major population centers; through the agricultural heartland; on, over, or alongside the drinking water supplies of our nation. Whether due to high-speed crashes, heavy crushing loads, high-temperature/long duration fires, falls from a great height, underwater submersions, collapsing transport infrastructure, or intentional attack with powerful or sophisticated explosives, such as anti-tank missiles or shaped charges, high-level radioactive waste shipments, if breached, could unleash catastrophic amounts of hazardous radioactivity into the environment.

We do not consent to heavy haul trucks (monster truck in front and back, two hundred wheels on the trailer in between, traveling only 3 miles per hour) as an end run attempt to transport very heavy rail casks to the nearest railhead, while attempting to avoid controversial, high-risk barge shipments.

We do not consent to Mobile Chernobyls, or Dirty Bombs on Wheels, traveling by railway through most states in the country under DOE's "mostly rail" shipping scheme.

We do not consent to Mobile Chernobyls, Fukushima Freeways, or Dirty Bombs on Wheels, traveling by highway through most states in the country, even under DOE's "mostly [but not entirely] rail" shipping scheme. (Casks designed for "legal-weight truck" shipments, as they are called, are significantly smaller and less heavy than rail casks, and would travel on interstate highways, and connecting roadways.)

We do not consent to containers, in violation of quality assurance and quality control (QA/QC) standards, being used to ship high-level radioactive waste. Commonwealth Edison/Exelon whistleblower Oscar Shirani, and NRC Midwest Region dry cask storage inspector, Dr. Ross Landsman, revealed major QA/QC violations with Holtec casks, 15 years ago. They questioned the structural integrity of Holtec casks *sitting still, going zero miles per hour*, let alone at 60 mph -- or faster -- on the rail lines. NRC has never adequately addressed these QA violations, so we have to assume they have continued right up to the present. Holtec containers have received an NRC rubber-stamp permit not only for on-site storage at more than a third of U.S. reactors, but also for rail/barge transport. To make matters worse, Holtec is the lead partner in the scheme to establish a parking lot dump in New Mexico. (The Private Fuel Storage, LLC parking lot dump targeted at the Skull Valley Goshute Indian Reservation, NRC rubber-stamped but later stopped despite this, would have utilized *4,000* Holtec casks, containing *40,000 metric tons* of irradiated nuclear fuel.) Holtec is not the only high-level radioactive waste container with QA/QC failures, however. NAC (Nuclear Assurance Corp.), VSCs (Ventilated Storage Casks), TN NUHOMS (TransNuclear), and others have violated QA/QC standards, as well. In fact, cask QA violations run rampant across industry, enabled by NRC complicity and collusion.

We do not consent to DOE's and industry's cynical attempt to "railroad" the American public on high-risk, high-level radioactive waste transport, by invoking the U.S. Constitution's Interstate Commerce Clause, to ram Mobile Chernobyls down our throats, through our communities. For starters, radioactive waste is not a commodity. It is a forever-deadly poison, with nowhere to go, never belonged on our living planet to begin with. We must stop making it.

ENVIRONMENTAL INJUSTICE/RADIOACTIVE RACISM

We do not consent to the environmental injustice and radioactive racism of yet again targeting low-income Native American communities with the most hazardous substances ever created. From 1987 to 1992, DOE's Nuclear Waste Negotiator wrote to every one of the many hundreds of federally recognized Native American tribes in the U.S., offering relatively large (for the tribes, anyway) sums of money in exchange for them "just to consider" hosting high-level radioactive waste parking lot dumps (the amount of money was exceedingly small, as compared to DOE's annual budgets, and especially as compared to nuclear power industry profit margins). DOE's Nuclear Waste Negotiator focused on 60-some tribes in particular. Mescalero Apache in New Mexico, and Skull Valley Goshutes in Utah, went the furthest. But traditionals like Rufina Marie Laws and Joe Geronimo at Mescalero, and Margene Bullcreek and Sammy Blackbear at Skull Valley, blocked the parking lot dumps in the end, after fierce battles, that left very deep wounds in those communities, for which the nuclear establishment bears responsibility. This resistance was assisted by Grace Thorpe, who not only blocked the parking lot dump targeted at her own Sauk and Fox Reservation in Oklahoma, but assisted environmental allies at reservations across the country to do the same. President Obama honored Thorpe for her anti-dump work, as a "Woman Taking the Lead to Save Our Planet," alongside the likes of Rachel Carson of *Silent Spring* fame, in his March 2009 Women's History Month proclamation. And yet, President Obama's own Blue Ribbon Commission on America's Nuclear Future, as well as his DOE, are yet again including Native American reservations on the target list for parking lot dumps. This most disturbing internal Obama administration contradiction has never been explained.

We do not consent to the targeting of nuclear power plant sites already heavily burdened with irradiated nuclear fuel to become parking lot dumps, importing other reactors' wastes. A study by Oak Ridge Nuclear Lab, for example, has singled out the Dresden nuclear power plant in Morris, IL as a top target for a parking lot dump. But Dresden is already heavily burdened with around a whopping 3,000 metric tons of irradiated nuclear fuel, in the storage pools at three atomic reactors, in the "overflow parking" dry cask storage installations, as well as the immediately adjacent General Electric-Morris reprocessing facility "wet storage" pool.

SITES CURRENTLY AT THE VERY TOP OF THE TARGET LIST FOR *DE FACTO* PERMANENT PARKING LOT DUMPS

We do not consent to the targeting of DOE sites, already heavily contaminated with radioactivity and burdened with high-level radioactive waste, to become parking lot dumps for the importation of other sites' or reactors' wastes. The proposal to open a parking lot dump in Eddy-Lea Counties in extreme southeastern New Mexico, near the Waste Isolation Pilot Project, is a case in point. WIPP is the U.S. national dump-site, in a salt formation 2,000 feet below ground, for trans-uranic contaminated radioactive wastes from the U.S. nuclear weapons complex. Although DOE assured the public that WIPP could not possibly leak in the first 10,000 years, and would leak at most once in the first 200,000 years, WIPP suffered a trans-uranic radioactive waste leak to the environment in year 15 of its operations, on Valentine's Day, 2014. Nearly two-dozen workers at the surface suffered inhalation doses of ultra-hazardous, alpha-emitting substances, including plutonium. Trans-uranics also fell out downwind, to be further distributed by wind and rain over time. The burst of a single barrel 2,000 feet underground caused the radioactivity release. The root cause of the burst was a chemical reaction due to the mixing of chemically reactive nitrates and lead in with the radioactive wastes, which sparked the ignition. The fire was sustained by the inclusion of organic (meaning fibrous, plant-based) *kitty litter*, meant to absorb liquids.

The burst of the single barrel has already shut down WIPP for over two years. DOE estimates the recovery cost at $500 million; the *L.A. Times* estimates one billion dollars.

We do not consent to a *de facto* permanent parking lot dump targeted at Waste Control Specialists, LLC (WCS) in Andrews County, Texas. WCS applied to NRC for a construction and operation license on April 28, 2016. WCS already dumps all categories of so-called "low" level radioactive waste – Class A, B, and C – into the ground, either directly above, or immediately adjacent to, the Ogallala Aquifer. The Ogallala Aquifer serves as a vital supply of drinking and irrigation water for numerous states on the Great Plains, from Texas to South Dakota. WCS effectively serves as a national dump-site for such radioactive wastes. (Several state environmental agency staffers resigned their career jobs in protest over the outrageous decision to allow WCS to open for "low" level radioactive waste dumping in the first place.) WCS also accepted many scores of barrels from Los Alamos Nuclear Lab in New Mexico, containing the same volatile mix as burst in the WIPP underground in 2014. Already, the potentially bursting barrels have sat out in the hot summer sun at WCS in 2014, 2015, and now 2016, with no end in sight. Heat fueling a chemical reaction, igniting combustibles, and pressure build-up, is the entire problem with the burst risk. If one or more barrels burst at WCS, into the open air of the surface environment, the releases of plutonium and other ultra-hazardous trans-uranic radioactive wastes could be significantly worse, in terms of downwind and downstream fallout, than the 2014 WIPP release, which originated 2,000 feet below ground, and had to follow a long, circuitous path, through thousands of feet of horizontal burial caverns and tunnels, as well as thousands of feet of vertical ventilation shaft, to reach the surface environment, and fallout over a wide area downwind. The barrels at WCS are *at* the surface environment! WCS accepting these potentially explosive barrels in such a great big hurry in the first place, without even knowing the risks they were getting into, shows what a careless company it is. It cannot and should not be trusted to store high-level radioactive waste, not even temporarily (although "interim" is a deception – the storage would become very long term, perhaps even permanent).

A second company, Advanced Fuel Cycle Initiative (AFCI), is targeting another west TX county for *de facto* permanent storage as well: Culberson. Given the large Hispanic American population in the area, as well as low-income levels, Environmental Justice concerns are raised, yet again, by these proposed west TX parking lot dumps. Much the same can be said regarding the populations in southeastern New Mexico, surrounding the proposed parking lot dump there.

Another parking lot dump target – Savannah River Site (SRS), South Carolina – also raises red flags about disproportionate impacts on people of color and low-income communities. SRS is already a badly radioactively contaminated region, due to decades of nuclear weapons production, and other related nuclear activities (such as mixed oxide plutonium fuel storage and fabrication, civilian high-level radioactive waste reprocessing, etc.). But in addition, the area also "hosts" the adjacent Barnwell, SC "low" level radioactive waste dump – a national dump for decades on end, long leaking. To make matters even worse, the area "hosts" the largest – in terms of number of reactors – nuclear power plant in the U.S., Vogtle. Vogtle Units 1 and 2 have already operated for decades; Units 3 and 4 are currently under construction. The nearby community of Shell Bluff, Georgia is predominantly African American and low-income. Targeting the SRS area with a high-level radioactive waste parking lot dump would just compound the environmental injustice even worse.

HIGH-LEVEL RADIOACTIVE WASTE STORAGE POOLS

We do not consent to the nuclear power industry, with NRC's blessing, keeping high-level radioactive waste at high-risk, high-density "wet" storage in waste pools, for years or decades into the future. NRC decommissioning regulations, for example, allow pool storage for as long as 60-years post reactor shutdown (so, if the reactor had operated for 60 years, as NRC has permitted time and again, that would mean a total of 120 years of pool storage; NRC is now actively considering allowing 80 years of operations at reactors, which would then add up to 140 years of pool storage.). Nuclear utilities seek to defer dry cask storage costs as far off into the future as possible, by maximizing pool storage for as long as possible. Pools are so densely-packed,

they have approached operating reactor core densities. Especially considering degradation of neutron absorbing structures (such as Boraflex panels) in the pools, this risks potentially deadly and disastrous nuclear chain reactions in the unshielded pool. But high-density storage also risks a sudden cooling water drain down, or a slower motion boil down. Either way, the worst case scenario would be a partial drain down, where irradiated nuclear fuel is partially exposed to air, with remaining pool water below blocking convection air currents, that would at least provide some (and perhaps still not enough) cooling to the overheating exposed irradiated nuclear fuel assemblies. Once exposed to air, the zirconium-clad fuel rods could reach ignition temperature within hours, initiating spontaneous combustion. The chemical reaction would turn exothermic, self-feeding, with the fire burning down the fuel rods, not unlike 4th of July sparklers. The pool would be unapproachable, due to lack of cooling water radiation shielding, with instantaneously deadly doses nearby. Thus, emergency responders would likely be blocked from intervening, making even suicide squad interventions ineffective. The radioactive Cesium-137 releases alone, to the environment, would be catastrophic, due to such a pool fire.

We do not consent to ongoing pool storage, due to pool leaks that, according to NRC in 2013, have already occurred at 13 pools across the U.S. This number can be expected to increase, with worsening age-related degradation at U.S. nuclear power plants. Such pool leaks harm soil, groundwater, surface water, and people and other living things downstream, up the food chain, and down the generations.

We do not consent to pools being dismantled during nuclear power plant decommissioning. Although pools should be off-loaded into hardened on-site storage ASAP (see below), and kept unloaded, the pool structures, systems, and components themselves should be left intact, maintained, and not dismantled or allowed to fall into disrepair. Keeping functional pools extant, albeit empty until needed, would provide an emergency location for failed cask to new replacement cask transfers of irradiated nuclear fuel, with needed radiation shielding. If pools are dismantled at decommissioning nuclear power plant sites (as has been the standard approach thus far), any cask-to-cask transfers would have to be done on an *ad hoc* basis, perhaps under a worsening emergency situation. There is no reason to paint ourselves into such a corner. Pools can be maintained to provide an emergency back-up transfer option. Although they should no longer be used for regular waste storage, as they are took risky.

NEED FOR HARDENED ON-SITE STORAGE (HOSS)

We do not consent to NRC's status quo, allowing nuclear utilities to store irradiated nuclear fuel for as long as 120 years in vulnerable storage pools, and to store high-level radioactive waste in vulnerable dry casks. Many hundreds of environmental, public interest, and social justice groups, representing all 50 states, have called for Hardened On-Site Storage (HOSS) for 15 years. HOSS calls for emptying of vulnerable storage pools into dry casks, but not into vulnerable status quo ones, as is currently done. This out of the frying pan, into the fire approach is unacceptable and dangerous. Dry casks must be designed and built well, with rigorous QA standards, to last not decades, but centuries. Dry cask storage must be safeguarded against leaks, accidents, natural disasters, and intentional attacks. Such health, safety, security, and environmental protections are not fulfilled by current, vulnerable dry cask storage permitted by NRC.

We do not consent to abandonment of high-level radioactive waste on the shores of the Great Lakes, on the banks of rivers, on the ocean coasts, etc., where it is currently stored. Such abandonment would lead to catastrophic releases of hazardous radioactivity over time, into the drinking water supplies for countless millions of people, into major fisheries, etc. This is especially true under climate chaos scenarios, with extreme weather events at such locations, and rising sea levels, causing major flooding. Many of these very same sites are also vulnerable to earthquakes, tsunamis, and other natural disasters. As environmental groups have long

advocated, high-level radioactive wastes should be stored as close to the point of origin as possible, as safely as possible. Certain sites are not appropriate for HOSS, just as they were not appropriate for reactors in the first place. Prairie Island, Minnesota, is a case in point, home to the Prairie Island Indian Community, which never granted its consent to the construction and operation of the two atomic reactors there, nor to the generation and storage of high-level radioactive waste, just hundreds of yards from their community. While wastes need to be relocated from Prairie Island to higher ground, out of the flood plain of the Mississippi River, this should be done in the immediate area, as close as possible, as safely as possible. This is no justification to launch a national Mobile Chernobyl/parking lot dump campaign, creating a whole new set of potentially catastrophic risks elsewhere. In fact, Prairie Island nuclear power plant's owner, Xcel Energy/Northern States Power, has been an infamous leader in such schemes, for decades, including the radioactively racist targeting of PFS at the Skull Valley Goshutes Indian Reservation in Utah.

We do not consent to NRC's science fiction fantasy of non-existent, unfunded "Dry Transfer Systems," and the absurd notion that these Dry Transfer Systems and dry cask storage installations, will be replaced, in their entirety, once every hundred years, whether the storage is at current nuclear power plant sites, or away-from-reactor locations (such as *de facto* permanent parking lot dumps). Dr. Mark Cooper of Vermont Law School has estimated that the first 200 years of irradiated nuclear fuel management in the U.S. – assuming a single repository, and a certain number of centralized interim storage sites – will already cost ratepayers, and/or taxpayers, $210 to 350 billion – effectively doubling the cost of nuclear-generated electricity, if accounted for (which it never has been, till Dr. Cooper did the calculations on his own initiative, on behalf of an environmental coalition intervening in NRC's Nuclear Waste Confidence/Continued Storage of Spent Nuclear Fuel proceeding). But 200 years is a drop in the ocean, compared to the million years, or longer, high-level radioactive waste remains hazardous. We need to stop making it, by shutting down reactors and replacing them with energy efficiency and renewable sources, such as wind power and solar photo-voltaic (PV). And we need to figure out how to keep the radioactive waste that already exists, isolated from the living environment, forevermore. As Arnie Gundersen, Chief Engineers of Fairewinds Associates, Inc., has put it: "*We all know that the wind doesn't blow consistently and the sun doesn't shine every day, but the nuclear industry would have you believe that humankind is smart enough to develop techniques to store nuclear waste for a quarter of a million years, but at the same time humankind is so dumb we can't figure out a way to store solar electricity overnight. To me that doesn't make sense.*"

Yucca Mountain

We do not consent to the proposed dumpsite for high-level radioactive waste at Yucca Mountain, Nevada. It was wisely cancelled and defunded by the Obama administration and DOE in 2010, as it should have been from the beginning, in the early 1980s. Obama and the Energy Secretaries serving under him declared Yucca "unworkable." Unfolding what "unworkable" means would have to include that the site is not scientifically suitable. It is a very active earthquake zone. It is a volcanic zone. It is saturated with water underground. It has highly corrosive chemistry in the rock, which, combined with the thermal heat of the waste, and the surrounding moisture, would create the perfect storm for burial container failure in a relatively short period of time. If irradiated nuclear fuel were ever to be buried at Yucca, it would leak out massively over time. The catastrophic amounts of hazardous radioactivity would be carried by Yucca's groundwater to points downstream, including the Amargosa Valley agricultural region, one of Nevada's most productive, as well as Death Valley, home to the Timbisha Shoshone Nation.

Unworkable also means that Yucca is Western Shoshone Indian Nation land, by the "peace and friendship" Treaty of Ruby Valley of 1863. The Yucca dump is an unacceptable environmental justice violation.

Unworkable also means that Nevada does not consent to the dump. It never has. Yucca Mountain, Nevada was singled out as the only site in the U.S. for further consideration as a potential dump-site, by the "Screw Nevada bill" of 1987, as it is most commonly referred to. This amendment to the Nuclear Waste Policy Act of 1983 was

orchestrated by such powerful state congressional delegations as Texas and Washington State – other Western targets, which also happened to hold the U.S. House Speakership, and U.S. House Majority Leadership. Conspiring with such Eastern states also New Hampshire, these states successfully got themselves off the short list for the country's high-level radioactive waste dump, by "screwing Nevada." This turned a science-based site search comparison, including regional equity (a dump in the West, but also one in the East, where the vast majority of atomic reactors are located to begin with), into a ram it down Nevada's throat case of raw politics (Nevada had only one U.S. Representative in 1987; Texas and Washington, by comparison, had three dozen, and one dozen, respectively.) Despite this, the State of Nevada has successfully fought tooth and nail, expressing its non-consent to the Yucca dump, for 30 years now.

The Yucca dump is a non-starter, and must be removed from any further consideration.

Nuclear Power and High-Level Radioactive Waste Generation

We do not consent to the generation of irradiated nuclear fuel in the first place. Both the Blue Ribbon Commission on America's Nuclear Future, and now DOE's ONE (Office of Nuclear Energy), have cynically framed the radioactive waste problem as a minor one, to be solved as expeditiously – and seemingly flippantly – as possible, so that nuclear power can go on its merry way, making ever more forever deadly high-level radioactive waste, for which there is still no safe, sound solution, and may never be. As Dr. Judy Johnsrud of Environmental Coalition on Nuclear Power put it, radioactive waste may well be "trans-solutional," a problem we have created that is beyond our ability to solve. And as Beyond Nuclear board member Kay Drey has put it, the mountain of radioactive waste is now more than 70 years high, and we still don't know what to do with the first cupful.

Thanks for your time and attention.

Sincerely,

Ellen Atkinson

Reno, NV

Consent-Based Siting

From: Jeffrey H. Axelbank, Psy.D. [mailto:axelbank@rci.rutgers.edu]
Sent: Friday, July 29, 2016 5:00 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Response to IPC - I do not consent!

I want to add my voice to those who DO NOT CONSENT. The reasons are obvious: there is no way to make nuclear waste safe 100%, and trucking or transporting it via train or waterway through any human habitat or natural habitat is just too risky and inviting a horrific, very long-term disaster. So please do not go forward with this plan! The only acceptable plan is expedited transfer of high-level radioactive waste from vulnerable pools into hardened dry casks, designed and built to last not decades but centuries, without leaking, safeguarded against accidents and natural disasters, and secured against attack.

Jeff Axelbank
226 S. 4th Avenue
Highland Park, NJ 08904
732-819-0153

Consent-Based Siting

From: borsope@aol.com [mailto:borsope@aol.com]
Sent: Friday, July 29, 2016 5:22 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: High Level Radioactive Waste

I am submitting these comments regarding high level nuclear waste storage.

I feel we should not be storing this nuclear waste on an interim level and transporting it more than once.

1. Store irradiated nuclear fuel in HOSS dry casks, **as safely and securely as possible, as close to the point of generation as possible, in a monitored, inspectable, retrievable manner.**

2. Given the unavoidable risks of high-level radioactive waste truck, train, and/or barge shipments on roads, rails, and/or waterways **transport irradiated nuclear fuel only once**, such as straight to a suitable, acceptable, geological repository, not to centralized interim storage.

3. **Geological repositories** must be **scientifically suitable** (capable of isolating the hazardous high-level radioactive waste from the living environment forevermore),**socially acceptable** (genuinely consent-based), and **environmentally just**. Note that no such suitable/acceptable/just geologic repository has yet been found, in more than half a century of looking. DOE has admitted it can't open *any* repository (even an unsuitable/unacceptable/unjust one) till 2048 at the earliest.

4. Do not reprocess

5. Carefully pass information about storing irradiated nuclear fuel as safely as possible, as close to the point of generation as possible, from one generation to the next.

6. Address the shortfall in funding for forevermore storage of high-level radioactive waste.

7. **Environmental justice**, in keeping with Bill Clinton's 1994 Executive Order 12898**,** demands that Native American communities and lands as well as those of other low income and/or people of color communities never again be targeted for high level radioactive sites.

8. **Just Stop making it.**

Thank you for this opportunity to comment.

Pam Borso
P O Box 154
Custer, WA 98240

Consent-Based Siting

From: William Cline [mailto:cline@wilmina.ac.jp]
Sent: Thursday, July 28, 2016 4:22 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Response to IPC

Dear People,
Nuclear power is too dangerous and expensive. Furthermore, nuclear waste is a long-lasting problem.
Concerning nuclear waste—

1 **Stop making it.** The only truly safe, sound, just solution for the radioactive waste problem, is to not make it in the first place. Electricity can be supplied by clean, safe, affordable renewable sources, such as wind and solar, and demand decreased significantly by efficiency, rather than generating radioactive waste via dirty, dangerous, and expensive nuclear power.

2 **Expedite the transfer of irradiated nuclear fuel from densely-packed "wet" storage pools into Hardened On-Site Storage (HOSS) dry casks**.

3 Store irradiated nuclear fuel in HOSS dry casks, **as safely and securely as possible, as close to the point of generation as possible, in a monitored, inspectable, retrievable manner.**

4 Given the unavoidable risks of high-level radioactive waste truck, train, and/or barge shipments on roads, rails, and/or waterways (Mobile Chernobyls, Dirty Bombs on Wheels, Floating Fukushimas), **transport irradiated nuclear fuel only once**, such as straight to a (suitable, acceptable, just) geological repository, **not to so-called centralized interim storage** (*de facto* permanent parking lot dumps, such as those currently targeted at Waste Control Specialists, LLC in Andrews County, west Texas; at Eddy-Lea Counties, near the Waste Isolation Pilot Plant in southeast New Mexico; Native American reservations; nuclear power plants, such as Exelon's Dresden in Morris, IL; etc.).

Thank you for considering my comments.

William Cline
Associate Professor
Osaka Jogakuin College—University
2-26-54 Tamatsukuri
Chuo-ku, Osaka 540-0004 JAPAN

Consent-Based Siting

From: Sandra M Cobb [mailto:smcobb@beechmere.com]
Sent: Thursday, July 28, 2016 1:09 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Responce to IPC

Please consider the below points re nuclear power.

1. **Stop making it.** The only truly safe, sound, just solution for the radioactive waste problem, is to not make it in the first place
2. **Expedite the transfer of irradiated nuclear fuel from densely-packed "wet" storage pools into Hardened On-Site Storage (HOSS) dry casks**.
3. Store irradiated nuclear fuel in HOSS dry casks, **as safely and securely as possible, as close to the point of generation as possible, in a monitored, inspectable, retrievable manner.**
4. t**ransport irradiated nuclear fuel only once**, such as straight to a (suitable, acceptable, just) geological repository
5. **Geological repositories** must be **scientifically suitable** (capable of isolating the hazardous high-level radioactive waste from the living environment forevermore), **socially acceptable** (genuinely consent-based), and **environmentally just**.
6. **Do not reprocess** (extract fissile plutonium and/or uranium from) irradiated nuclear fuel. Not only would this risk **nuclear weapons proliferation**, and be **astronomically expensive**; it would also very likely cause **environmental ruin downwind and downstream**
7. **Preserve and maintain "wet" storage pools – albeit *emptied* of irradiated nuclear fuel -- as an emergency back up location for cask-to-cask HOSS transfers.**
8. **Carefully pass information** about storing irradiated nuclear fuel as safely as possible, as close to the point of generation as possible, **from one generation to the next, à la the concept of "Rolling Stewardship"** described by the Canadian Coalition for Nuclear Responsibility.
9. **Address the shortfall in funding for forevermore storage of high-level radioactive waste**.
10. **Environmental justice, demands that Native American communities and lands, as well as those of other low income and/or people of color communities, never again be targeted for high-level radioactive waste parking lot dumps or permanent burial sites, a shameful form of radioactive racism dating back decades in the U.S.**

Sandra Cobb

3880 Ellendale Rd

Moreland HIlls, OH 44022

Consent-Based Siting

From: Mark M Giese [mailto:m.mk@att.net]
Sent: Friday, July 29, 2016 1:40 PM
To: Consent Based Siting
Subject: Response to IPC

We do not consent.

THE RUSH JOB TO *DE FACTO* PERMANENT PARKING LOT DUMPS, FOR ALL THE WRONG REASONS: We do not consent to DOE rushing into *de facto* permanent parking lot dumps (so-called "centralized" or "consolidated interim storage"), in order to expedite the transfer of title and liability from the nuclear utilities that profited from the generation of high-level radioactive waste, onto the backs of taxpayers.

FLOATING FUKUSHIMAS ON SURFACE WATERS: We do not consent to radioactive waste barge shipments on the lakes and rivers of this country, the fresh drinking water supply for countless millions, nor on the seacoasts. In addition to a disastrous radioactive release if the shipping container is breached, infiltrating water could spark a nuclear chain reaction, if a critical mass forms, due to the fissile U-235 and Pu-239 still present in the waste.

And so forth.

Thank you.

--Mark M Giese
1520 Bryn Mawr Ave
Racine, WI 53403

Consent-Based Siting

From: Jeane Harrison [mailto:jlhggy@gmail.com]
Sent: Thursday, July 07, 2016 7:55 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Response to IPC

We do not consent to DOE rushing into de facto permanent parking lot dumps (so-called "centralized" or "consolidated interim storage"), in order to expedite the transfer of title and liability from the nuclear utilities that profited from the generation of high-level radioactive waste, onto the backs of taxpayers.

We do not consent to radioactive waste barge shipments on the lakes and rivers of this country, the fresh drinking water supply for countless millions, nor on the seacoasts. In addition to a disastrous radioactive release if the shipping container is breached, infiltrating water could spark a nuclear chain reaction, if a critical mass forms, due to the fissile U-235 and Pu-239 still present in the waste.

We do not consent to high-level radioactive waste truck and train shipments through the heart of major population centers; through the agricultural heartland; on, over, or alongside the drinking water supplies of our nation. Whether due to high-speed crashes, heavy crushing loads, high-temperature/long duration fires, falls from a great height, underwater submersions, collapsing transport infrastructure, or intentional attack with powerful or sophisticated explosives, such as anti-tank missiles or shaped charges, high-level radioactive waste shipments, if breached, could unleash catastrophic amounts of hazardous radioactivity into the environment.

We do not consent to the targeting, yet again, of low-income, Native American, and other communities of color, with high-level radioactive waste parking lot dumps. It is most ironic that President Obama's Blue Ribbon Commission on America's Nuclear Future, and his DOE, have yet again targeted Native Americans. Obama honored Sauk and Fox environmental activist Grace Thorpe for defending her reservation in Oklahoma against a parking lot dump, and then assisting allies at dozens of other reservations being targeted by DOE's Nuclear Waste Negotiator. Obama praised Thorpe as a "Woman Taking the Lead to Save Our Planet," alongside the likes of Rachel Carson of Silent Spring fame, in his March 2009 Women's History Month proclamation. Similarly, Yucca Mountain, Nevada is Western Shoshone Indian land, as the U.S. government acknowledged by signing a treaty. In addition, Yucca is not scientifically suitable. It is an active earthquake zone, a volcanic zone, and water-saturated underground. If waste is ever buried there, it will leak massively into the environment. And the State of Nevada has never consented to becoming the country's high-level radioactive waste dump.

We do not consent to the targeting of nuclear power plants, radioactive waste dumps, or DOE sites, already heavily contaminated with radioactivity and burdened with highlevel radioactive waste, to become parking lot dumps for the importation of other sites' or reactors' wastes. DOE, NRC, and industry's top targets include Waste Control Specialists in Andrews County, TX; Eddy-Lea Counties, NM, near DOE's Waste Isolation Pilot Plant; DOE's Savannah River Site, SC; Dresden nuclear power plant in Morris, IL; the list goes on.

Consent-Based Siting

From: Hwlyfstr@aol.com [mailto:Hwlyfstr@aol.com]
Sent: Thursday, July 28, 2016 5:12 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: (no subject)

We
do
not
consent
to
the
targeting,
yet
again,
of
low--income,
Native
American,
and
other
communities
of
color,
with
high--level
radioactive
waste
parking
lot
dumps.
It
is
most
ironic
that
President
Obama's
Blue
Ribbon
Commission
on
America's
Nuclear
Future,
and
his
DOE,

have
yet
again
targeted
Native
Americans.
Obama
honored
Sauk
and
Fox
environmental
activist
Grace
Thorpe
for
defending
her
reservation
in
Oklahoma
against
a
parking
lot
dump,
and
then
assisting
allies
at
dozens
of
other
reservations
being
targeted
by
DOE’s
Nuclear
Waste
Negotiator.
Obama
praised
Thorpe
as
a
“Woman
Taking
the
Lead
to
Save
Our
Planet,”
alongside
the

likes
of
Rachel
Carson
of
Silent
Spring
fame,
in
his
March
2009
Women’s
History
Month
proclamation.
Similarly,
Yucca
Mountain,
Nevada
is
Western
Shoshone
Indian
land,
as
the
U.S.
government
acknowledged
by
signing
a
treaty.
In
addition,
Yucca
is
not
scientifically
suitable.
It
is
an
active
earthquake
zone,
a
volcanic
zone,
and
water--saturated
underground.
If
waste
is
ever

buried
there,
it
will
leak
massively
into
the
environment.
And
the
State
of
Nevada
has
never
consented
to
becoming
the
country’s
high--level
radioactive
waste
dump

Consent-Based Siting

From: Robert Kolodny [mailto:rk@kolodnyassoc.com]
Sent: Sunday, July 31, 2016 6:11 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Response to IPC

To Whom It May Concern,

See below for my comments regarding ***DOE's Proposed"Consent-Based Siting" of Radioactive Waste Dumps:***

THE RUSH JOB TO *DE FACTO* PERMANENT PARKING LOT DUMPS, FOR ALL THE WRONG REASONS: I do not consent to DOE rushing into *de facto* permanent parking lot dumps (so-called "centralized" or "consolidated interim storage"), in order to expedite the transfer of title and liability from the nuclear utilities that profited from the generation of high-level radioactive waste, onto the backs of taxpayers.

FLOATING FUKUSHIMAS ON SURFACE WATERS: I do not consent to radioactive waste barge shipments on the lakes and rivers of this country, the fresh drinking water supply for countless millions, nor on the seacoasts. In addition to a disastrous radioactive release if the shipping container is breached, infiltrating water could spark a nuclear chain reaction, if a critical mass forms, due to the fissile U-235 and Pu-239 still present in the waste.

MOBILE CHERNOBYLS/DIRTY BOMBS ON WHEELS: I do not consent to high-level radioactive waste truck and train shipments through the heart of major population centers; through the agricultural heartland; on, over, or alongside the drinking water supplies of our nation. Whether due to high-speed crashes, heavy crushing loads, high-temperature/long duration fires, falls from a great height, underwater submersions, collapsing transport infrastructure, or intentional attack with powerful or sophisticated explosives, such as anti-tank missiles or shaped charges, high-level radioactive waste shipments, if breached, could unleash catastrophic amounts of hazardous radioactivity into the environment.

ENVIRONMENTAL INJUSTICE/RADIOACTIVE RACISM: I do not consent to the targeting, yet again, of low-income, Native American, and other communities of color, with high-level radioactive waste parking lot dumps. It is most ironic that President Obama's Blue Ribbon Commission on America's Nuclear Future, and his DOE, have yet again targeted Native

Americans. Obama honored Sauk and Fox environmental activist Grace Thorpe for defending her reservation in Oklahoma against a parking lot dump, and then assisting allies at dozens of other reservations being targeted by DOE's Nuclear Waste Negotiator. Obama praised Thorpe as a "Woman Taking the Lead to Save Our Planet," alongside the likes of Rachel Carson of *Silent Spring* fame, in his March 2009 Women's History Month proclamation. Similarly, Yucca Mountain, Nevada is Western Shoshone Indian land, as the U.S. government acknowledged by signing a treaty. In addition, Yucca is not scientifically suitable. It is an active earthquake zone, a volcanic zone, and water-saturated underground. If waste is ever buried there, it will leak massively into the environment. And the State of Nevada has never consented to becoming the country's high-level radioactive waste dump.

SITES CURRENTLY AT THE VERY TOP OF THE TARGET LIST FOR *DE FACTO* PERMANENT PARKING LOT DUMPS: I do not consent to the targeting of nuclear power plants, radioactive waste dumps, or DOE sites, already heavily contaminated with radioactivity and burdened with high-level radioactive waste, to become parking lot dumps for the importation of other sites' or reactors' wastes. DOE, NRC, and industry's top targets include Waste Control Specialists in Andrews County,
TX; Eddy-Lea Counties, NM, near DOE's Waste Isolation Pilot Plant; DOE's Savannah River Site, SC; Dresden nuclear power plant in Morris, IL; the list goes on.

RISKS OF HIGH-LEVEL RADIOACTIVE WASTE STORAGE POOLS, AND NEED FOR HARDENED ON-SITE STORAGE (HOSS): As just re-confirmed by the National Academies of Science, and Princeton U. researchers Von Hippel and Schoeppner, pools are at risk of fires that could unleash catastrophic amounts of hazardous Cesium-137 into the environment over a wide region. Since 2002, a coalition of hundreds of environmental and public interest groups, representing all 50 states, has called for expedited transfer of high-level radioactive waste from vulnerable pools into hardened dry casks, designed and built to last not decades but centuries, without leaking, safeguarded against accidents and natural disasters, and secured against attack.

NUCLEAR POWER AND HIGH-LEVEL RADIOACTIVE WASTE GENERATION: The mountain of radioactive waste in the U.S. has grown 70 years high, and we still don't know what to do with the first cupful. Radioactive waste may well prove to be a "trans-solutional" problem, one created by humans, but beyond our ability to solve. The only safe, sound solution for radioactive waste is to not make it in the first place. Reactors should be permanently shut down, to stop the generation of high-level radioactive waste for which we have no good solution.

Sincerely,

Robert Kolodny

Dr. Robert Kolodny
Robert Kolodny & Associates
64 West 89 Street
New York, NY 10024
Tel: (212) 873-6667
Fax: (212) 873-6924
rk@kolodnyassoc.com

Consent-Based Siting

From: Laura Lynch [mailto:artistlauralynch@yahoo.com]
Sent: Sunday, July 31, 2016 9:51 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Response to IPC - DOE Consent Based Siting for Spent Nuclear Fuel Risks Major Radioactive Leaks

TO: U.S. Department of Energy
Office of Nuclear Energy, Response to IPC
1000 Independence Ave SW.
Washington, DC 20585
consentbasedsiting@hq.doe.gov

FROM: Laura Lynch, Environmental Health and Safety Advocate
artistlauralynch@yahoo.com
Santa Barbara, CA 93101
805.687.7435

RE: Response to IPC - DOE's CIS Nuclear Waste Plan Risks Major Radioactive Leaks

1) STOP MAKING IT! The only truly safe, sound, just solution for the radioactive waste problem, is to not make it in the first place. Electricity can be supplied by clean, safe, affordable renewable sources, such as wind and solar, and demand decreased significantly by efficiency, rather than generating radioactive waste via dirty, dangerous, and expensive nuclear power.

In the 1990s I met Jacques Cousteau here in Santa Barbara. He shared this story: When he and other French scientists like Louis Fage, heard an American Scientist defending the future of nuclear energy in the 1970s, "Jacques, this energy is necessary for humankind, and we will build it, even at the cost of closing all the oceans to human activity." Jacques Cousteau said in response: "We were terrified."

It's what many scientists and others believed in and referred to as the syndrome of SAINT EXUPÉRY (author The Little Prince, a fantasy based on the imagination of children, rather than the strict realism of adults) a belief that we would always find a way to correct the damage we have created after it was done. To build a machine before there is a way to control it is, of course, irresponsible. Seven decades ago, in order to continue the production of atomic energy (peaceful atoms), the federal government was charged with finding a means of storing this nuclear waste out of harm's way. Yet here we are today, seven decades later, the problem has not been solved and the operation and promotion of nuclear energy —a dangerous dirty expensive energy source —is still being allowed while leaving in its path seven decades and counting of an accumulated unprecedented amount of billions of tons of toxic nuclear trash (TNT) from every operating nuclear reactor site in the country; knowing all the while they

didn't know then and still don't know now where to put it or how to safely store this TNT out of harm's way, is criminal! Why is the nuclear industry still being allowed to go forward in generating electricity from nuclear power knowing the harm they are creating and the horrendous environmental catastrophes that have occurred and with the inherent risks of their industry to the environment and future generations?

In June of 2012, in a lawsuit brought by New York state, the U.S. Court of Appeals threw out NRC's Waste Storage Rules saying the commission failed to fully evaluate risks associated with its regulations on the storage of spent fuel. The U.S. Court of Appeals ruled that the NRC's conclusion that permanent storage will be available in the future when it's needed didn't account for how its absence could affect the environment now. The commission also failed to fully assess the dangers of storing spent fuel onsite for 60 years after a nuclear plant's license expires, the court said. "The commission's evaluation of the risks of spent nuclear fuel is deficient," Chief Judge David Sentelle wrote for the three-judge panel. Spent fuel "poses a dangerous long-term health and environmental risk."

I believe no industry should be allowed to continue creating high level radioactive waste (HLRW) that it has no ability to dispose of. Since neither the nuclear industry nor the federal government has an operating spent-fuel/high-level radioactive waste disposal facility in operation, it should not be allowed to manufacture any more of these wastes. Since you have no place to dispose of radioactive spent fuel why are you still allowing 99 atomic reactors across the U.S. to continue churning out 2,000-3,000 metric tons (2,200 to 3,300 tons) of HLRW yearly? This is in direct contradiction to your obligation of what should be safety first for the wellbeing of people and the environment.

(***The following list numbered 2-10 to the DOE re: Irradiated Nuclear Fuel (High-Level Radioactive Waste is substantiated in detail with attachments via SanOnofreSafety.org http://bit.ly/SOStoDOE specifically relating to the DOE's CIS Risks in Major Radioactive Leaks via U.S. dry storage thin steel canister systems that cannot be inspected, maintained, repaired, adequately monitored to avoid radioactive leaks, and the DOE pilot plan has no plan for replacing failing canisters or retrieval of fuel, as required by NWPA***.)

2) Expedite the transfer of irradiated nuclear fuel from densely-packed "wet" storage pools into Hardened On-Site Storage (HOSS) dry casks.

3) Store irradiated nuclear fuel in HOSS dry casks, as safely and securely as possible, as close to the point of generation as possible, in a monitored, inspectable, retrievable manner.

4) Given the unavoidable risks of high-level radioactive waste truck, train, and/or barge shipments on roads, rails, and/or waterways (Mobile Chernobyls, Dirty Bombs on Wheels, Floating Fukushimas), transport irradiated nuclear fuel only once, such as straight to a (suitable, acceptable, just) geological repository, not to so-called centralized interim storage (de facto permanent parking lot dumps, such as those currently targeted at Waste Control Specialists, LLC in Andrews County, west Texas; at Eddy-Lea Counties, near the Waste Isolation Pilot Plant in southeast New Mexico; Native American reservations; nuclear power plants, such as Exelon's Dresden in Morris, IL; etc.).

5) Geological repositories must be scientifically suitable (capable of isolating the hazardous high-level radioactive waste from the living environment forevermore), socially acceptable (genuinely consent-based), and environmentally just. Note that no such suitable/acceptable/just geologic repository has yet been found, in more than half a century of

looking. DOE has admitted it can't open any repository (even an unsuitable/unacceptable/unjust one) till 2048 at the earliest, more than a century after Enrico Fermi, in 1942, generated the first high-level radioactive waste, in the world's first reactor, as part of the Manhattan Project to build atomic bombs; and more than 90 years years after the first "civilian" atomic reactor began generating waste at Shippingport, PA.

6) Do not reprocess (extract fissile plutonium and/or uranium from) irradiated nuclear fuel. Not only would this risk nuclear weapons proliferation, and be astronomically expensive; it would also very likely cause environmental ruin downwind and downstream of wherever it is carried out, as has been shown at such places as Hanford Nuclear Reservation in Washington; Savannah River Site, South Carolina; West Valley, New York; Sellafield, England; La Hague, France; Kyshtym, Russia; etc.

7) Preserve and maintain "wet" storage pools – albeit emptied of irradiated nuclear fuel -- as an emergency back up location for cask-to-cask HOSS transfers, when old HOSS casks deteriorate toward failure, and need to be replaced with brand new HOSS casks. That is, do not dismantle pools as part of nuclear power plant decommissioning post-reactor shutdown.

8) Carefully pass information about storing irradiated nuclear fuel as safely as possible, as close to the point of generation as possible, from one generation to the next, à la the concept of "Rolling Stewardship" described by the Canadian Coalition for Nuclear Responsibility.

9) Address the shortfall in funding for forevermore storage of high-level radioactive waste. Dr. Mark Cooper of Vermont Law School has estimated the first 200 years of commercial irradiated nuclear fuel storage (assuming just a single repository, although at least two will be required!) will cost $210 to $350 billion, even though there is only some tens of billions of dollars remaining in the now-terminated Nuclear Waste Fund, collected from nuclear power ratepayers.

10) Environmental justice, in keeping with Bill Clinton's 1994 Executive Order 12898, demands that Native American communities and lands, as well as those of other low income and/or people of color communities, never again be targeted for high-level radioactive waste parking lot dumps or permanent burial sites, a shameful form of radioactive racism dating back decades in the U.S.I do not accept DOE's current Consolidated Interim Storage (CIS) pilot plan and its proposed unsafe transport and storage of highly irradiated spent nuclear fuel in canisters that are grossly inadequate and susceptible to corrosion and leaks and do not meet current Nuclear Waste Policy Act (NWPA) requirements.

Consent-Based Siting

From: Abe Markman [mailto:Abraham.Markman@verizon.net]
Sent: Saturday, July 30, 2016 2:24 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Nuclear energy

To Whom it may concern:

The mountain of radioactive waste in the U.S. has grown 70 years high, and we still don't know what to do with the first cupful. Radioactive waste may well prove to be a "trans-solutional" problem, one created by humans, but beyond our ability to solve. The only safe, sound solution for radioactive waste is to not make it in the first place. Reactors should be permanently shut down, to stop the generation of high-level radioactive waste for which we have no good solution.
In addition , I am opposed to transporting the nuclear waste across the country. Who will take responsibility if there is an accident?

Abe Markman
675 Water Street # 5-C
NYC, NY 10002
212-204-0656

Consent-Based Siting

From: M.P. Montgomery [mailto:tutuwuwu1@gmail.com]
Sent: Wednesday, July 13, 2016 3:33 AM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Respinse ti IPC

1. **Stop making it.** The only truly safe, sound, just solution for the radioactive waste problem, is to not make it in the first place. Electricity can be supplied by clean, safe, affordable renewable sources, such as wind and solar, and demand decreased significantly by efficiency, rather than generating radioactive waste via dirty, dangerous, and expensive nuclear power.
2. **Expedite the transfer of irradiated nuclear fuel from densely-packed "wet" storage pools into Hardened On-Site Storage (HOSS) dry casks**.
3. Store irradiated nuclear fuel in HOSS dry casks, **as safely and securely as possible, as close to the point of generation as possible, in a monitored, inspectable, retrievable manner.**
4. Given the unavoidable risks of high-level radioactive waste truck, train, and/or barge shipments on roads, rails, and/or waterways (Mobile Chernobyls, Dirty Bombs on Wheels, Floating Fukushimas), **transport irradiated nuclear fuel only once**, such as straight to a (suitable, acceptable, just) geological repository, **not to so-called centralized interim storage** (*de facto* permanent parking lot dumps, such as those currently targeted at Waste Control Specialists, LLC in Andrews County, west Texas; at Eddy-Lea Counties, near the Waste Isolation Pilot Plant in southeast New Mexico; Native American reservations; nuclear power plants, such as Exelon's Dresden in Morris, IL; etc.).
5. **Geological repositories** must be **scientifically suitable** (capable of isolating the hazardous high-level radioactive waste from the living environment forevermore), **socially acceptable** (genuinely consent-based), and **environmentally just**. Note that no such suitable/acceptable/just geologic repository has yet been found, in more than half a century of looking. DOE has admitted it can't open *any* repository (even an unsuitable/unacceptable/unjust one) till 2048 at the earliest, more than a century after Enrico Fermi, in 1942, generated the first high-level radioactive waste, in the world's first reactor, as part of the Manhattan Project to build atomic bombs; and more than 90 years years after the first "civilian" atomic reactor began generating waste at Shippingport, PA.
6. **Do not reprocess** (extract fissile plutonium and/or uranium from) irradiated nuclear fuel. Not only would this risk **nuclear weapons proliferation**, and be **astronomically expensive**; it would also very likely cause **environmental ruin downwind and downstream** of wherever it is carried out, as has been shown at such places as Hanford Nuclear Reservation in Washington; Savannah River Site, South Carolina; West Valley, New York; Sellafield, England; La Hague, France; Kyshtym, Russia; etc.
7. **Preserve and maintain "wet" storage pools – albeit *emptied* of irradiated nuclear fuel -- as an emergency back up location for cask-to-cask HOSS transfers**, when old HOSS

casks deteriorate toward failure, and need to be replaced with brand new HOSS casks. That is, do not dismantle pools as part of nuclear power plant decommissioning post-reactor shutdown.

8. **Carefully pass information** about storing irradiated nuclear fuel as safely as possible, as close to the point of generation as possible, **from one generation to the next, à la the concept of "Rolling Stewardship"** described by the Canadian Coalition for Nuclear Responsibility.
9. **Address the shortfall in funding for forevermore storage of high-level radioactive waste**. Dr. Mark Cooper of Vermont Law School has estimated the first 200 years of commercial irradiated nuclear fuel storage (assuming just a single repository, although at least two will be required!) will cost $210 to $350 billion, even though there is only some tens of billions of dollars remaining in the now-terminated Nuclear Waste Fund, collected from nuclear power ratepayers.
10. **Environmental justice**, in keeping with Bill Clinton's 1994 **Executive Order 12898, demands that Native American communities and lands, as well as those of other low income and/or people of color communities, never again be targeted for high-level radioactive waste parking lot dumps or permanent burial sites, a shameful form of radioactive racism dating back decades in the U.S.**
11. It would seem to me, that considering the Fukushima disaster, and the failure to stop the leaks there, that the US will be in the oceanic and atmospheric path of that fallout for centuries to come. This alone should put the brakes on the use of nuclear power. There are 15 nuclear power plants along the New Madrid fault. With all the fracking, the earthquake activity along that fault has been activated (enenews.com). Indian Point in New York is a fragile situation, threatening NYC. Hanford Facility is failing, polluting the Columbia River. All of this is quite lethal to humanity and the environment. Insurance companies did not want to touch this industry with somebody else's 10 foot pole…that should have triggered a red flag, but NOOOOO. Now you are going to have to deal with it in a responsible fashion. End the practice of nuclear energy production NOW. Maybe you could arrange with NASA to jettison trash into space, because this planet has had enough. Oh, depleted uranium ordinance is a crime against humanity - i.e.Gulf/ Iraq war.

Consent-Based Siting

From: Thea Paneth [mailto:tpaneth@gmail.com]
Sent: Thursday, July 28, 2016 12:30 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Response to IPC

To the US Department of Energy:

I write to express my concerns about "Consent-Based Siting" of high level radioactive waste and the use of trucks, trains and barges to deliver the nuclear waste to said sites.

1. **Stop making it.** The only truly safe, sound, just solution for the radioactive waste problem, is to not make it in the first place. Electricity can be supplied by clean, safe, affordable renewable sources, such as wind and solar, and demand decreased significantly by efficiency, rather than generating radioactive waste via dirty, dangerous, and expensive nuclear power.
2. **Expedite the transfer of irradiated nuclear fuel from densely-packed "wet" storage pools into Hardened On-Site Storage (HOSS) dry casks**.
3. Store irradiated nuclear fuel in HOSS dry casks, **as safely and securely as possible, as close to the point of generation as possible, in a monitored, inspectable, retrievable manner.**
4. Given the unavoidable risks of high-level radioactive waste truck, train, and/or barge shipments on roads, rails, and/or waterways (Mobile Chernobyls, Dirty Bombs on Wheels, Floating Fukushimas), **transport irradiated nuclear fuel only once**, such as straight to a (suitable, acceptable, just) geological repository, **not to so-called centralized interim storage** (*de facto* permanent parking lot dumps, such as those currently targeted at Waste Control Specialists, LLC in Andrews County, west Texas; at Eddy-Lea Counties, near the Waste Isolation Pilot Plant in southeast New Mexico; Native American reservations; nuclear power plants, etc.).
5. **Geological repositories** must be **scientifically suitable** (capable of isolating the hazardous high-level radioactive waste from the living environment forevermore), **socially acceptable** (genuinely consent-based), and **environmentally just**. Note that no such suitable/acceptable/just geologic repository has yet been found, in more than half a century of looking. DOE has admitted it can't open *any* repository (even an unsuitable/unacceptable/unjust one) till 2048 at the earliest. That will be over a century after Enrico Fermi, in 1942, generated the first high-level radioactive waste, in the world's first reactor, as part of the Manhattan Project to build atomic bombs; and more than 90 years years after the first "civilian" atomic reactor began generating waste at Shippingport, PA.
6. **Do not reprocess** (extract fissile plutonium and/or uranium from) irradiated nuclear fuel. Not only would this risk **nuclear weapons proliferation**, and be **astronomically expensive**; it would also very likely cause **environmental ruin downwind and downstream** of wherever it is carried out, as has been shown at such places as Hanford Nuclear Reservation in Washington; Savannah River Site, South Carolina; West Valley, New York; Sellafield, U.K.; La Hague, France; Kyshtym, Russia; etc.

7. **Preserve and maintain "wet" storage pools – albeit *emptied* of irradiated nuclear fuel -- as an emergency back up location for cask-to-cask HOSS transfers**, when old HOSS casks deteriorate toward failure, and need to be replaced with brand new HOSS casks. That is, do not dismantle pools as part of nuclear power plant decommissioning, post-reactor shutdown.
8. **Carefully pass information** about storing irradiated nuclear fuel as safely as possible, as close to the point of generation as possible, **from one generation to the next, à la the concept of "Rolling Stewardship"** described by the Canadian Coalition for Nuclear Responsibility.
9. **Address the shortfall in funding for forevermore storage of high-level radioactive waste**. Dr. Mark Cooper of Vermont Law School has estimated the first 200 years of commercial irradiated nuclear fuel storage (assuming just a single repository, although *at least two* will be required!) will cost $210 to $350 billion, even though there is only some tens of billions of dollars remaining in the now-terminated Nuclear Waste Fund, with additional fees no longer collected from nuclear power ratepayers. (This means federal taxpayers will be forced to make up for the shortfall!)

10. **Environmental justice**, in keeping with President Bill Clinton's 1994 **Executive Order 12898**, demands that **Native American communities and lands, as well as those of other low income and/or people of color communities, never again be targeted** for high-level radioactive waste parking lot dumps or permanent burial sites, a shameful form of radioactive racism dating back decades in the U.S.

Thea Paneth

10 Cottage Ave

Arlington, MA 02474

Consent-Based Siting

From: Roberta Paro [mailto:raparo@snet.net]
Sent: Saturday, July 30, 2016 11:03 AM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Response to Invitation to Public Comment

Hello,

I do not consent to the plan centralize and consolidate interim storage of nuclear waste.

I would like to see the following done.

1. Put the principal of environmental justice first. In keeping with Bill Clinton's 1994 Executive Order 12898, demands that Native American communities and lands, as well as those of other low income and/or people of color communities, never again be targeted for high-level radioactive waste parking lot dumps or permanent burial sites.

2. Expedite the transfer of irradiated nuclear fuel from densely packed "wet" storage into hardened on-site storage dry casks.

3. Preserve "wet" storage pools - emptied of irradiated nuclear fuel - as an emergency back up location for cask-t-cask hardened on-site storage transfer, when old hardened on-site storage casks deteriorate toward failure and need to be replaced with brand new hardened on-site storage casks.

4. Address the shortfall funding for forevermore storage of high-level radioactive waste.

I do not want the nuclear waste to be transported by rail, barge, or trucks.

Roberta Paro
246A Yantic Street
Norwich, CT 06360
raparo@snet.net
860-857-0976

Consent-Based Siting

From: reto pieth [mailto:rpieth@sover.net]
Sent: Thursday, July 28, 2016 7:20 PM
To: Consent Based Siting
Subject: Nucelar Waste

Nuclear Fuel (High-Level Radioactive Waste)

1. **Stop making it.** The only truly safe, sound, just solution for the radioactive waste problem, is to not make it in the first place. Electricity can be supplied by clean, safe, affordable renewable sources, such as wind and solar, and demand decreased significantly by efficiency, rather than generating radioactive waste via dirty, dangerous, and expensive nuclear power.
2. **Expedite the transfer of irradiated nuclear fuel from densely-packed "wet" storage pools into Hardened On-Site Storage (HOSS) dry casks**.
3. Store irradiated nuclear fuel in HOSS dry casks, **as safely and securely as possible, as close to the point of generation as possible, in a monitored, inspectable, retrievable manner.**
4. Given the unavoidable risks of high-level radioactive waste truck, train, and/or barge shipments on roads, rails, and/or waterways (Mobile Chernobyls, Dirty Bombs on Wheels, Floating Fukushimas), **transport irradiated nuclear fuel only once**, such as straight to a (suitable, acceptable, just) geological repository, **not to so-called centralized interim storage** (*de facto* permanent parking lot dumps, such as those currently targeted at Waste Control Specialists, LLC in Andrews County, west Texas; at Eddy-Lea Counties, near the Waste Isolation Pilot Plant in southeast New Mexico;Native American reservations; nuclear power plants, such as Exelon's Dresden in Morris, IL; etc.).
5. **Geological repositories** must be **scientifically suitable** (capable of isolating the hazardous high-level radioactive waste from the living environment forevermore),**socially acceptable** (genuinely consent-based), and **environmentally just**. Note that no such suitable/acceptable/just geologic repository has yet been found, in more than half a century of looking. DOE has admitted it can't open *any* repository (even an unsuitable/unacceptable/unjust one) till 2048 at the earliest, more than a century afterEnrico Fermi, in 1942, generated the first high-level radioactive waste, in the world's first reactor, as part of the Manhattan Project to build atomic bombs; and more than 90 years years after the first "civilian" atomic reactor began generating waste at Shippingport, PA.
6. **Do not reprocess** (extract fissile plutonium and/or uranium from) irradiated nuclear fuel. Not only would this risk **nuclear weapons proliferation**, and be **astronomically expensive**; it would also very likely cause **environmental ruin downwind and downstream** of wherever it is carried out, as has been shown at such places as Hanford Nuclear Reservation in Washington; Savannah River Site, South Carolina; West Valley, New York; Sellafield, England; La Hague, France; Kyshtym, Russia; etc.
7. **Preserve and maintain "wet" storage pools – albeit *emptied* of irradiated nuclear fuel -- as an emergency back up location for cask-to-cask HOSS transfers**, when old HOSS casks deteriorate toward failure, and need to be replaced with

brand new HOSS casks. That is, do not dismantle pools as part of nuclear power plant decommissioning post-reactor shutdown.

8. **Carefully pass information** about storing irradiated nuclear fuel as safely as possible, as close to the point of generation as possible, **from one generation to the next, à la the concept of "Rolling Stewardship"** described by the Canadian Coalition for Nuclear Responsibility.
9. **Address the shortfall in funding for forevermore storage of high-level radioactive waste**. Dr. Mark Cooper of Vermont Law School has estimated the first 200 years of commercial irradiated nuclear fuel storage (assuming just a single repository, although at least two will be required!) will cost $210 to $350 billion, even though there is only some tens of billions of dollars remaining in the now-terminated Nuclear Waste Fund, collected from nuclear power ratepayers.
10. **Environmental justice**, in keeping with Bill Clinton's 1994 **Executive Order 12898, demands that Native American communities and lands, as well as those of other low income and/or people of color communities, never again be targeted for high-level radioactive waste parking lot dumps or permanent burial sites, a shameful form of radioactive racism dating back decades in the U.S.**

Reto Pieth

409 Rt 121 E

Grafton, VT 05146

Consent-Based Siting

From: Marty Rajandran [mailto:marty_rajandran@yahoo.com]
Sent: Wednesday, July 13, 2016 11:59 AM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Fw: Response to IPC

----- Forwarded Message -----
From: Marty Rajandran <marty_rajandran@yahoo.com>
To: "conentbasedsiting@hq.doe.gov" <conentbasedsiting@hq.doe.gov>
Sent: Wednesday, July 13, 2016 11:57 AM
Subject: Response to IPC

Dear Sir/Ms, Please find a letter reflecting my response on the issue of community views on storage of nuclear waste.

Just to be clear: nuclear waste requires specific safety requirements over a period of I understand 100,000 + years. The type of site found in Norway is a good example of efforts to try to secure such waste safely.

I do not think any community has the capacity to undertake such an effort. And no lands belonging to first nations people should be considered as already their land has been diminished or previously irradiated (uranium wastes among others).

The solution: close all nuclear power plants so as to not generate any further waste. And for what is available, to identify the suitable deep ground possible sites that can be fitted appropriately to store and cover forever such waste. (ensuring water tables, fault lines, etc are fully considered).

Thank you. Martha P Rajandran, 1964 First Ave. Apt 1Q, NY, NY 10029

United States Citizens
July 12, 2016

U.S. Department of Energy
Office of Nuclear Energy
Response to IPC
1000 Independence Ave. SW
Washington, DC 20585

Greetings, Members of the DOE

Thank you for this opportunity to comment on your plan for Consent-Based Siting for radioactive nuclear waste. Asking communities to go through this process of deciding whether or not they want to store radioactive nuclear waste will most likely - as it has in the past - result in environmental racism. Low-income and communities of color will be unfairly, unjustly targeted by this process.

Moving radioactive waste around the country by rail, truck or barge presents unavoidable risk to all along the way. We do not want "Mobile Chernobyls," Dirty Bombs," or "Floating Fukushimas." Nuclear experts say that Hardened On-Site Storage (HOSS) is the best solution we have for storage of radioactive nuclear waste.

Most importantly, **STOP MAKING NUCLEAR WASTE** - close existing plants and do not build new ones. The recent example of Diablo Canyon in California has shown us that it is possible to have a nuclear plant closure with 100% conversion to renewable energy and a program of "retain and retrain" - a just transition for its workers.

Expedite the transfer of irradiated nuclear fuel from densely-packed, over-crowded "wet" Storage pools into Hardened On-Site Storage (HOSS).

Store irradiated nuclear fuel in HOSS dry casks as safely and securely as possible, as close to the point of generation as possible, in a monitored, inspectable, retrievable way.

Geological repositories must be geologically suitable, socially acceptable and environmentally just.

Do not reprocess irradiated nuclear fuel. This would risk nuclear weapons proliferation, be astronomically expensive and cause environmental ruin downwind and downstream.

Preserve and maintain "wet" storage pools for emergency back up location and for HOSS cask-to-cask transfers.

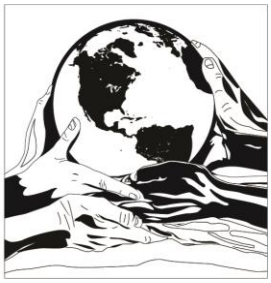
Thank you, Respectfully and in PEACE,

Consent-Based Siting

From: Wes Raymond [mailto:wesraymond.cacc@outlook.com]
Sent: Sunday, July 31, 2016 11:21 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Response to IPC

Response to IPC letter is attached.

Thank you,
Wes Raymond - Administrator
Citizens for Alternatives to Chemical Contamination
8735 Maple Grove Rd
Lake, MI 48632
989.544.3318
http://caccmi.org



Citizens for Alternatives to Chemical Contamination
8735 Maple Grove rd
Lake, MI 48632
989.544.3318
http://caccmi.org

7/31/2016

United States Department of Energy,

We do not consent to DOE rushing into parking lot dumps (so-called “centralized” or “consolidated interim storage,” in order to expedite the transfer of title and liability from the nuclear utilities that profited from the generation of high-level radioactive waste, onto the backs of taxpayers.

We do not consent to “centralized interim storage” facilities becoming ***de facto*** **permanent surface storage parking lot dumps** for high-level radioactive waste.

We do not consent to “games” of radioactive Russian roulette, radioactive hot potato, and radioactive musical chairs being played, when it comes to high-risk, high-level radioactive waste shipments on the roads, rails, and waterways.

We do not consent to the nonsense of shipping high-level radioactive waste to “centralized interim storage,” when permanent disposal could well involve shipping those very same wastes, right back to, or through, where they came from in the first place, heading in the opposite direction.

We do not consent to the nuclear establishment’s “return to sender” schemes with “centralized interim storage.” Had the Private Fuel Storage, LLC (PFS) parking lot dump – its license for construction and operation at the Skull Valley Goshutes Indian Reservation in Utah rubber-stamped by the U.S. Nuclear Regulatory Commission (NRC) a decade ago – actually opened, this nonsensical multiplication of transport risks could have occurred. PFS’s plan was to dump the wastes at Yucca Mountain, Nevada. But

its Plan B, should Yucca not open, was to "return to sender." Yucca has been cancelled. Had the Maine Yankee nuclear power plant, for example, sent its wastes to PFS, they would have been "returned to sender." More than 50 containers of high-risk, high-level radioactive waste, shipped *5,000 miles round-trip* through numerous states, accomplishing absolutely nothing.

We do not consent to DOE's oldest trick in the book, of trying to divide and conquer, by attempting to play "orphaned" waste communities off against the rest of us – many "stranded" waste communities have stated explicitly that DOE's *de facto* permanent parking lot dump shenanigans are done "not in our name." DOE's stated purpose for prioritizing "stranded" waste export to parking lot dumps – to free up decommissioned nuclear power plant sites for "unrestricted," productive "re-use," is a non-starter. Decommissioning regulations are so inadequate, supposedly "cleaned up" sites are still significantly contaminated with hazardous radioactivity, making re-use of those sites risky for current and future generations.

FLOATING FUKUSHIMAS ON SURFACE WATERS

We do not consent to radioactive waste barge shipments on the lakes and rivers of this country, the fresh drinking water supply for countless millions, nor on the seacoasts.

We do not consent to "Floating Fukushimas." There are some 26 atomic reactors in the U.S. that lack direct rail access. Yet DOE has chosen the "mostly rail" shipping scenario of high-level radioactive wastes as its preferred policy. Rail shipping containers weigh more than 100 tons. These cannot go down the highways. They are designed to go down railways. But to get these giant, very heavy containers to the nearest railhead, either heavy haul trucks, or barges on waterways, would have to be used. Barges raise the specter of a high-level radioactive waste shipment sinking, with the potential for disastrous releases of high-level radioactive waste into drinking water supplies and fisheries, or even a nuclear chain reaction on the bottom of the surface waterway (there is enough fissile U-235 and Pu-239 present in high-level radioactive waste that, if a critical mass forms in the sinking disaster, and water infiltrates the container, a nuclear chain reaction could be initiated, worsening radioactivity releases to the water body, and making emergency response a suicide mission, given the fatal gamma doses coming off the chain reaction).

We do not consent to high-level radioactive waste shipments on the Great Lakes; one barge sinking could radioactively contaminate the drinking water supply for 40 million people in two countries – eight states in the U.S., and two provinces in Canada – as well as a large number of Native American First Nations. The Palisades reactor in southwest Michigan, and the Kewaunee and Point Beach nuclear power plants in Wisconsin, were revealed by DOE in 2002 to be potential barge shipment points of origin. The barges would ply the waters of Lake Michigan, headwaters for the rest of the Great Lakes

downstream, and the direct drinking water supply for many millions of people, including the Chicago metro region.

We do not consent to high-level radioactive waste barge shipments from the Calvert Cliffs nuclear power plant in Maryland, to the Port of Baltimore on the Chesapeake Bay. A sinking could destroy decades of Bay restoration work in one fell swoop, putting countless watermen out of work forever, and wrecking the Bay's tourism and recreation industries, as well as its fragile, irreplaceable, vibrant, biologically diverse ecosystem.

We do not consent to high-level radioactive waste barge shipments from the Surry nuclear power plant in Virginia, to the Port of Norfolk on the James River. A sinking could ruin this historic river, and also impact the Chesapeake downstream.

We do not consent to Floating Fukushimas from the Salem/Hope Creek nuclear power plant in New Jersey traveling up the already badly polluted Delaware River to the Port of Wilmington.

We do not consent to Floating Fukushimas on the surface waters of New Jersey, New York, and Connecticut, surrounding the metropolitan New York City area, including: from New Jersey's Oyster Creek nuclear power plant, up the Jersey Shore, around Staten Island, New York, to the Port of Newark, New Jersey; from Indian Point nuclear power plant, down the Hudson River, past Manhattan, to the Port of Jersey City, New Jersey; and from the decommissioned Connecticut Yankee nuclear power plant site, down the Connecticut River, onto Long Island Sound, into the Port of New Haven, Connecticut. The very high security risks alone, of intentionally bringing ultra-hazardous high-level radioactive waste, into such close proximity to so many millions of people, is a non-starter.

We do not consent to Floating Fukushimas on Cape Cod Bay, Massachusetts Bay, and Boston Harbor, traveling from Pilgrim nuclear power plant to the Port of Boston.

We do not consent to Floating Fukushimas on the Mississippi River, traveling from the Grand Gulf nuclear power plant to the Port of Vicksburg in Mississippi.

We do not consent to Floating Fukushimas on the Tennessee River, traveling from the Browns Ferry nuclear power plant to Florence, Alabama.

We do not consent to Floating Fukushimas on the Missouri River, traveling from the Cooper nuclear power plant to the Port of Omaha in Nebraska.

We do not consent to Floating Fukushimas on the Pacific Coast, traveling from the Diablo Canyon nuclear power plant to Oxnard/Port of Hueneme in California.

We do not consent to Floating Fukushimas on south Florida's Atlantic Coast, traveling from St. Lucie nuclear power plant to Fort Lauderdale/Port of Everglades and/or from Turkey Point nuclear power plant to the Port of Miami.

We do not consent to Floating Fukushimas on any other surface waters in the U.S., whether they be fresh water drinking water supplies, or salt water fisheries.

MOBILE CHERNOBYLS/DIRTY BOMBS ON WHEELS

We do not consent to high-level radioactive waste truck and train shipments through the heart of major population centers; through the agricultural heartland; on, over, or alongside the drinking water supplies of our nation. Whether due to high-speed crashes, heavy crushing loads, high-temperature/long duration fires, falls from a great height, underwater submersions, collapsing transport infrastructure, or intentional attack with powerful or sophisticated explosives, such as anti-tank missiles or shaped charges, high-level radioactive waste shipments, if breached, could unleash catastrophic amounts of hazardous radioactivity into the environment.

We do not consent to heavy haul trucks (monster truck in front and back, two hundred wheels on the trailer in between, traveling only 3 miles per hour) as an end run attempt to transport very heavy rail casks to the nearest railhead, while attempting to avoid controversial, high-risk barge shipments.

We do not consent to Mobile Chernobyls, or Dirty Bombs on Wheels, traveling by railway through most states in the country under DOE's "mostly rail" shipping scheme.

We do not consent to Mobile Chernobyls, Fukushima Freeways, or Dirty Bombs on Wheels, traveling by highway through most states in the country, even under DOE's "mostly [but not entirely] rail" shipping scheme. (Casks designed for "legal-weight truck" shipments, as they are called, are significantly smaller and less heavy than rail casks, and would travel on interstate highways, and connecting roadways.)

We do not consent to containers, in violation of quality assurance and quality control (QA/QC) standards, being used to ship high-level radioactive waste. Commonwealth Edison/Exelon whistleblower Oscar Shirani, and NRC Midwest Region dry cask storage inspector, Dr. Ross Landsman, revealed major QA/QC violations with Holtec casks, 15 years ago. They questioned the structural integrity of Holtec casks *sitting still, going zero miles per hour*, let alone at 60 mph -- or faster -- on the rail lines. NRC has never adequately addressed these QA violations, so we have to assume they have continued right up to the present. Holtec containers have received an NRC rubber-stamp permit not only for on-site storage at more than a third of U.S. reactors, but also for rail/barge transport. To make matters worse, Holtec is the lead partner in the scheme to establish a parking lot dump in New Mexico. (The Private Fuel Storage, LLC parking lot dump targeted at the Skull Valley Goshute Indian Reservation, NRC rubber-stamped but later stopped despite this, would have utilized *4,000* Holtec casks, containing *40,000 metric tons* of irradiated nuclear fuel.) Holtec is not the only high-level radioactive waste container with QA/QC failures, however. NAC (Nuclear Assurance Corp.), VSCs (Ventilated Storage Casks), TN NUHOMS (TransNuclear), and others have violated QA/QC standards, as well. In fact, cask QA violations run rampant across industry, enabled by NRC complicity and collusion.

We do not consent to DOE's and industry's cynical attempt to "railroad" the American public on high-risk, high-level radioactive waste transport, by invoking the U.S. Constitution's Interstate Commerce Clause, to ram Mobile Chernobyls down our throats, through our communities. For starters, radioactive waste is not a commodity. It is a forever-deadly poison, with nowhere to go, never belonged on our living planet to begin with. We must stop making it.

ENVIRONMENTAL INJUSTICE/RADIOACTIVE RACISM

We do not consent to the environmental injustice and radioactive racism of yet again targeting low-income Native American communities with the most hazardous substances ever created. From 1987 to 1992, DOE's Nuclear Waste Negotiator wrote to every one of the many hundreds of federally recognized Native American tribes in the U.S., offering relatively large (for the tribes, anyway) sums of money in exchange for them "just to consider" hosting high-level radioactive waste parking lot dumps (the amount of money was exceedingly small, as compared to DOE's annual budgets, and especially as compared to nuclear power industry profit margins). DOE's Nuclear Waste Negotiator focused on 60-some tribes in particular. Mescalero Apache in New Mexico, and Skull Valley Goshutes in Utah, went the furthest. But traditionals like Rufina Marie Laws and Joe Geronimo at Mescalero, and Margene Bullcreek and Sammy Blackbear at Skull Valley, blocked the parking lot dumps in the end, after fierce battles, that left very deep wounds in those communities, for which the nuclear establishment bears responsibility. This resistance was assisted by Grace Thorpe, who not only blocked the parking lot dump targeted at her own Sauk and Fox Reservation in Oklahoma, but assisted environmental allies at reservations across the country to do the same. President Obama honored Thorpe for her anti-dump work, as a "Woman Taking the Lead to Save Our Planet," alongside the likes of Rachel Carson of *Silent Spring* fame, in his March

2009 Women's History Month proclamation. And yet, President Obama's own Blue Ribbon Commission on America's Nuclear Future, as well as his DOE, are yet again including Native American reservations on the target list for parking lot dumps. This most disturbing internal Obama administration contradiction has never been explained.

We do not consent to the targeting of nuclear power plant sites already heavily burdened with irradiated nuclear fuel to become parking lot dumps, importing other reactors' wastes. A study by Oak Ridge Nuclear Lab, for example, has singled out the Dresden nuclear power plant in Morris, IL as a top target for a parking lot dump. But Dresden is already heavily burdened with around a whopping 3,000 metric tons of irradiated nuclear fuel, in the storage pools at three atomic reactors, in the "overflow parking" dry cask storage installations, as well as the immediately adjacent General Electric-Morris reprocessing facility "wet storage" pool.

SITES CURRENTLY AT THE VERY TOP OF THE TARGET LIST FOR *DE FACTO* PERMANENT PARKING LOT DUMPS

We do not consent to the targeting of DOE sites, already heavily contaminated with radioactivity and burdened with high-level radioactive waste, to become parking lot dumps for the importation of other sites' or reactors' wastes. The proposal to open a parking lot dump in Eddy-Lea Counties in extreme southeastern New Mexico, near the Waste Isolation Pilot Project, is a case in point. WIPP is the U.S. national dump-site, in a salt formation 2,000 feet below ground, for trans-uranic contaminated radioactive wastes from the U.S. nuclear weapons complex. Although DOE assured the public that WIPP could not possibly leak in the first 10,000 years, and would leak at most once in the first 200,000 years, WIPP suffered a trans-uranic radioactive waste leak to the environment in year 15 of its operations, on Valentine's Day, 2014. Nearly two-dozen workers at the surface suffered inhalation doses of ultra-hazardous, alpha-emitting substances, including plutonium. Trans-uranics also fell out downwind, to be further distributed by wind and rain over time. The burst of a single barrel 2,000 feet underground caused the radioactivity release. The root cause of the burst was a chemical reaction due to the mixing of chemically reactive nitrates and lead in with the radioactive wastes, which sparked the ignition. The fire was sustained by the inclusion of organic (meaning fibrous, plant-based) *kitty litter*, meant to absorb liquids. The burst of the single barrel has already shut down WIPP for over two years. DOE estimates the recovery cost at $500 million; the *L.A. Times* estimates one billion dollars.

We do not consent to a *de facto* permanent parking lot dump targeted at Waste Control Specialists, LLC (WCS) in Andrews County, Texas. WCS applied to NRC for a construction and operation license on April 28, 2016. WCS already dumps all categories of so-called "low" level radioactive waste – Class A, B, and C – into the ground, either directly above, or immediately adjacent to, the Ogallala Aquifer. The Ogallala Aquifer serves as a vital supply of drinking and irrigation water for numerous states on the Great Plains, from Texas to South Dakota. WCS effectively serves as a national dump-site for such radioactive wastes.

(Several state environmental agency staffers resigned their career jobs in protest over the outrageous decision to allow WCS to open for "low" level radioactive waste dumping in the first place.) WCS also accepted many scores of barrels from Los Alamos Nuclear Lab in New Mexico, containing the same volatile mix as burst in the WIPP underground in 2014. Already, the potentially bursting barrels have sat out in the hot summer sun at WCS in 2014, 2015, and now 2016, with no end in sight. Heat fueling a chemical reaction, igniting combustibles, and pressure build-up, is the entire problem with the burst risk. If one or more barrels burst at WCS, into the open air of the surface environment, the releases of plutonium and other ultra-hazardous trans-uranic radioactive wastes could be significantly worse, in terms of downwind and downstream fallout, than the 2014 WIPP release, which originated 2,000 feet below ground, and had to follow a long, circuitous path, through thousands of feet of horizontal burial caverns and tunnels, as well as thousands of feet of vertical ventilation shaft, to reach the surface environment, and fallout over a wide area downwind. The barrels at WCS are *at* the surface environment! WCS accepting these potentially explosive barrels in such a great big hurry in the first place, without even knowing the risks they were getting into, shows what a careless company it is. It cannot and should not be trusted to store high-level radioactive waste, not even temporarily (although "interim" is a deception – the storage would become very long term, perhaps even permanent).

A second company, Advanced Fuel Cycle Initiative (AFCI), is targeting another west TX county for *de facto* permanent storage as well: Culberson. Given the large Hispanic American population in the area, as well as low-income levels, Environmental Justice concerns are raised, yet again, by these proposed west TX parking lot dumps. Much the same can be said regarding the populations in southeastern New Mexico, surrounding the proposed parking lot dump there.

Another parking lot dump target – Savannah River Site (SRS), South Carolina – also raises red flags about disproportionate impacts on people of color and low-income communities. SRS is already a badly radioactively contaminated region, due to decades of nuclear weapons production, and other related nuclear activities (such as mixed oxide plutonium fuel storage and fabrication, civilian high-level radioactive waste reprocessing, etc.). But in addition, the area also "hosts" the adjacent Barnwell, SC "low" level radioactive waste dump – a national dump for decades on end, long leaking. To make matters even worse, the area "hosts" the largest – in terms of number of reactors – nuclear power plant in the U.S., Vogtle. Vogtle Units 1 and 2 have already operated for decades; Units 3 and 4 are currently under construction. The nearby community of Shell Bluff, Georgia is predominantly African American and low-income. Targeting the SRS area with a high-level radioactive waste parking lot dump would just compound the environmental injustice even worse.

HIGH-LEVEL RADIOACTIVE WASTE STORAGE POOLS

We do not consent to the nuclear power industry, with NRC's blessing, keeping high-level radioactive waste at high-risk, high-density "wet" storage in waste pools, for years or decades into the future. NRC

decommissioning regulations, for example, allow pool storage for as long as 60-years post reactor shutdown (so, if the reactor had operated for 60 years, as NRC has permitted time and again, that would mean a total of 120 years of pool storage; NRC is now actively considering allowing 80 years of operations at reactors, which would then add up to 140 years of pool storage.). Nuclear utilities seek to defer dry cask storage costs as far off into the future as possible, by maximizing pool storage for as long as possible. Pools are so densely-packed, they have approached operating reactor core densities. Especially considering degradation of neutron absorbing structures (such as Boraflex panels) in the pools, this risks potentially deadly and disastrous nuclear chain reactions in the unshielded pool. But high-density storage also risks a sudden cooling water drain down, or a slower motion boil down. Either way, the worst case scenario would be a partial drain down, where irradiated nuclear fuel is partially exposed to air, with remaining pool water below blocking convection air currents, that would at least provide some (and perhaps still not enough) cooling to the overheating exposed irradiated nuclear fuel assemblies. Once exposed to air, the zirconium-clad fuel rods could reach ignition temperature within hours, initiating spontaneous combustion. The chemical reaction would turn exothermic, self-feeding, with the fire burning down the fuel rods, not unlike 4th of July sparklers. The pool would be unapproachable, due to lack of cooling water radiation shielding, with instantaneously deadly doses nearby. Thus, emergency responders would likely be blocked from intervening, making even suicide squad interventions ineffective. The radioactive Cesium-137 releases alone, to the environment, would be catastrophic, due to such a pool fire.

We do not consent to ongoing pool storage, due to pool leaks that, according to NRC in 2013, have already occurred at 13 pools across the U.S. This number can be expected to increase, with worsening age-related degradation at U.S. nuclear power plants. Such pool leaks harm soil, groundwater, surface water, and people and other living things downstream, up the food chain, and down the generations.

We do not consent to pools being dismantled during nuclear power plant decommissioning. Although pools should be off-loaded into hardened on-site storage ASAP (see below), and kept unloaded, the pool structures, systems, and components themselves should be left intact, maintained, and not dismantled or allowed to fall into disrepair. Keeping functional pools extant, albeit empty until needed, would provide an emergency location for failed cask to new replacement cask transfers of irradiated nuclear fuel, with needed radiation shielding. If pools are dismantled at decommissioning nuclear power plant sites (as has been the standard approach thus far), any cask-to-cask transfers would have to be done on an *ad hoc* basis, perhaps under a worsening emergency situation. There is no reason to paint ourselves into such a corner. Pools can be maintained to provide an emergency back-up transfer option. Although they should no longer be used for regular waste storage, as they are took risky.

NEED FOR HARDENED ON-SITE STORAGE (HOSS)

We do not consent to NRC's status quo, allowing nuclear utilities to store irradiated nuclear fuel for as long as 120 years in vulnerable storage pools, and to store high-level radioactive waste in vulnerable dry casks. Many hundreds of environmental, public interest, and social justice groups, representing all 50 states, have called for Hardened On-Site Storage (HOSS) for 15 years. HOSS calls for emptying of vulnerable storage pools into dry casks, but not into vulnerable status quo ones, as is currently done. This out of the frying pan, into the fire approach is unacceptable and dangerous. Dry casks must be designed and built well, with rigorous QA standards, to last not decades, but centuries. Dry cask storage must be safeguarded against leaks, accidents, natural disasters, and intentional attacks. Such health, safety, security, and environmental protections are not fulfilled by current, vulnerable dry cask storage permitted by NRC.

We do not consent to abandonment of high-level radioactive waste on the shores of the Great Lakes, on the banks of rivers, on the ocean coasts, etc., where it is currently stored. Such abandonment would lead to catastrophic releases of hazardous radioactivity over time, into the drinking water supplies for countless millions of people, into major fisheries, etc. This is especially true under climate chaos scenarios, with extreme weather events at such locations, and rising sea levels, causing major flooding. Many of these very same sites are also vulnerable to earthquakes, tsunamis, and other natural disasters. As environmental groups have long advocated, high-level radioactive wastes should be stored as close to the point of origin as possible, as safely as possible. Certain sites are not appropriate for HOSS, just as they were not appropriate for reactors in the first place. Prairie Island, Minnesota, is a case in point, home to the Prairie Island Indian Community, which never granted its consent to the construction and operation of the two atomic reactors there, nor to the generation and storage of high-level radioactive waste, just hundreds of yards from their community. While wastes need to be relocated from Prairie Island to higher ground, out of the flood plain of the Mississippi River, this should be done in the immediate area, as close as possible, as safely as possible. This is no justification to launch a national Mobile Chernobyl/parking lot dump campaign, creating a whole new set of potentially catastrophic risks elsewhere. In fact, Prairie Island nuclear power plant's owner, Xcel Energy/Northern States Power, has been an infamous leader in such schemes, for decades, including the radioactively racist targeting of PFS at the Skull Valley Goshutes Indian Reservation in Utah.

We do not consent to NRC's science fiction fantasy of non-existent, unfunded "Dry Transfer Systems," and the absurd notion that these Dry Transfer Systems and dry cask storage installations, will be replaced, in their entirety, once every hundred years, whether the storage is at current nuclear power plant sites, or away-from-reactor locations (such as *de facto* permanent parking lot dumps). Dr. Mark Cooper of Vermont Law School has estimated that the first 200 years of irradiated nuclear fuel management in the U.S. – assuming a single repository, and a certain number of centralized interim storage sites – will already cost ratepayers, and/or taxpayers, $210 to 350 billion – effectively doubling the cost of nuclear-generated electricity, if accounted for (which it never has been, till Dr. Cooper did the calculations on his own initiative, on behalf of an environmental coalition intervening in NRC's Nuclear Waste Confidence/Continued Storage of Spent Nuclear Fuel proceeding). But 200 years is a drop in the ocean, compared to the million years, or longer, high-level radioactive waste remains hazardous. We need to stop making it, by shutting down reactors and replacing them with energy efficiency and

renewable sources, such as wind power and solar photo-voltaic (PV). And we need to figure out how to keep the radioactive waste that already exists, isolated from the living environment, forevermore. As Arnie Gundersen, Chief Engineers of Fairewinds Associates, Inc., has put it: *"We all know that the wind doesn't blow consistently and the sun doesn't shine every day, but the nuclear industry would have you believe that humankind is smart enough to develop techniques to store nuclear waste for a quarter of a million years, but at the same time humankind is so dumb we can't figure out a way to store solar electricity overnight. To me that doesn't make sense."*

Yucca Mountain

We do not consent to the proposed dumpsite for high-level radioactive waste at Yucca Mountain, Nevada. It was wisely cancelled and defunded by the Obama administration and DOE in 2010, as it should have been from the beginning, in the early 1980s. Obama and the Energy Secretaries serving under him declared Yucca "unworkable." Unfolding what "unworkable" means would have to include that the site is not scientifically suitable. It is a very active earthquake zone. It is a volcanic zone. It is saturated with water underground. It has highly corrosive chemistry in the rock, which, combined with the thermal heat of the waste, and the surrounding moisture, would create the perfect storm for burial container failure in a relatively short period of time. If irradiated nuclear fuel were ever to be buried at Yucca, it would leak out massively over time. The catastrophic amounts of hazardous radioactivity would be carried by Yucca's groundwater to points downstream, including the Amargosa Valley agricultural region, one of Nevada's most productive, as well as Death Valley, home to the Timbisha Shoshone Nation.

Unworkable also means that Yucca is Western Shoshone Indian Nation land, by the "peace and friendship" Treaty of Ruby Valley of 1863. The Yucca dump is an unacceptable environmental justice violation.

Unworkable also means that Nevada does not consent to the dump. It never has. Yucca Mountain, Nevada was singled out as the only site in the U.S. for further consideration as a potential dump-site, by the "Screw Nevada bill" of 1987, as it is most commonly referred to. This amendment to the Nuclear Waste Policy Act of 1983 was orchestrated by such powerful state congressional delegations as Texas and Washington State – other Western targets, which also happened to hold the U.S. House Speakership, and U.S. House Majority Leadership. Conspiring with such Eastern states also New Hampshire, these states successfully got themselves off the short list for the country's high-level radioactive waste dump, by "screwing Nevada." This turned a science-based site search comparison, including regional equity (a dump in the West, but also one in the East, where the vast majority of atomic reactors are located to begin with), into a ram it down Nevada's throat case of raw politics (Nevada had only one U.S. Representative in 1987; Texas and Washington, by comparison, had three dozen, and one dozen, respectively.) Despite this, the State of Nevada has successfully fought tooth and nail, expressing its non-consent to the Yucca dump, for 30 years now.

The Yucca dump is a non-starter, and must be removed from any further consideration.

Nuclear Power and High-Level Radioactive Waste Generation

We do not consent to the generation of irradiated nuclear fuel in the first place. Both the Blue Ribbon Commission on America's Nuclear Future, and now DOE's ONE (Office of Nuclear Energy), have cynically framed the radioactive waste problem as a minor one, to be solved as expeditiously – and seemingly flippantly – as possible, so that nuclear power can go on its merry way, making ever more forever deadly high-level radioactive waste, for which there is still no safe, sound solution, and may never be. As Dr. Judy Johnsrud of Environmental Coalition on Nuclear Power put it, radioactive waste may well be "trans-solutional," a problem we have created that is beyond our ability to solve. And as Beyond Nuclear board member Kay Drey has put it, the mountain of radioactive waste is now more than 70 years high, and we still don't know what to do with the first cupful.

CACC does not consent to the continued use of nuclear power

Risks to the biosphere, and by extension the human species, must be reduced at all costs. Radioactive materials formed during the formation of the Earth were eventually buried deep in the Earth's crust and isolated, allowing for the evolution of life and the biosphere. Mining and use of radioactive material poses a grave risk to the health of the biosphere. A steady stream of nuclear accidents and near-misses over the last 70 years has and continues to pose a grave risk to the health of the biosphere. The US nuclear power plant fleet must be decommissioned immediately. Use of all technologies based on radioactive materials and nuclear reaction must be ceased. The potential negative consequences of these actions pale in comparison to the potential negative consequences of continued nuclear accidents.

-CACC

Citizens for Alternatives to Chemical Contamination
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Consent-Based Siting

From: northbeachcomm@cs.com [mailto:northbeachcomm@cs.com]
Sent: Thursday, July 28, 2016 1:13 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Comments, July 28th; nuclear waste

Hello Dept. of Energy;

We do not consent to DOE rushing into parking lot dumps (so-called "centralized" or "consolidated interim storage," in order to expedite the transfer of title and liability from the nuclear utilities that profited from the generation of high-level radioactive waste, onto the backs of taxpayers.

We do not consent to "centralized interim storage" facilities becoming ***de facto*** **permanent surface storage parking lot dumps** for high-level radioactive waste.

We do not consent to "games" of radioactive Russian roulette, radioactive hot potato, and radioactive musical chairs being played, when it comes to high-risk, high-level radioactive waste shipments on the roads, rails, and waterways through most states.

We do not consent to the nonsense of shipping high-level radioactive waste to "centralized interim storage," when permanent disposal could well involve shipping those very same wastes, right back to, or through, where they came from in the first place, heading in the opposite direction.

We do not consent to the nuclear establishment's "return to sender" schemes with "centralized interim storage." Had the Private Fuel Storage, LLC (PFS) parking lot dump – its license for construction and operation at the Skull Valley Goshutes Indian Reservation in Utah rubber-stamped by the U.S. Nuclear Regulatory Commission (NRC) a decade ago – actually opened, this nonsensical multiplication of transport risks could have occurred. PFS's plan was to dump the wastes at Yucca Mountain, Nevada. But its Plan B, should Yucca not open, was to "return to sender." Yucca has been cancelled. Had the Maine Yankee nuclear power plant, for example, sent its wastes to PFS, they would have been "returned to sender." More than 50 containers of high-risk, high-level radioactive waste, shipped *5,000 miles round-trip* through numerous states, accomplishing absolutely nothing.

We do not consent to DOE's oldest trick in the book, of trying to divide and conquer, by attempting to play "orphaned" waste communities off against the rest of us – many "stranded" waste communities have stated explicitly that DOE's *de facto* permanent parking lot dump shenanigans are done "not in our name." DOE's stated purpose for prioritizing "stranded" waste export to parking lot dumps – to free up decommissioned nuclear power plant sites for "unrestricted," productive "re-use," is a non-starter. Decommissioning regulations are so inadequate, supposedly "cleaned up" sites are still significantly

contaminated with hazardous radioactivity, making re-use of those sites risky for current and future generations.
Thank you;
Lee Rimeer
555 Lake Lena
Winter Haven, Fla
33823

Consent-Based Siting

From: Lora Schwarzberg [mailto:watr3colr@yahoo.com]
Sent: Friday, July 08, 2016 8:08 AM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: comments on nuclear waste storage

Below are some suggestions for guidelines:

1. Stop making more & focus on transferring to renewables
2. Expedite the transfer of irradiated nuclear fuel from "wet" storage into dry casks.
3. Store irradiated nuclear must be stored so it can be monitored, inspectable, retrievable.
4. Transport irradiated nuclear fuel only once.
5. Geological repositories must be scientifically suitable,socially acceptable, and environmentally just.
6. Do not reprocessirradiated nuclear fuel.
7. Preserve and maintain "wet" storage pools as an emergency back up location for cask-to-cask HOSS transfers.
8. Carefully pass information about storing irradiated nuclear fuel as safely as possible from one generation to the next.
9. Address the shortfall in funding for forevermore storage of high-level radioactive waste.
10. Environmental justice demands that Native American communities and lands, as well as those of other low income and/or people of color communities, never again be targeted for high-level radioactive waste dumps.
11. Sincerely, Lora Schwartzberg

Consent-Based Siting

From: Nita Sembrowich [mailto:sembro@verizon.net]
Sent: Thursday, July 28, 2016 1:15 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Response to IPC

To whom it may concern:

I support all the following statements. I could recast these statements in my own words, but the "Beyond Nuclear" summary below says it as well as I would or could. To my mind, the issue of what to do with nuclear waste is a deal breaker as far as nuclear power is concerned. There is simply no way to store the waste safely and securely for the time period required, which exceeds the entire time span that civilization as we now know it has existed. It is mind boggling that we would even consider endangering our population, our drinking water, and our agricultural heartland by shipping nuclear waste around the nation on trucks or trains, siting nuclear waste on barges, or locating a giant nuclear waste dump in an earthquake zone or anywhere near the Great Lakes. It is absolutely appalling that we re-victimize Native Americans and other low-income communities and communities of color by sticking them with radioactive dump sites on top of the other wrongs they suffer, even as we idealize Native Americans' traditional ecological awareness. It is mind-boggling to me too that we have learned nothing from Chernobyl or the ongoing tsunami-related nuclear disasters in Japan. This alone demonstrates to me that we are not capable-- as a nation or as a species-- of managing nuclear power and nuclear waste intelligently or safely.

Thank you for accepting my comments.

THE RUSH JOB TO *DE FACTO* PERMANENT PARKING LOT DUMPS, FOR ALL THE WRONG REASONS: We do not consent to DOE rushing into *de facto* permanent parking lot dumps (so-called “centralized” or “consolidated interim storage”), in order to expedite the transfer of title and liability from the nuclear utilities that profited from the generation of high-level radioactive waste, onto the backs of taxpayers.

FLOATING FUKUSHIMAS ON SURFACE WATERS: We do not consent to radioactive waste barge shipments on the lakes and rivers of this country, the fresh drinking water supply for countless millions, nor on the seacoasts. In addition to a disastrous radioactive release if the shipping container is breached, infiltrating water could spark a nuclear chain reaction, if a critical mass forms, due to the fissile U-235 and Pu-239 still present in the waste.

MOBILE CHERNOBYLS/DIRTY BOMBS ON WHEELS: We do not consent to high-level radioactive waste truck and train shipments through the heart of major population centers; through the agricultural heartland; on, over, or alongside the drinking water supplies of our nation. Whether due to high-speed crashes, heavy crushing loads, high-temperature/long duration fires, falls from a great height, underwater submersions, collapsing

transport infrastructure, or intentional attack with powerful or sophisticated explosives, such as anti-tank missiles or shaped charges, high-level radioactive waste shipments, if breached, could unleash catastrophic amounts of hazardous radioactivity into the environment.

ENVIRONMENTAL INJUSTICE/RADIOACTIVE RACISM: We do not consent to the targeting, yet again, of low-income, Native American, and other communities of color, with high-level radioactive waste parking lot dumps. It is most ironic that President Obama's Blue Ribbon Commission on America's Nuclear Future, and his DOE, have yet again targeted Native Americans. Obama honored Sauk and Fox environmental activist Grace Thorpe for defending her reservation in Oklahoma against a parking lot dump, and then assisting allies at dozens of other reservations being targeted by DOE's Nuclear Waste Negotiator. Obama praised Thorpe as a "Woman Taking the Lead to Save Our Planet," alongside the likes of Rachel Carson of *Silent Spring* fame, in his March 2009 Women's History Month proclamation. Similarly, Yucca Mountain, Nevada is Western Shoshone Indian land, as the U.S. government acknowledged by signing a treaty. In addition, Yucca is not scientifically suitable. It is an active earthquake zone, a volcanic zone, and water-saturated underground. If waste is ever buried there, it will leak massively into the environment. And the State of Nevada has never consented to becoming the country's high-level radioactive waste dump.

SITES CURRENTLY AT THE VERY TOP OF THE TARGET LIST FOR *DE FACTO* PERMANENT PARKING LOT DUMPS: We do not consent to the targeting of nuclear power plants, radioactive waste dumps, or DOE sites, already heavily contaminated with radioactivity and burdened with high-level radioactive waste, to become parking lot dumps for the importation of other sites' or reactors' wastes. DOE, NRC, and industry's top targets include Waste Control Specialists in Andrews County,
TX; Eddy-Lea Counties, NM, near DOE's Waste Isolation Pilot Plant; DOE's Savannah River Site, SC; Dresden nuclear power plant in Morris, IL; the list goes on.

(continued over)

RISKS OF HIGH-LEVEL RADIOACTIVE WASTE STORAGE POOLS, AND NEED FOR HARDENED ON-SITE STORAGE (HOSS): As just re-confirmed by the National Academies of Science, and Princeton U. researchers Von Hippel and Schoeppner, pools are at risk of fires that could unleash catastrophic amounts of hazardous Cesium-137 into the environment over a wide region. Since 2002, a coalition of hundreds of environmental and public interest groups, representing all 50 states, has called for expedited transfer of high-level radioactive waste from vulnerable pools into hardened dry casks, designed and built to last not decades but centuries, without leaking, safeguarded against accidents and natural disasters, and secured against attack.

NUCLEAR POWER AND HIGH-LEVEL RADIOACTIVE WASTE GENERATION: The mountain of radioactive waste in the U.S. has grown 70 years high, and we still don't know what to do with the first cupful. Radioactive waste may well prove to be a "trans-solutional" problem, one created by humans, but beyond our ability to solve. The only safe, sound solution for radioactive waste is to not make it in the first place. Reactors should be permanently shut down, to stop the generation of high-level radioactive waste for which we have no good solution.

Consent-Based Siting

From: Susan Shapiro [mailto:susan@hitoshapirolaw.com]
Sent: Saturday, July 30, 2016 6:21 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Response to IPC, Invitation for Public Comment Consent Based Siting

Please find attached my comments regarding Response to IPC, Invitation for Public Comment Consent Based Siting.

If you have any problems opening these files please contact me at (845) 371-2100.

Sincerely yours,

Susan H. Shapiro, Esq.

SUSAN H. SHAPIRO **ATTORNEY AT LAW**

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7/30/16

U.S. Department of Energy, Office of Nuclear Energy
1000 Independence Ave SW., Washington, DC 20585.
Via email: consentbasedsiting@hq.doe.gov

RE: Response to IPC, Invitation for Public Comment Consent Based Siting

We, the people of these United States of America, DO NOT consent to the Department of Energy's ("DOE") so called "consent-based siting" of Radioactive Waste Dumps in "centralized" or "consolidated interim storage," in order to expedite the transfer of title and liability from the nuclear utilities that profited from the generation of high-level radioactive waste, onto the backs of communities, without scientifically proven, funded, permanent waste safe storage plans.

Bottom line is the farce the DOE continues to perpetuate needs to stop regarding nuclear waste from nuclear energy and nuclear weapons production. Nuclear waste production must stop immediately since simply there is no scientific, safe temporary permanent storage solution, as nuclear waste remains toxic for longer than humanity has existed. Additionally ever nuclear reactor in the country is leaking radioactive tritium and other nuclides into the environment. Nuclear fission is a scientific experiment that has gone wrong, and we, human beings, to no know how to manage it.

It is a dangerous act of malfeasance for the DOE to approve any plan to transport nuclear waste shipments over roadways, on rails and down our rivers throughout the nation and in doing so endanger the entire nation.

Since after over 50 years of nuclear fission in the United States there is still not feasible safe storage solution for nuclear waste – the answer must be to stop making the waste. This is not rocket science but simple common sense.

If you don't know how to fix something, then don't keep breaking it over and over again to make an even bigger mess.

So called "centralized interim storage" is nonsensical – as the heat waste problem of nuclear waste, is only exacerbated by piling large quantities of nuclear waste together. The scientific, not the political, reason Yucca Mountain failed, has to do with heat waste and the inability of engineers to be able to guarantee that the rock surrounding the waste would not melt and in turn pollute drinking water supplies. (see attached: K. Pruess and Y. Tsang, "*Modeling of Strongly Heat-Driven Flow Processes at Potential High-Level Nuclear Waste Repository at Yucca Mountain, Nevada*, Lawrence Berkley Laboratory, January 1993)

We do not consent to DOE's oldest trick in the book, of trying to divide and conquer, by attempting to play "orphaned" waste communities off against the rest of us – many "stranded" waste communities have stated explicitly that DOE's *de facto* permanent parking lot dump shenanigans are done "not in our name." DOE's stated purpose for prioritizing "stranded" waste export to parking lot dumps – to free up decommissioned nuclear power plant sites for "unrestricted," productive "re-use," is a non-starter. Decommissioning regulations are so inadequate, supposedly "cleaned up" sites are still significantly contaminated with hazardous radioactivity, making re-use of those sites risky for current and future generations and adding more waste to such sites will only add to the already existing problems.

FLOATING FUKUSHIMAS ON SURFACE WATERS

We do not consent to radioactive waste barge shipments on the lakes and rivers of this country, the fresh drinking water supply for countless millions, nor on the seacoasts. Specifically, we do not, and never will consent to the Hudson River being used to transport nuclear waste through the Hudson Valley past 20 million Americans in New York City metropolitan area.

Accidents happen, terrorism happens and for the DOE to shut it eyes and somehow believe they can prevent a nuclear waste accident from happening is nothing more than magical thinking.

We do not consent to "Floating Fukushimas." There are some 26 atomic reactors in the U.S. that lack direct rail access, including Indian Point. Yet DOE has chosen the "mostly rail" shipping scenario of high-level radioactive wastes as its preferred policy. Rail shipping containers weigh more than 100 tons. These cannot go down the highways. They are designed to go down railways. But to get these giant, very heavy containers to the nearest railhead, either heavy haul trucks, or barges on waterways, would have to be used. Barges raise the specter of a high-level radioactive waste shipment sinking, with the potential for disastrous releases of high-level radioactive waste into drinking water supplies and fisheries, or even a nuclear chain reaction on the bottom of the surface waterway (there is enough fissile U-235 and Pu-239 present in high-level radioactive waste that, if a critical mass forms in the sinking disaster, and water infiltrates the container, a nuclear chain reaction could be initiated, worsening radioactivity releases to the water body, and making emergency response a suicide mission, given the fatal gamma doses coming off the chain reaction).

We do not consent to Floating Fukushimas on the surface waters of New Jersey, New York, and Connecticut, surrounding the metropolitan New York City area, including: from New Jersey's Oyster Creek nuclear power plant, up the Jersey Shore, around Staten Island, New York, to the Port of Newark, New Jersey; from Indian Point nuclear power plant, down the Hudson River, past Manhattan, to the Port of Jersey City, New Jersey; and from the decommissioned Connecticut Yankee nuclear power plant site, down the Connecticut River, onto Long Island Sound, into the Port of New Haven, Connecticut. The very high security risks alone, of intentionally bringing ultra-hazardous high-level radioactive waste, into such close proximity to so many millions of people, is a non-starter.

We do not consent to high-level radioactive waste shipments on the Great Lakes; one barge sinking could radioactively contaminate the drinking water supply for 40 million people in two countries – eight states in the U.S., and two provinces in Canada – as well as a large number of Native American First Nations. The Palisades reactor in southwest Michigan, and the Kewaunee and Point Beach nuclear power plants in Wisconsin, were revealed by DOE in 2002 to be potential barge shipment points of origin. The barges would ply the waters of Lake Michigan, headwaters for the rest of the Great Lakes downstream, and the direct drinking water supply for many millions of people, including the Chicago metro region.

We do not consent to high-level radioactive waste barge shipments from the Calvert Cliffs nuclear power plant in Maryland, to the Port of Baltimore on the Chesapeake Bay. A sinking could destroy decades of Bay restoration work in one fell swoop, putting countless watermen out of work forever, and wrecking the Bay's tourism and recreation industries, as well as its fragile, irreplaceable, vibrant, biologically diverse ecosystem.

We do not consent to high-level radioactive waste barge shipments from the Surry nuclear power plant in Virginia, to the Port of Norfolk on the James River. A sinking could ruin this historic river, and also impact the Chesapeake downstream.

We do not consent to Floating Fukushimas from the Salem/Hope Creek nuclear power plant in New Jersey traveling up the already badly polluted Delaware River to the Port of Wilmington.

We do not consent to Floating Fukushimas on Cape Cod Bay, Massachusetts Bay, and Boston Harbor, traveling from Pilgrim nuclear power plant to the Port of Boston.

We do not consent to Floating Fukushimas on the Mississippi River, traveling from the Grand Gulf nuclear power plant to the Port of Vicksburg in Mississippi.

We do not consent to Floating Fukushimas on the Tennessee River, traveling from the Browns Ferry nuclear power plant to Florence, Alabama.

We do not consent to Floating Fukushimas on the Missouri River, traveling from the Cooper nuclear power plant to the Port of Omaha in Nebraska.

We do not consent to Floating Fukushimas on the Pacific Coast, traveling from the Diablo Canyon nuclear power plant to Oxnard/Port of Hueneme in California.

We do not consent to Floating Fukushimas on south Florida's Atlantic Coast, traveling from St. Lucie nuclear power plant to Fort Lauderdale/Port of Everglades and/or from Turkey Point nuclear power plant to the Port of Miami.

We do not consent to Floating Fukushimas on any other surface waters in the U.S., whether they be fresh water drinking water supplies, or salt water fisheries.

MOBILE CHERNOBYLS/DIRTY BOMBS ON WHEELS

We do not consent to high-level radioactive waste truck and train shipments through the heart of major population centers; through the agricultural heartland; on, over, or alongside the drinking water supplies of our nation. Whether due to high-speed crashes, heavy crushing loads, high-temperature/long duration fires, falls from a great height, underwater submersions, collapsing transport infrastructure, or intentional attack with powerful or sophisticated explosives, such as anti-tank missiles or shaped charges, high-level radioactive waste shipments, if breached, could unleash catastrophic amounts of hazardous radioactivity into the environment.

We do not consent to heavy haul trucks (monster truck in front and back, two hundred wheels on the trailer in between, traveling only 3 miles per hour) as an end run attempt to transport very heavy rail casks to the nearest railhead, while attempting to avoid controversial, high-risk barge shipments.

We do not consent to Mobile Chernobyls, or Dirty Bombs on Wheels, traveling by railway through most states in the country under DOE's "mostly rail" shipping scheme.

We do not consent to Mobile Chernobyls, Fukushima Freeways, or Dirty Bombs on Wheels, traveling by highway through most states in the country, even under DOE's "mostly [but not entirely] rail" shipping scheme. (Casks designed for "legal-weight truck" shipments, as they are called, are significantly smaller and less heavy than rail casks, and would travel on interstate highways, and connecting roadways.)

We do not consent to containers, in violation of quality assurance and quality control (QA/QC) standards, being used to ship high-level radioactive waste. Commonwealth Edison/Exelon whistleblower Oscar Shirani, and NRC Midwest Region dry cask storage inspector, Dr. Ross Landsman, revealed major QA/QC violations with Holtec casks, 15 years ago. They questioned the structural integrity of Holtec casks *sitting still, going zero miles per hour*, let alone at 60 mph -- or faster -- on the rail lines. NRC has never adequately addressed these QA violations, so we have to assume they have continued

right up to the present. Holtec containers have received an NRC rubber-stamp permit not only for on-site storage at more than a third of U.S. reactors, but also for rail/barge transport. To make matters worse, Holtec is the lead partner in the scheme to establish a parking lot dump in New Mexico. (The Private Fuel Storage, LLC parking lot dump targeted at the Skull Valley Goshute Indian Reservation, NRC rubber-stamped but later stopped despite this, would have utilized *4,000* Holtec casks, containing *40,000 metric tons* of irradiated nuclear fuel.) Holtec is not the only high-level radioactive waste container with QA/QC failures, however. NAC (Nuclear Assurance Corp.), VSCs (Ventilated Storage Casks), TN NUHOMS (TransNuclear), and others have violated QA/QC standards, as well. In fact, cask QA violations run rampant across industry, enabled by NRC complicity and collusion.

Additionally, the Holtec casks current in use, create generation of new Carbon-14 atoms continuously as radioactive methane and C02. Until the DOE has conducted a comprehensive study and provides comprehensive real time monitoring of the newly create carbon it cannot continue use of the inadequate Holtec casking system.

We do not consent to DOE's and industry's cynical attempt to "railroad" the American public on high-risk, high-level radioactive waste transport, by invoking the U.S. Constitution's Interstate Commerce Clause, to ram Mobile Chernobyls down our throats, through our communities. For starters, radioactive waste is not a commodity. It is a forever-deadly poison, with nowhere to go, never belonged on our living planet to begin with. We must stop making it.

ENVIRONMENTAL INJUSTICE/RADIOACTIVE RACISM

We do not consent to the environmental injustice and radioactive racism of yet again targeting low-income Native American communities and other Environmental Justice Communities with the most hazardous substances ever created. From 1987 to 1992, DOE's Nuclear Waste Negotiator wrote to every one of the many hundreds of federally recognized Native American tribes in the U.S., offering relatively large (for the tribes, anyway) sums of money in exchange for them "just to consider" hosting high-level radioactive waste parking lot dumps (the amount of money was exceedingly small, as compared to DOE's annual budgets, and especially as compared to nuclear power industry profit margins). DOE's Nuclear Waste Negotiator focused on 60-some tribes in particular. Mescalero Apache in New Mexico, and Skull Valley Goshutes in Utah, went the furthest. But traditionals like Rufina Marie Laws and Joe Geronimo at Mescalero, and Margene Bullcreek and Sammy Blackbear at Skull Valley, blocked the parking lot dumps in the end, after fierce battles, that left very deep wounds in those communities, for which the nuclear establishment bears responsibility. This resistance was assisted by Grace Thorpe, who not only blocked the parking lot dump targeted at her own Sauk and Fox Reservation in Oklahoma, but assisted environmental allies at reservations across the country to do the same. President Obama honored Thorpe for her anti-dump work, as a "Woman Taking the Lead to Save Our Planet," alongside the likes of Rachel Carson of *Silent Spring* fame, in his March 2009 Women's History Month proclamation. And yet, President Obama's own Blue Ribbon Commission on America's Nuclear Future, as well

as his DOE, are yet again including Native American reservations on the target list for parking lot dumps. This most disturbing internal Obama administration contradiction has never been explained.

We do not consent to the targeting of nuclear power plant sites already heavily burdened with irradiated nuclear fuel to become parking lot dumps, importing other reactors' wastes. A study by Oak Ridge Nuclear Lab, for example, has singled out the Dresden nuclear power plant in Morris, IL as a top target for a parking lot dump. But Dresden is already heavily burdened with around a whopping 3,000 metric tons of irradiated nuclear fuel, in the storage pools at three atomic reactors, in the "overflow parking" dry cask storage installations, as well as the immediately adjacent General Electric-Morris reprocessing facility "wet storage" pool.

SITES CURRENTLY AT THE VERY TOP OF THE TARGET LIST FOR *DE FACTO* PERMANENT PARKING LOT DUMPS

We do not consent to the targeting of DOE sites, already heavily contaminated with radioactivity and burdened with high-level radioactive waste, to become parking lot dumps for the importation of other sites' or reactors' wastes. The proposal to open a parking lot dump in Eddy-Lea Counties in extreme southeastern New Mexico, near the Waste Isolation Pilot Project, is a case in point. WIPP is the U.S. national dump-site, in a salt formation 2,000 feet below ground, for trans-uranic contaminated radioactive wastes from the U.S. nuclear weapons complex. Although DOE assured the public that WIPP could not possibly leak in the first 10,000 years, and would leak at most once in the first 200,000 years, WIPP suffered a trans-uranic radioactive waste leak to the environment in year 15 of its operations, on Valentine's Day, 2014. Nearly two-dozen workers at the surface suffered inhalation doses of ultra-hazardous, alpha-emitting substances, including plutonium. Trans-uranics also fell out downwind, to be further distributed by wind and rain over time. The burst of a single barrel 2,000 feet underground caused the radioactivity release. The root cause of the burst was a chemical reaction due to the mixing of chemically reactive nitrates and lead in with the radioactive wastes, which sparked the ignition. The fire was sustained by the inclusion of organic (meaning fibrous, plant-based) *kitty litter*, meant to absorb liquids. The burst of the single barrel has already shut down WIPP for over two years. DOE estimates the recovery cost at $500 million; the *L.A. Times* estimates one billion dollars.

We do not consent to a *de facto* permanent parking lot dump targeted at Waste Control Specialists, LLC (WCS) in Andrews County, Texas. WCS applied to NRC for a construction and operation license on April 28, 2016. WCS already dumps all categories of so-called "low" level radioactive waste – Class A, B, and C – into the ground, either directly above, or immediately adjacent to, the Ogallala Aquifer. The Ogallala Aquifer serves as a vital supply of drinking and irrigation water for numerous states on the Great Plains, from Texas to South Dakota. WCS effectively serves as a national dump-site for such radioactive wastes. (Several state environmental agency staffers resigned their career jobs in protest over the outrageous decision to allow WCS to open for "low" level radioactive waste dumping in the first place.) WCS also accepted many scores of barrels

from Los Alamos Nuclear Lab in New Mexico, containing the same volatile mix as burst in the WIPP underground in 2014. Already, the potentially bursting barrels have sat out in the hot summer sun at WCS in 2014, 2015, and now 2016, with no end in sight. Heat fueling a chemical reaction, igniting combustibles, and pressure build-up, is the entire problem with the burst risk. If one or more barrels burst at WCS, into the open air of the surface environment, the releases of plutonium and other ultra-hazardous trans-uranic radioactive wastes could be significantly worse, in terms of downwind and downstream fallout, than the 2014 WIPP release, which originated 2,000 feet below ground, and had to follow a long, circuitous path, through thousands of feet of horizontal burial caverns and tunnels, as well as thousands of feet of vertical ventilation shaft, to reach the surface environment, and fallout over a wide area downwind. The barrels at WCS are *at* the surface environment! WCS accepting these potentially explosive barrels in such a great big hurry in the first place, without even knowing the risks they were getting into, shows what a careless company it is. It cannot and should not be trusted to store high-level radioactive waste, not even temporarily (although "interim" is a deception – the storage would become very long term, perhaps even permanent).

A second company, Advanced Fuel Cycle Initiative (AFCI), is targeting another west TX county for *de facto* permanent storage as well: Culberson. Given the large Hispanic American population in the area, as well as low-income levels, Environmental Justice concerns are raised, yet again, by these proposed west TX parking lot dumps. Much the same can be said regarding the populations in southeastern New Mexico, surrounding the proposed parking lot dump there.

Another parking lot dump target – Savannah River Site (SRS), South Carolina – also raises red flags about disproportionate impacts on people of color and low-income communities. SRS is already a badly radioactively contaminated region, due to decades of nuclear weapons production, and other related nuclear activities (such as mixed oxide plutonium fuel storage and fabrication, civilian high-level radioactive waste reprocessing, etc.). But in addition, the area also "hosts" the adjacent Barnwell, SC "low" level radioactive waste dump – a national dump for decades on end, long leaking. To make matters even worse, the area "hosts" the largest – in terms of number of reactors – nuclear power plant in the U.S., Vogtle. Vogtle Units 1 and 2 have already operated for decades; Units 3 and 4 are currently under construction. The nearby community of Shell Bluff, Georgia is predominantly African American and low-income. Targeting the SRS area with a high-level radioactive waste parking lot dump would just compound the environmental injustice even worse.

HIGH-LEVEL RADIOACTIVE WASTE STORAGE POOLS

We do not consent to the nuclear power industry, with NRC's blessing, keeping high-level radioactive waste at high-risk, high-density "wet" storage in waste pools, for years or decades into the future. NRC decommissioning regulations, for example, allow pool storage for as long as 60-years post reactor shutdown (so, if the reactor had operated for 60 years, as NRC has permitted time and again, that would mean a total of 120 years of pool storage; NRC is now actively considering allowing 80 years of operations at

reactors, which would then add up to 140 years of pool storage.). Nuclear utilities seek to defer dry cask storage costs as far off into the future as possible, by maximizing pool storage for as long as possible. Pools are so densely-packed, they have approached operating reactor core densities. Especially considering degradation of neutron absorbing structures (such as Boraflex panels) in the pools, this risks potentially deadly and disastrous nuclear chain reactions in the unshielded pool. But high-density storage also risks a sudden cooling water drain down, or a slower motion boil down. Either way, the worst case scenario would be a partial drain down, where irradiated nuclear fuel is partially exposed to air, with remaining pool water below blocking convection air currents, that would at least provide some (and perhaps still not enough) cooling to the overheating exposed irradiated nuclear fuel assemblies. Once exposed to air, the zirconium-clad fuel rods could reach ignition temperature within hours, initiating spontaneous combustion. The chemical reaction would turn exothermic, self-feeding, with the fire burning down the fuel rods, not unlike 4th of July sparklers. The pool would be unapproachable, due to lack of cooling water radiation shielding, with instantaneously deadly doses nearby. Thus, emergency responders would likely be blocked from intervening, making even suicide squad interventions ineffective. The radioactive Cesium-137 releases alone, to the environment, would be catastrophic, due to such a pool fire.

We do not consent to ongoing pool storage, due to pool leaks that, according to NRC in 2013, have already occurred at 13 pools across the U.S. This number can be expected to increase, with worsening age-related degradation at U.S. nuclear power plants. Such pool leaks harm soil, groundwater, surface water, and people and other living things downstream, up the food chain, and down the generations.

We do not consent to pools being dismantled during nuclear power plant decommissioning. Although pools should be off-loaded into hardened on-site storage ASAP (see below), and kept unloaded, the pool structures, systems, and components themselves should be left intact, maintained, and not dismantled or allowed to fall into disrepair. Keeping functional pools extant, albeit empty until needed, would provide an emergency location for failed cask to new replacement cask transfers of irradiated nuclear fuel, with needed radiation shielding. If pools are dismantled at decommissioning nuclear power plant sites (as has been the standard approach thus far), any cask-to-cask transfers would have to be done on an *ad hoc* basis, perhaps under a worsening emergency situation. There is no reason to paint ourselves into such a corner. Pools can be maintained to provide an emergency back-up transfer option. Although they should no longer be used for regular waste storage, as they are took risky.

NEED FOR HARDENED ON-SITE STORAGE (HOSS)

We do not consent to NRC's status quo, allowing nuclear utilities to store irradiated nuclear fuel for as long as 120 years in vulnerable storage pools, and to store high-level radioactive waste in vulnerable dry casks. Many hundreds of environmental, public interest, and social justice groups, representing all 50 states, have called for Hardened On-Site Storage (HOSS) for 15 years. HOSS calls for emptying of vulnerable storage

pools into dry casks, but not into vulnerable status quo ones, as is currently done. This out of the frying pan, into the fire approach is unacceptable and dangerous. Dry casks must be designed and built well, with rigorous QA standards, to last not decades, but centuries. Dry cask storage must be safeguarded against leaks, accidents, natural disasters, and intentional attacks. Such health, safety, security, and environmental protections are not fulfilled by current, vulnerable dry cask storage permitted by NRC, nor is there a funding mechanism in place to replace dry cask after 100 years.

Instead of the DOE paying nuclear industry for not taking title to the waste, it should be using those funds to give states adequate funding to protect their communities from nuclear waste that already exist and it must order all nuclear fission operations to cease immediately, so that no additional waste is produced.

We do not consent to abandonment of high-level radioactive waste on the shores of the Great Lakes, on the banks of rivers, on the ocean coasts, etc., where it is currently stored. Such abandonment would lead to catastrophic releases of hazardous radioactivity over time, into the drinking water supplies for countless millions of people, into major fisheries, etc. This is especially true under climate chaos scenarios, with extreme weather events at such locations, and rising sea levels, causing major flooding. Many of these very same sites are also vulnerable to earthquakes, tsunamis, and other natural disasters. As environmental groups have long advocated, high-level radioactive wastes should be stored as close to the point of origin as possible, as safely as possible. Certain sites are not appropriate for HOSS, just as they were not appropriate for reactors in the first place. Prairie Island, Minnesota, is a case in point, home to the Prairie Island Indian Community, which never granted its consent to the construction and operation of the two atomic reactors there, nor to the generation and storage of high-level radioactive waste, just hundreds of yards from their community. While wastes need to be relocated from Prairie Island to higher ground, out of the flood plain of the Mississippi River, this should be done in the immediate area, as close as possible, as safely as possible. This is no justification to launch a national Mobile Chernobyl/parking lot dump campaign, creating a whole new set of potentially catastrophic risks elsewhere. In fact, Prairie Island nuclear power plant's owner, Xcel Energy/Northern States Power, has been an infamous leader in such schemes, for decades, including the radioactively racist targeting of PFS at the Skull Valley Goshutes Indian Reservation in Utah.

We do not consent to NRC's science fiction fantasy of non-existent, unfunded "Dry Transfer Systems," and the absurd notion that these Dry Transfer Systems and dry cask storage installations, will be replaced, in their entirety, once every hundred years, whether the storage is at current nuclear power plant sites, or away-from-reactor locations (such as *de facto* permanent parking lot dumps). Dr. Mark Cooper of Vermont Law School has estimated that the first 200 years of irradiated nuclear fuel management in the U.S. – assuming a single repository, and a certain number of centralized interim storage sites – will already cost ratepayers, and/or taxpayers, $210 to 350 billion – effectively doubling the cost of nuclear-generated electricity, if accounted for (which it never has been, till Dr. Cooper did the calculations on his own initiative, on behalf of an environmental coalition intervening in NRC's Nuclear Waste Confidence/Continued Storage of Spent Nuclear

Fuel proceeding). But 200 years is a drop in the ocean, compared to the million years, or longer, high-level radioactive waste remains hazardous. We need to stop making it, by shutting down reactors and replacing them with energy efficiency and renewable sources, such as wind power and solar photo-voltaic (PV). And we need to figure out how to keep the radioactive waste that already exists, isolated from the living environment, forevermore. As Arnie Gundersen, Chief Engineers of Fairewinds Associates, Inc., has put it: *"We all know that the wind doesn't blow consistently and the sun doesn't shine every day, but the nuclear industry would have you believe that humankind is smart enough to develop techniques to store nuclear waste for a quarter of a million years, but at the same time humankind is so dumb we can't figure out a way to store solar electricity overnight. To me that doesn't make sense."*

Yucca Mountain

We do not consent to the proposed dumpsite for high-level radioactive waste at Yucca Mountain, Nevada. It was wisely cancelled and defunded by the Obama administration and DOE in 2010, as it should have been from the beginning, in the early 1980s. Obama and the Energy Secretaries serving under him declared Yucca "unworkable." Unfolding what "unworkable" means would have to include that the site is not scientifically suitable. It is a very active earthquake zone. It is a volcanic zone. It is saturated with water underground. It has highly corrosive chemistry in the rock, which, combined with the thermal heat of the waste, and the surrounding moisture, would create the perfect storm for burial container failure in a relatively short period of time. If irradiated nuclear fuel were ever to be buried at Yucca, it would leak out massively over time. The catastrophic amounts of hazardous radioactivity would be carried by Yucca's groundwater to points downstream, including the Amargosa Valley agricultural region, one of Nevada's most productive, as well as Death Valley, home to the Timbisha Shoshone Nation.

Unworkable also means that Yucca is Western Shoshone Indian Nation land, by the "peace and friendship" Treaty of Ruby Valley of 1863. The Yucca dump is an unacceptable environmental justice violation.

Unworkable also means that Nevada does not consent to the dump. It never has. Yucca Mountain, Nevada was singled out as the only site in the U.S. for further consideration as a potential dump-site, by the "Screw Nevada bill" of 1987, as it is most commonly referred to. This amendment to the Nuclear Waste Policy Act of 1983 was orchestrated by such powerful state congressional delegations as Texas and Washington State – other Western targets, which also happened to hold the U.S. House Speakership, and U.S. House Majority Leadership. Conspiring with such Eastern states also New Hampshire, these states successfully got themselves off the short list for the country's high-level radioactive waste dump, by "screwing Nevada." This turned a science-based site search comparison, including regional equity (a dump in the West, but also one in the East, where the vast majority of atomic reactors are located to begin with), into a ram it down Nevada's throat case of raw politics (Nevada had only one U.S. Representative in 1987; Texas and Washington, by comparison, had three dozen, and one dozen, respectively.)

Despite this, the State of Nevada has successfully fought tooth and nail, expressing its non-consent to the Yucca dump, for 30 years now.

The Yucca dump is a non-starter, and must be removed from any further consideration.

Nuclear Power and High-Level Radioactive Waste Generation

We do not consent to the generation of irradiated nuclear fuel in the first place. Both the Blue Ribbon Commission on America's Nuclear Future, and now DOE's ONE (Office of Nuclear Energy), have cynically framed the radioactive waste problem as a minor one, to be solved as expeditiously – and seemingly flippantly – as possible, so that nuclear power can go on its merry way, making ever more forever deadly high-level radioactive waste, for which there is still no safe, sound solution, and may never be. As Dr. Judy Johnsrud of Environmental Coalition on Nuclear Power put it, radioactive waste may well be "trans-solutional," a problem we have created that is beyond our ability to solve. And as Beyond Nuclear board member Kay Drey has put it, the mountain of radioactive waste is now more than 70 years high, and we still don't know what to do with the first cupful.

First, the DOE must order all nuclear fission to cease immediately.

Then, the DOE must take title of the waste at the every nuclear reactor site where the waste was produced and is currently being stored

The DOE must require U.S. military personnel protect and secure of the highly, irradiated waste, easily converted into weapons, materials, from theft, vandalism and terrorism, instead of the current private, mercenary, under trained security guards that are currently being used by reactor operators to guard the waste. This is an urgent matter of Homeland Security and the DOE failure to act and its attempt to transport waste to interim sites endangers the entire nation, and amount to malfeasance.

Once again the DOE must immediately order United State nuclear reactors stop producing additional nuclear waste, until there is a scientific, proven, funded, safe storage solution.

Sincerely yours,
Susan H. Shapiro

LBL-33597

Modeling of Strongly Heat-Driven Flow Processes at Potential High-Level Nuclear Waste Repository at Yucca Mountain, Nevada

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January 1993

This work was supported by the Director, Office of Civilian Radioactive Waste Management, Yucca Mountain Site Characterization Project Office, Regulatory and Site Evaluation Division, and by Sandia National Laboratories, under the Yucca Mountain Project, through U.S. Department of Energy Contract No. DE-AC03-76SF00098.

MODELING OF STRONGLY HEAT-DRIVEN FLOW PROCESSES AT A POTENTIAL HIGH-LEVEL NUCLEAR WASTE REPOSITORY AT YUCCA MOUNTAIN, NEVADA

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ABSTRACT

Two complementary numerical models for analyzing high-level nuclear waste emplacement at Yucca Mountain have been developed. A vertical cross-sectional (X-Z) model permits a realistic representation of hydrogeologic features, such as alternating tilting layers of welded and non-welded tuffs, fault zones, and surface topography. An alternative radially symmetric (R-Z) model is more limited in its ability to describe the hydrogeology of the site, but is better suited to model heat transfer in the host rock. Our models include a comprehensive description of multiphase fluid and heat flow processes, including strong enhancements of vapor diffusion from pore-level phase change effects. The neighborhood of the repository is found to partially dry out from the waste heat. A condensation halo of large liquid saturation forms around the drying zone, from which liquid flows downward at large rates. System response to infiltration from the surface and to ventilation of mined openings is evaluated. The impact of the various flow processes on the waste isolation capabilities of the site is discussed.

INTRODUCTION

Emplacement of heat-generating high-level nuclear wastes at Yucca Mountain would give rise to complex multiphase fluid and heat flow processes. These include heat transfer by conduction and advection, phase change phenomena (boiling and condensation), flow of liquid water and gas phase under gravity, capillary, and pressure forces, inter-diffusion of vapor and air, and vapor adsorption and vapor pressure lowering effects. These processes would be played out in a complicated geologic setting with alternating layers of porous and fractured-porous materials, and would be significantly impacted by the actual repository operations (e.g. waste emplacement, ventilation), as well as by natural forcings (e.g. infiltration, barometric pressure variations).

It is the purpose of this paper to present conceptual and numerical models for performance assessment of strongly heat-driven flow processes that would be induced by the thermal load of the repository. Our objective is to develop a preliminary understanding and assessment of flow processes and thermo-hydrologic conditions in the host rock. This should assist in evaluating the suitability of the site for nuclear waste isolation, provide guidance for repository design considerations, pinpoint critical uncertainties that need to be addressed in future work, and serve as a basis for further development of performance assessment models.

MODELING APPROACH

An "ideal" performance assessment model would include a comprehensive description of all relevant physical and chemical processes affecting repository and host rock behavior. It would also represent the important hydrogeologic features of the potential repository site in full explicit detail.

Fluid and heat flow fields around a nuclear waste repository at Yucca Mountain would be three-dimensional, due to irregular waste emplacement geometries, and because of geologic irregularities, such as the presence of tilting layers of welded (porous-fractured) and non-welded (porous) tuffs, and irregular surface geometry. Fully three-dimensional simulations of highly non-linear multiphase fluid and heat flow processes are feasible but are extremely demanding computationally. For practical applications it is necessary to make simplifications either in the fluid and heat flow process description, or in the flow system geometry.

The performance assessment models presented here borrow from geothermal and petroleum reservoir simulation methodology to focus on coupled multi-phase fluid and heat flow processes. We attempt a fairly comprehensive description of such processes, but the representation of geologic features and flow system geometry is intentionally left simplistic and schematic. Stripping away nonessential detail aids in understanding and critically evaluating process complexities and uncertainties. It also helps to keep the models simple and flexible enough so that additional detail may be incorporated in the future.

We have developed two complementary two-dimensional models, a vertical section (X-Z) model (Figure 1) patterned after stratigraphic sections developed by Klavetter and Peters,[1] and a cylindrically symmetric (R-Z) model (Figure 2). The X-Z model obviously can provide a more realistic representation of hydrogeologic features such as tilting of lithologic units, presence of fault zones, and irregular surface topography, but it gives a poorer approximation for repository heat transfer. The R-Z model is more limited and schematic in its ability to describe the hydrogeology of the site, but it is better suited to model the "volumetric" nature of heat transfer into the host rock. Furthermore, in the R-Z model one central waste package, assumed emplaced vertically, can be represented explicitly through fine gridding at small radial distances. This makes possible a more accurate prediction of thermo-hydrologic conditions near the waste packages than could be attained with models that apply

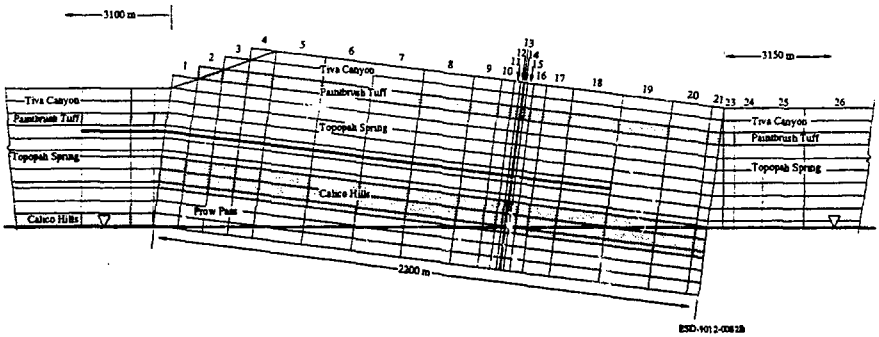

Figure 1. Computational grid for two-dimensional east-west vertical section (X-Z) model of Yucca Mountain.

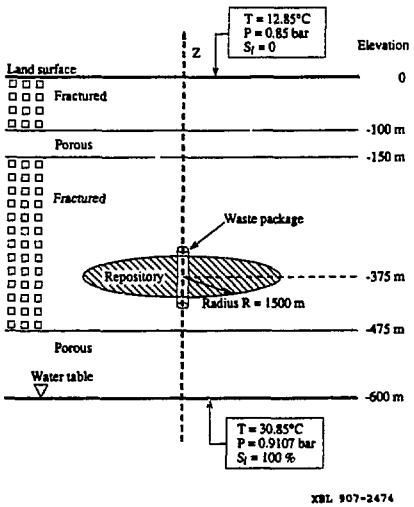

Figure 2. Two-dimensional radially symmetric (R-Z) model of a high-level nuclear waste repository at Yucca Mountain.

waste heat only in a volumetrically averaged manner. It also permits a detailed definition of "interior" boundary conditions at the surface of the emplacement hole, which is crucial for a realistic representation of the interaction between the waste packages and the mined openings. As will be shown below, this interaction has important ramifications for repository ventilation and moisture status in the host rock surrounding the repository. Both models are closely tied together through parameter choices and intercomparisons. Their strengths and weaknesses are complementary so that when taken together they can provide increased confidence for predictions.

The computational grid of the R-Z model consists of 21 layers with 30 blocks in radial direction, for a total of 630 grid blocks. Layer thicknesses range from 2.5 m near the waste packages to a maximum of 50 m; radial grid increments range from .061 m near the waste package to 1881 m at the outer perimeter. The X-Z model (Figure 1) consists of a central section of 20 layers with 21 columns of grid blocks, tilted by 7°, and two attached sections without tilt. The western section has 16 layers and 6 columns, the eastern section has 13 layers and 7 columns. Finer gridding is used near the repository level, and in the region of the Ghost Dance fault system (near column 13 of the tilted section). This makes possible an investigation of the effects of the fault on flow;[2] however, in the simulations reported here hydrogeologic parameters in the fault region have been chosen identical to the "background" values away from the fault.

Most of the multiphase fluid and heat flow processes expected near heat-generating high-level wastes emplaced in the vadose zone are well understood. Application of comprehensive process models is limited at present by uncertainties of site-specific parameters for the Yucca Mountain site. Our parameter choices for a reference case are discussed in laboratory reports.[3,4] Briefly, the non-welded units (Paintbrush Tuff and Calico Hills) are represented as porous media with permeability of 18 millidarcy. Characteristic curves (capillary pressure and relative permeability) are represented by van Genuchten's model,[5] with parameters as determined by Peters et al.[6] for Paintbrush sample GU4-2, and Calico Hills sample GU3-15. The welded units (Tiva Canyon and Topopah Spring) are modeled as fractured-porous media, using an effective continuum approximation.[7,8] Unfractured matrix permeability is 1.9 microdarcy, with characteristic curves as determined by Peters et al.[6] for Topopah Spring sample G4-6. Fracture network permeability is assumed to be 18

millidarcy. Porosities are taken as 0.18% for the fracture network, and 10% for the composite medium. Previous modeling studies have shown that thermal and hydrologic conditions near waste packages are very sensitive to the relative permeability and capillary pressure behavior of fractures which is poorly known at present.[9] In this paper we have assumed a "sequential saturation" approximation in which liquid is immobile in the fractures as long as the matrix is not fully saturated.[3,4,10]

A difficult aspect of the simulations is the presence of coupled multi-phase fluid and heat flow processes with vastly different response times. Indeed, propagation of gas phase pressure disturbances on the repository scale (1 km) is expected to occur in a matter of months, propagation of thermal disturbances over such distance will require several 10,000 years, and capillary pressure disturbances in the tight Topopah Spring matrix rock will require in excess of 100,000 years (see Table 1). Even slower processes evolve from subtle couplings between formation temperatures, liquid saturations, and saturation-dependent thermal conductivities. Additional numerical complications arise from (1) the extreme permeability contrast of perhaps 4-6 orders of magnitude between fracture networks and unfractured rock matrix, (2) the large range of relevant spatial scales, ranging from centimeters for resolving important changes near the waste packages to hundreds of meters for repository-wide flow processes, and for interactions involving land surface and water table boundary conditions, and (3) the highly non-linear parameter dependencies for variably-saturated media, especially during phase change processes (drying and re-wetting).

Table 1. Characteristic Times for Multiphase Processes (*)

Process	Hydrogeologic Unit	
	Topopah Spring	Calico Hills
Heat conduction	29,900 yrs	51,100 yrs
Liquid flow	234,700 yrs	176 yrs
Gas flow	207 days	127 yrs
Vapor diffusion	1,480 yrs	1,480 yrs
Air diffusion	84,600 yrs	26,900 yrs

*For a propagation distance of x = 1000 m, calculated from $t = x^2/D$, where D is the appropriate diffusivity.[8]

Our modeling approach builds on previous studies of thermal and hydrologic conditions from waste package,[7,8,9] to repository scale.[11] All calculations were performed on an IBM RS/6000 workstation, using Lawrence Berkeley Laboratory's general-purpose multiphase fluid and heat flow simulator TOUGH2.[12] The formation fluids are modeled as two-phase (liquid, gas) two-component (pure water without salinity, air "pseudo-component"). A comment is in order about the treatment of "interface quantities" between grid blocks in the integral finite difference approximation. At lithologic contacts between porous and fractured-porous units we use full upstream weighting for both absolute and relative permeabilities. The more common procedure of using upstream weighting only for relative permeability and employing harmonic weighting for absolute permeability has been shown to lead to serious errors (spurious flow resistances) in heterogeneous media with large variability in permeability and capillary pressure behavior.[4]

PRE-EMPLACEMENT CONDITIONS

What are the appropriate initial conditions to be used for modeling repository performance at Yucca Mountain? Depending on the history of external perturbations (such as changes in infiltration due to variable climatic conditions), and on internal response times, natural hydrogeologic systems may or may not be close to steady-state conditions. For thick unsaturated zones with tight rock matrix internal system response times may be large, in excess of 100,000 years (Table 1). Moisture conditions at Yucca Mountain are therefore most likely not in a steady state; however, they will be in a stable state in the sense that, in the absence of man-made perturbations, changes in the flow system will occur very slowly. As an approximation to this stable state prior to waste emplacement, we develop a state with steady fluid and heat flows. For the R-Z model the steady initial state is one-dimensional in the sense that all flows are vertical. The steady state is obtained by numerical simulation, applying realistic boundary conditions of ambient pressures for both aqueous and gas phases, and natural geothermal gradients (Figure 2). For the reference case net infiltration is assumed to be zero. Because of the vastly different response times of different processes, a head-on approach trying to run the system to steady state from some arbitrary initial conditions is not very practical. Instead, we go through a parameter-stepping approach, in which we first obtain steady heat conduction for a system with zero permeability. Subsequently gas pressures are equilibrated for conditions of uniform permeability and immobile water. Finally, a steady state for coupled multiphase fluid and heat flow is obtained by introducing proper characteristic curves, heterogeneous permeability, and air-vapor diffusion in the gas phase. The R-Z model is then initialized with this one-dimensional steady state. Development of an initial steady state suitable for studying effects of the repository heat source in the X-Z model follows a similar approach as in the R-Z model, but is somewhat more involved due to added pressure and temperature effects from the tilting of layers.

Gas diffusion in porous media is customarily described by Fick's law, with "free" diffusivities modified by applying a strength factor

$$B = \phi \cdot S_{gas} \cdot \tau \qquad (1)$$

to account for pore space volume and tortuosity effects. For typical porous media, the strength factor B is of order .03 (ϕ = .3, S_{gas} = .5, τ = .2). However, from soil science studies it is well established that vapor diffusivity in porous media is strongly enhanced from pore-level phase change effects mediated by liquid islands; typical values for B are of order 1.[4] Assuming that vapor diffusion enhancement in tuffs is similar to what has been observed in sands, we find that a "normal" geothermal gradient of .03°C/m will cause an upward diffusive vapor flux approximately equivalent to .04 mm/yr of water, in good agreement with Ross' estimate of .03 mm/yr.[13] With zero net infiltration at the land surface, the upward vapor diffusion must be balanced by downflow of liquid condensate at a rate of .04 mm/yr. This liquid flux, although small, is not insignificant relative to the saturated

hydraulic conductivity of the unfractured welded tuffs; indeed, the permeability of 1.9 microdarcy corresponds to a hydraulic conductivity of .6 mm/yr. Thus the downflow of condensate to balance upward vapor diffusion has a strong impact on steady-state saturation distributions in the welded tuffs. Our steady-state saturation profile in the Topopah Spring unit is similar to that obtained by Buscheck and Nitao[14] without consideration of enhanced vapor diffusion for .045 mm/yr net infiltration.

RESPONSE TO WASTE EMPLACEMENT

Subsequent to attainment of steady-state conditions, we have simulated, for a time period of 10^5 years, the system response to emplacement of high-level nuclear waste packages. During these simulations water table and land surface (atmospheric) boundaries are maintained at constant conditions. In the R-Z model we also maintain initial vertical profiles of gas pressures, water saturations, and temperatures at the outer (R = 5,000 m) boundary. The wastes are assumed to be 10 years out-of-reactor, and are emplaced instantaneously at an initial heat load of 57 kW/acre. At an initial power level of 3,051 kW the repository area per waste package is 213.2 m.^{2} Limited sensitivity studies were carried out to evaluate effects of different rates of water infiltration, and of variations in repository operations during the waste emplacement phase.

After heat generation is first turned on the flow system is undergoing rapid changes in temperature and moisture conditions, and the simulation proceeds with small time steps. As the pace of changes slows, and waste heat generation declines, time steps grow to large values. For the R-Z model the simulation takes 38 time steps for 1 year, 104 time steps for 100 years, and 197 time steps in total to reach 10^5 years.

Assuming that waste emplacement holes are sealed (not ventilated), and that fractures have negligible effective permeability for liquid water at ambient suction conditions, simulated system behavior is as follows. Temperatures near the waste packages rise to a maximum of approximately 180°C at about 10 years after waste emplacement, and then slowly decline to about 120°C at 100 years, 85°C at 1,000 years, and 40°C at 10,000 years (Figure 3). Average rock temperatures at the repository horizon peak at 95°C. Formation waters boil near the waste packages; the vapor is driven away from the heat sources by advection and diffusion, with diffusion dominating when enhancements from pore-level phase change effects are taken into account (see the discussion following Equation 1). Complete dry-out occurs only within a small region of a few meters around the waste packages, while partial drying occurs in a region of approximately 100 m thickness above and below the repository (Figures 4 and 5). Beyond the region of partial drying a halo of increased liquid saturation forms from vapor condensation. The most important effect of the partial drying and condensation is that, near the repository level, very strong capillary pressure gradients are generated. Their effects on liquid phase flow is much stronger than gravity effects, so that liquid flows towards rather than away from the repository. The region of partial dry-out is long-lived; even 10,000 years after waste emplacement only approximately half of the liquid originally in place in a region of 30 m thickness above and below the repository will have been restored to that region.

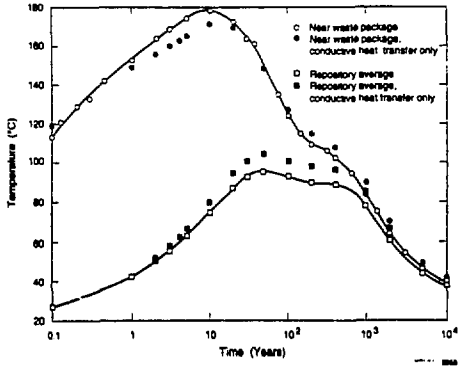

Figure 3. Simulated temperatures in the host rock in the R-Z model.

Our simulations predict sizeable downward flow of condensate towards the repository horizon. Averaged over the repository area, downward liquid flux from the condensation halo is 13.3 mm/yr at 10 years, 7.0 mm/yr at 100 years, and 1.3 mm/yr at 1,000 years. Even larger condensate fluxes are predicted near the waste packages, namely, 44.8 mm/yr at 10 years, and 10.0 mm/yr at 100 years. The vapor migration and condensation is expected to take place primarily in the fractures. The relatively large condensate fluxes predicted from our simulations suggest that the fracture-matrix system may not attain capillary equilibrium, and that downflow of condensate may involve a significant fracture component.

The predicted partial dry-out near the repository level has important consequences for waste isolation: As long as water flows towards rather than away from the repository no contaminant release through aqueous pathways is possible. Partial dry-out would provide a long-lasting capillary "trap" that would prevent dissolved contaminants from reaching the accessible environment. However, the possibility that water may flow along localized fracture paths without reaching larger-scale capillary and thermal equilibrium can not be ruled out at present. Such nonequilibrium water may be able to flow across the repository horizon even when on average strong capillary suction conditions would be present in the neighborhood of the repository.

At the nominal effective gas phase permeability of approximately 20 millidarcy in both welded and non-welded units the temperature field is not much affected by phase change and flow processes. A calculation using heat conduction only (no fluid flow) predicts temperatures to within 5–8°C or better, as compared to a calculation with full allowance for multiphase effects (Figure 3). This suggests that, unless effective permeability of the fracture network in the welded units should turn out to be substantially larger than 20 millidarcy, a "conduction only" calculation would be adequate for evaluating thermal performance of the repository. However, maximum host rock temperatures near the waste packages cannot be predicted with confidence at

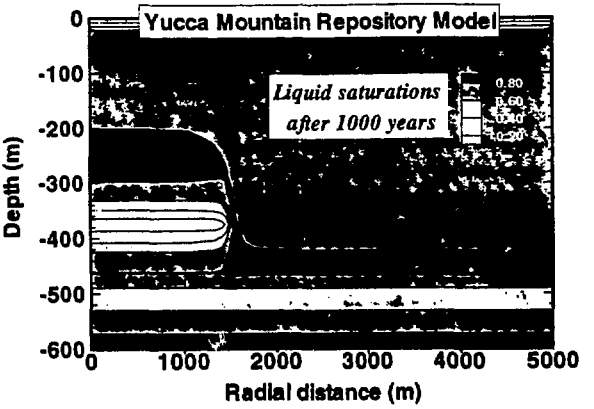

Figure 4. Simulated water saturation distribution after 1,000 years in the R-Z model.

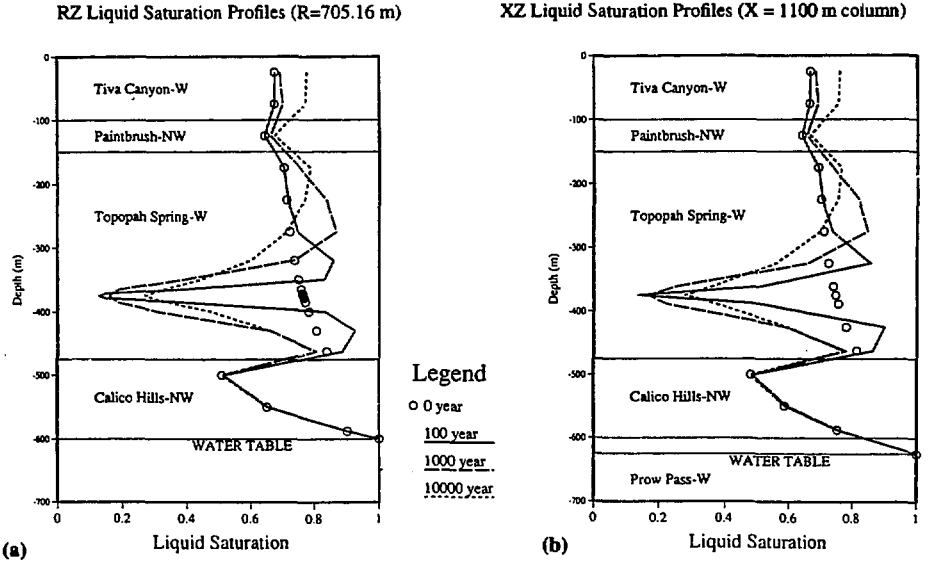

Figure 5. Simulated water saturation profiles. (a) R-Z model at R = 705.16 m radius, (b) X-Z model at column 8 (see Figure 1).

the present time, due to poorly known behavior of rough-walled rock fractures in partially saturated conditions. If at ambient suction conditions in the Topopah Spring unit water would have significant mobility in the fractures persistent heat pipe conditions would develop that would prevent temperatures from rising much beyond 100°C[8]. Heater experiments performed by Zimmerman and coworkers in G-tunnel, Nevada Test Site,[15,16] suggest that development of persistent heat pipe conditions, while not a ubiquitous phenomenon, is a distinct possibility.[8] Indeed, several thermocouples in these experiments registered temperatures near 94°C for extended time periods. This happens to be the boiling temperature at ambient pressures in G-tunnel, indicating persistent two-phase conditions.

For sealed emplacement holes, the impact of heat pipe conditions would be limited to the vicinity (a few meters) of the waste emplacement hole, and would not affect temperature and moisture conditions on a larger scale. For open-hole ventilated conditions, however, heat pipe development could have significant effects, promoting removal of heat and moisture from the system. Waste package-scale simulations have indicated that, when liquid is assumed mobile in the fractures, as much as 2/3 of total heat generated could be removed through ventilated open emplacement holes, and substantial moisture removal could take place to distances of 100 m or more above and below the repository horizon.[8]

A comparison between liquid saturation profiles in the R-Z and X-Z models shows good agreement at all times (Figure 5). This indicates that the X-Z model can provide an adequate approximation to waste heat effects on a larger scale (large compared to waste package dimensions), and that the model is suitable for studying the interaction between the waste heat and actual hydrogeologic features at the site. Of particular interest in this regard are capillary barrier phenomena at sloping contacts between different lithologic units,[17] and the role of fault zones with respect to liquid and gas phase flows.[2]

Gas phase flow effects are more complicated than would be expected from simple thermal buoyancy. Figure 6 shows gas fluxes calculated in the X-Z model at 1,000 years after waste emplacement. It is seen that gas convection is directed away from the repository, with flow being upward above the repository, downward beneath the repository. As noted previously,[11] this effect is due to an interplay between vapor-air diffusion and Darcy flow: Gas phase near the repository is primarily vapor, while away from the repository it is primarily air. Therefore, air diffuses towards the repository, increasing air partial pressure and total gas phase pressure there, and causing the gas phase outflow. The R-Z model shows the same effect.

SENSITIVITY STUDIES

Limited sensitivity studies have been carried out to examine effects of liquid infiltration from the ground surface. Two cases were simulated, with infiltration rates of 1 and 10 mm/yr, respectively, commencing at 1,000 years after waste emplacement. Impacts of the 1 mm/yr infiltration are very minor, even though this rate exceeds the matrix saturated conductivity in the Tiva Canyon and Topopah Spring units. Running the simulation to 10,000 years, fracture flow is found to never extend beyond 50 m depth. Liquid downflow at greater depths occurs entirely through the rock matrix under the combined action of gravity and capillary forces. The condition of liquid flow converging towards the repository that was observed in the "no infiltration" simulations persists even with 1 mm/yr infiltration for the entire 10,000 year period. When a persistent infiltration of 10 mm/yr is switched on at 1,000 years, however, liquid flow patterns are altered. Convergent liquid flow towards the repository horizon persists to 2,000 years, but gives way to downflow all the way to the water table at approximately 3,000 years. However, examining the immediate vicinity of the explicitly represented central waste package, it is observed that convergent liquid flow towards the emplacement hole is maintained to approximately 4,000 years. Subsequently, liquid downflow in the rock matrix extends all the way to the emplacement hole.

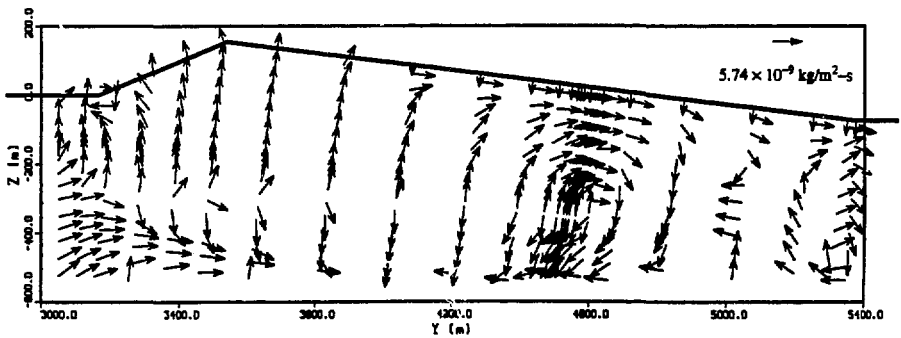

Figure 6. Simulated gas phase fluxes after 1,000 years in the X-Z model.

A brief study of open-hole emplacement was made, to evaluate the impact of repository ventilation during the operational phase on thermohydrologic conditions in the host rock. Ventilation effects were represented in a schematic way by applying a boundary condition of reduced relative humidity of 90%[18] and constant gas phase pressure at the inner boundary of the central waste package in the R-Z model. Only sensible and latent heat transfer but no conductive heat exchange were permitted at this boundary. The rates of water, air, and heat flow into the explicitly modeled emplacement hole were also applied, properly scaled for areal density of waste packages, to the distributed repository grid blocks.

Compared with sealed emplacement, temperatures near the repository level after 50 years of ventilated operation were approximately 6°C lower, and water saturations were approximately 6% lower. These modest effects are consistent with recent estimates by Danko and Mousset-Jones.[19] Moisture removal from the formation is mostly by vapor diffusion, and occurs at a rate of approximately 10^{-4} kg/s per waste package, with insignificant variations during the 50-year period. Heat removal rate is approximately 300 W per waste package. Total water removed per waste package is approximately 184 m^3 in 50 years. To put this number in perspective: At a formation porosity of 10% and an initial water saturation of 75%, this removal would have completely dried a region extending 5.8 m above and below the repository level. These results pertain to a situation where liquid is assumed immobile in the fractures; much larger effects would be predicted if liquid mobility in the fractures were finite.

DISCUSSION AND CONCLUSIONS

Our studies show that detailed numerical simulations of strongly heat-driven multiphase flow processes over time scales of 100,000 years are feasible in models that represent site-specific hydrogeologic conditions at Yucca Mountain in considerable detail. Thermal effects are found to alter not only the magnitude but in fact the direction of liquid and gas phase flows, so that an understanding of these effects is essential for a realistic assessment of repository performance.

The most important impact of the repository heat load is the development of a zone of partial dry-out around the repository, which is surrounded by a condensation halo of increased water saturation. The region of partial dry-out is predicted to be long-lived and is not easily obliterated even when net infiltration of 1–10 mm/yr is applied. This region may form a capillary "trap," drawing liquid water towards the repository (more or less balanced by outflow of vapor), and thereby adding to the capacity of the site to safely contain hazardous radionuclides. A superficial inspection of simulated flow behavior would appear to suggest that the capillary trap will be totally effective, completely preventing any liquid from migrating away from the repository region as long as capillary pressures are sufficiently negative there. However, it appears unlikely that such an absolute prohibition against liquid flow away from the repository would hold in reality. Most of the vapor condensation above the repository is expected to take place in fractures. Simulated condensation rates for the 57 kW/acre thermal loading considered here are so large that the condensate may not reach capillary equilibrium between fractures and matrix and may in part flow downward along fast fracture paths. Liquid flow along fast paths across the repository region appears therefore possible even though on average capillary pressures would be more negative there.

It has been suggested recently that waste containment benefits associated with formation dry-out could be enhanced by means of high areal power density.[14] However, it should be noted that increased thermal loading will not only, on average, enhance formation dry-out, but will also increase rates of boiling and condensation, and thereby promote non-equilibrium flow of condensate along fractures. This could in fact have an adverse impact on the containment of hazardous radionuclides, suggesting that the issue of thermal loading should be dealt with cautiously. Clearly, further experimental and theoretical study is needed to develop a better understanding of liquid flow in partially saturated fractures in low-permeability rocks.

ACKNOWLEDGEMENT

The authors gratefully acknowledge support from the Director, Office of Civilian Radioactive Waste Management, U.S. Department of Energy, under Contract No. DE-AC03-76SF00098. Earlier portions of this work were funded by the Yucca Mountain Project, Sandia National Laboratories. Thanks are due to Joe Wang for a review of the manuscript.

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From: CarpeDiemVoice@aol.com [mailto:CarpeDiemVoice@aol.com]
Sent: Friday, July 15, 2016 7:32 AM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: MY LACK OF CONSENT FOR YOUR AGENDA

I DO NOT CONSENT TO . . .

THE RUSH JOB TO *DE FACTO* PERMANENT PARKING LOT DUMPS, FOR ALL THE WRONG REASONS: We do not consent to DOE rushing into *de facto* permanent parking lot dumps (so-called "centralized" or "consolidated interim storage"), in order to expedite the transfer of title and liability from the nuclear utilities that profited from the generation of high-level radioactive waste, onto the backs of taxpayers.

FLOATING FUKUSHIMAS ON SURFACE WATERS: We do not consent to radioactive waste barge shipments on the lakes and rivers of this country, the fresh drinking water supply for countless millions, nor on the seacoasts. In addition to a disastrous radioactive release if the shipping container is breached, infiltrating water could spark a nuclear chain reaction, if a critical mass forms, due to the fissile U-235 and Pu-239 still present in the waste.

MOBILE CHERNOBYLS/DIRTY BOMBS ON WHEELS: We do not consent to high-level radioactive waste truck and train shipments through the heart of major population centers; through the agricultural heartland; on, over, or alongside the drinking water supplies of our nation. Whether due to high-speed crashes, heavy crushing loads, high-temperature/long duration fires, falls from a great height, underwater submersions, collapsing transport infrastructure, or intentional attack with powerful or sophisticated explosives, such as anti-tank missiles or shaped charges, high-level radioactive waste shipments, if breached, could unleash catastrophic amounts of hazardous radioactivity into the environment.

ENVIRONMENTAL INJUSTICE/RADIOACTIVE RACISM: We do not consent to the targeting, yet again, of low-income, Native American, and other communities of color, with high-level radioactive waste parking lot dumps. It is most ironic that President Obama's Blue Ribbon Commission on America's Nuclear Future, and his DOE, have yet again targeted Native Americans. Obama honored Sauk and Fox environmental activist Grace Thorpe for defending her reservation in Oklahoma against a parking lot dump, and then assisting allies at dozens of other reservations being targeted by DOE's Nuclear Waste Negotiator. Obama praised Thorpe as a "Woman Taking the Lead to Save Our Planet," alongside the likes of Rachel Carson of *Silent Spring* fame, in his March 2009 Women's History Month proclamation. Similarly, Yucca Mountain, Nevada is Western Shoshone Indian land, as the U.S. government acknowledged by signing a treaty. In addition, Yucca is not scientifically suitable. It is an active earthquake zone, a volcanic zone, and water-saturated underground. If waste is ever buried there, it will

leak massively into the environment. And the State of Nevada has never consented to becoming the country's high-level radioactive waste dump.

SITES CURRENTLY AT THE VERY TOP OF THE TARGET LIST FOR *DE FACTO* PERMANENT PARKING LOT DUMPS: We do not consent to the targeting of nuclear power plants, radioactive waste dumps, or DOE sites, already heavily contaminated with radioactivity and burdened with high-level radioactive waste, to become parking lot dumps for the importation of other sites' or reactors' wastes. DOE, NRC, and industry's top targets include Waste Control Specialists in Andrews County, TX; Eddy-Lea Counties, NM, near DOE's Waste Isolation Pilot Plant; DOE's Savannah River Site, SC; Dresden nuclear power plant in Morris, IL; the list goes on.

If you want to get the real news, (covering equality, human and civil rights, economic, environmental, and social justice,) instead of the corporate-owned news, along with calls to action, and some humor and inspiration, subscribe to my international online peace and justice political newsletter by sending an email to CarpeDiemVoice@aol.com with "P&J" and the country/state in which you live in the subject line and your name in the text box. If you wish to see a sample before subscribing, send an email to the same email address with the word Sample in the subject line.

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Consent-Based Siting

From: M. Sims [mailto:menucha65@verizon.net]
Sent: Thursday, July 28, 2016 8:43 PM
To: Consent Based Siting
Subject: Response to IPC

1. **Stop making it.** The only truly safe, sound, just solution for the radioactive waste problem, is to not make it in the first place. Electricity can be supplied by clean, safe, affordable renewable sources, such as wind and solar, and demand decreased significantly by efficiency, rather than generating radioactive waste via dirty, dangerous, and expensive nuclear power.
2. **Expedite the transfer of irradiated nuclear fuel from densely-packed "wet" storage pools into Hardened On-Site Storage (HOSS) dry casks**.
3. Store irradiated nuclear fuel in HOSS dry casks, **as safely and securely as possible, as close to the point of generation as possible, in a monitored, inspectable, retrievable manner.**
4. Given the unavoidable risks of high-level radioactive waste truck, train, and/or barge shipments on roads, rails, and/or waterways (Mobile Chernobyls, Dirty Bombs on Wheels, Floating Fukushimas), **transport irradiated nuclear fuel only once**, such as straight to a (suitable, acceptable, just) geological repository, **not to so-called centralized interim storage** (*de facto* permanent parking lot dumps, such as those currently targeted at Waste Control Specialists, LLC in Andrews County, west Texas; at Eddy-Lea Counties, near the Waste Isolation Pilot Plant in southeast New Mexico; Native American reservations; nuclear power plants, such as Exelon's Dresden in Morris, IL; etc.).
5. **Geological repositories** must be **scientifically suitable** (capable of isolating the hazardous high-level radioactive waste from the living environment forevermore), **socially acceptable** (genuinely consent-based), and **environmentally just**. Note that no such suitable/acceptable/just geologic repository has yet been found, in more than half a century of looking. DOE has admitted it can't open *any* repository (even an unsuitable/unacceptable/unjust one) till 2048 at the earliest, more than a century after Enrico Fermi, in 1942, generated the first high-level radioactive waste, in the world's first reactor, as part of the Manhattan Project to build atomic bombs; and more than 90 years years after the first "civilian" atomic reactor began generating waste at Shippingport, PA.
6. **Do not reprocess** (extract fissile plutonium and/or uranium from) irradiated nuclear fuel. Not only would this risk **nuclear weapons proliferation**, and be **astronomically expensive**; it would also very likely cause **environmental ruin downwind and downstream** of wherever it is carried out, as has been shown at such places as Hanford Nuclear Reservation in Washington; Savannah River Site, South Carolina; West Valley, New York; Sellafield, England; La Hague, France; Kyshtym, Russia; etc.
7. **Preserve and maintain "wet" storage pools – albeit *emptied* of irradiated nuclear fuel -- as an emergency back up location for cask-to-cask HOSS transfers**, when old HOSS casks deteriorate toward failure, and need to be replaced with brand new HOSS casks. That is, do not dismantle pools as part of nuclear power plant decommissioning post-reactor shutdown.

8. **Carefully pass information** about storing irradiated nuclear fuel as safely as possible, as close to the point of generation as possible, **from one generation to the next, à la the concept of "Rolling Stewardship"** described by the Canadian Coalition for Nuclear Responsibility.
9. **Address the shortfall in funding for forevermore storage of high-level radioactive waste**. Dr. Mark Cooper of Vermont Law School has estimated the first 200 years of commercial irradiated nuclear fuel storage (assuming just a single repository, although at least two will be required!) will cost $210 to $350 billion, even though there is only some tens of billions of dollars remaining in the now-terminated Nuclear Waste Fund, collected from nuclear power ratepayers.
10. **Environmental justice**, in keeping with Bill Clinton's 1994 **Executive Order 12898, demands that Native American communities and lands, as well as those of other low income and/or people of color communities, never again be targeted for high-level radioactive waste parking lot dumps or permanent burial sites, a shameful form of radioactive racism dating back decades in the U.S.**

Sincerely, Ms. M. Sims, 12 Roosevelt Place, Montclair NJ

Consent-Based Siting

From: Mevrian Thomas [mailto:reweaving@hotmail.com]
Sent: Saturday, July 30, 2016 10:51 AM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Fw: Consent-based Siting

The following is my comment with regard to "Consent Based Siting" of nuclear waste:

The best way to deal with nuclear waste is to stop making it, period. Our energy needs can be met by renewables like solar and wind power, combined with energy efficiency - and so there is absolutely no need to continue operating toxic, dangerous, carcinogenic nuclear plants. Nuclear waste is already backing up all over the country. The only safe way we can begin to deal with this escalating problem is to cease all nuclear production of energy and weapons now. Only in this way we can prevent a slow self-genocide through radiation poisoning.

The present 76 million tons of nuclear waste already existing in the U.S. should be transferred from cooling pools into HOSS hardened cask storage, and should be buried at the already-contaminated plant sites. This deadly waste should not be transported across our country. It should not be shipped across oceans, it should not be moved down our rivers on barges, and it should not be moved through our communities by truck or railroad, putting millions of citizens at risk of a radioactive accident. This waste should not come anywhere near our aquifers, and it should not be moved through areas where it can affect our food crops. We must minimize the transport of this material, not ship it all over the country multiple times in "interim" storage plans.

It is very sad and cynical to invite low-income communities, or communities of indigenous Native Americans, to "consent" to housing this deadly material. Groups that are in desperate economic need should not have to accept poison, radiation and death in their communities in return for the opportunity for jobs. They should not have to accept a process which will contaminate their communities for many generations to come. This is a clear violation of environmental justice, and simply shows a desire to dump this radioactive waste in communities who have the least ability to protest. Former President Bill Clinton's 1994 Executive Order 12898 demands that Native American communities and lands, as well as those of other low income and/or people of color communities, never again be targeted for high-level radioactive waste burial sites. This current consent-based siting proposal appears to be simply a clever method of circumventing that demand.

We need to find a better economic solution to the costs of dealing with radioactive waste. We have not even found a really acceptable way to dispose of and store this material. And yet instead of dealing with that problem, we are continuing to produce more nuclear waste. It is irresponsible for aging nuclear plants which are failing economically to be bailed out through subsidies which will be a burden on the taxpayers, as has been proposed for NY state. Taxpayer monies should be used instead to provide dry cask storage for the nuclear waste we have already created, and to invest in moving to renewables as quickly as possible.

Please hear what the public is saying about this very important issue.

Sincerely,

Edith Kantrowitz
333 McDonald Ave - #5D
Brooklyn, NY 11218

Consent-Based Siting

From: Butch [mailto:butch@wildrockies.org]
Sent: Thursday, July 28, 2016 4:22 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Response to IPC - Consent Based Siting

I do not consent to DOE rushing into de facto permanent parking lot dumps (so-called "centralized" or "consolidated interim storage"), in order to expedite the transfer of title and liability from the nuclear utilities that profited from the generation of high-level radioactive waste, onto the backs of taxpayers.

I do not consent to radioactive waste barge shipments on the lakes and rivers of this country, the fresh drinking water supply for countless millions, nor on the seacoasts. In addition to a disastrous radioactive release if the shipping container is breached, infiltrating water could spark a nuclear chain reaction, if a critical mass forms, due to the fissile U-235 and Pu-239 still present in the waste.

I do not consent to high-level radioactive waste truck and train shipments through the heart of major population centers; through the agricultural heartland; on, over, or alongside the drinking water supplies of our nation. Whether due to high-speed crashes, heavy crushing loads, high-temperature/long duration fires, falls from a great height, underwater submersions, collapsing transport infrastructure, or intentional attack with powerful or sophisticated explosives, such as anti-tank missiles or shaped charges, high-level radioactive waste shipments, if breached, could unleash catastrophic amounts of hazardous radioactivity into the environment.

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I do not consent to the targeting of nuclear power plants, radioactive waste dumps, or DOE sites, already heavily contaminated with radioactivity and burdened with high-level radioactive waste, to become parking lot dumps for the importation of other sites' or reactors' wastes. DOE, NRC, and industry's top targets include Waste Control Specialists in Andrews County,
TX; Eddy-Lea Counties, NM, near DOE's Waste Isolation Pilot Plant; DOE's Savannah River Site, SC; Dresden nuclear power plant in Morris, IL; the list goes on.

As just re-confirmed by the National Academies of Science, and Princeton U. researchers Von Hippel and Schoeppner, pools are at risk of fires that could unleash catastrophic amounts of hazardous Cesium-137 into the environment over a wide region. Since 2002, a coalition of hundreds of environmental and public interest groups, representing all 50 states, has called for expedited transfer of high-level radioactive waste from vulnerable pools into hardened dry casks, designed and built to last not decades but centuries, without leaking, safeguarded against accidents and natural disasters, and secured against attack.

The mountain of radioactive waste in the U.S. has grown 70 years high, and we still don't know what to do with the first cupful. Radioactive waste may well prove to be a "trans-solutional" problem, one created by humans, but beyond our ability to solve. The only safe, sound solution for radioactive waste is to not make it in the first place. Reactors should be permanently shut down, to stop the generation of high-level radioactive waste for which we have no good solution.

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From: Betty J. Van Wicklen [mailto:g10121@care2.com]
Sent: Thursday, July 14, 2016 6:59 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Response to IPC - "Consent-Based Siting" of Radioactive Saste dumps and Mobile Chernobyls

Dear Reviewer.

There follow my comments on the above subject:

1. Stop making it. The only truly safe, sound, just solution for the radioactive waste problem, is to not make it in the first place. Electricity can be supplied by clean, safe, affordable renewable sources, such as wind and solar, and demand decreased significantly by efficiency, rather than generating radioactive waste via dirty, dangerous, and expensive nuclear power. *This means decomissioning of existing plants which do not pass inspections or which have passed their life sxpectancy, and NO new plant approvals or extended leases and no waivers for any reason.*

2. Expedite the transfer of irradiated nuclear fuel from densely-packed “wet” storage pools into Hardened On-Site Storage (HOSS) dry casks.

3. Store irradiated nuclear fuel in HOSS dry casks, as safely and securely as possible, as close to the point of

generation as possible, in a monitored, inspectable, retrievable manner.

4. Given the unavoidable risks of high-level radioactive waste, truck, train, and/or barge shipments on roads, rails, and/or waterways (Mobile Chernobyls, Dirty Bombs on Wheels, Floating Fukushimas), transport irradiated nuclear fuel only once, such as straight to a (suitable, acceptable, just) geological repository, not to so-called centralized interim storage (de facto permanent parking lot dumps, such as those currently targeted at Waste Control Specialists, LLC in Andrews County, west Texas; at Eddy-Lea Counties, near the Waste Isolation Pilot Plant in southeast New Mexico; Native American reservations, sacred and cultural sites; nuclear power plants, etc.). *Such transport should avoid barge transport on rivers, lakes or streams when at all possible, and routes through areas of high population to avoid as much radiation contamination as possible due to accident.*

5. Geological repositories must be scientifically suitable (capable of isolating the hazardous high-level radioactive waste from the living environment forevermore), socially acceptable (genuinely consent-based), and not in environmentally at risk areas.

> *Note*: no such suitable/acceptable/just geologic repository has yet been found, in more than half a century of looking. DOE has admitted it can't open any repository (even an unsuitable/unacceptable/unjust one) till 2048 at the earliest. That will be over a century after Enrico Fermi, in 1942, generated the first high-

level radioactive waste, in the world's first reactor, as part of the Manhattan Project to build atomic bombs; and more than 90 years years after the first "civilian" atomic reactor began generating waste at Shippingport, PA!

6. Do not reprocess (extract fissile plutonium and/or uranium from) irradiated nuclear fuel. Not only would this risk nuclear weapons proliferation, and be astronomically expensive; it would also very likely cause environmental ruin downwind and downstream of wherever it is carried out, as has been shown at such places as Hanford Nuclear Reservation in Washington; Savannah River Site, South Carolina; West Valley, New York; Sellafield, U.K.; La Hague, France; Kyshtym, Russia; etc.

7. Preserve and maintain "wet" storage pools – albeit emptied of irradiated nuclear fuel -- as an emergency back up location for cask-to-cask HOSS transfers, when old HOSS casks deteriorate toward failure, and need to be replaced with brand new HOSS casks. That is, do not dismantle pools as part of nuclear power plant decommissioning, post-reactor shutdown.

8. Carefully pass information about storing irradiated nuclear fuel as safely as possible, as close to the point of generation as possible, from one generation to the next, à la the concept of "Rolling Stewardship" described by the Canadian Coalition for Nuclear Responsibility.

9. Address the shortfall in funding for forevermore storage of high-level radioactive waste. Dr. Mark Cooper of Vermont Law School has estimated the first 200 years

of commercial irradiated nuclear fuel storage (assuming just a single repository, although at least two will be required!) will cost $210 to $350 billion, even though there is only some tens of billions of dollars remaining in the now-terminated Nuclear Waste Fund, with additional fees no longer collected from nuclear power ratepayers. (This means federal taxpayers will be forced to make up for the shortfall!)

10. Environmental justice, in keeping with President Bill Clinton's 1994 Executive Order 12898, demands that *Native American communities and lands, as well as those of other low income and/or people of color communities, never again be targeted for high-level radioactive waste parking lot dumps or permanent burial sites,* a shameful form of radioactive racism dating back decades in the U.S.

Thank you for the opportunity to comment on your proposed to safely sequester radioactive waste. It is a truly daunting task which, unfortunately grows -- in severity, difficulty and expense to taxpayers -- with every day that passes unless point one is enacted. I can only hope that the scientific developers of nuclear and new chemical and biogenetic materials take due heed of these problems to avoid facing similar problems in the future.

Sincerely,

Betty J. Van Wicklen
41 Lake Shore Dr. #2B
Watervliet, NY 12189-2915

Consent-Based Siting

From: Karen Weehler [mailto:ksweehler@yahoo.com]
Sent: Sunday, July 31, 2016 1:39 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Radioactive waste

Do not move radioactive waste to consolidate it. It has misguidedly been produced so now leave it on site to try and prevent it from further contamination.

Karen Weehler
2411 W. Magnolia
San Antonio, TX 78228

Consent-Based Siting

From: jim yarbrough [mailto:jyarbro2003@yahoo.com]
Sent: Thursday, July 28, 2016 3:32 PM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: Consent based siting

Stop making radioactive waste. The only truly safe, sound, just solution for the radioactive waste problem, is to not make it in the first place. Electricity can be supplied by clean, safe, affordable renewable sources, such as wind and solar, and demand decreased significantly by efficiency, rather than generating radioactive waste via dirty, dangerous, and expensive nuclear power.

Expedite the transfer of irradiated nuclear fuel from densely-packed “wet” storage pools into Hardened On-Site Storage (HOSS) dry casks.

Store irradiated nuclear fuel in HOSS dry casks, as safely and securely as possible, as close to the point of generation as possible, in a monitored, inspectable, retrievable manner.

Given the unavoidable risks of high-level radioactive waste truck, train, and/or barge shipments on roads, rails, and/or waterways (Mobile Chernobyls, Dirty Bombs on Wheels, Floating Fukushimas), transport irradiated nuclear fuel only once, such as straight to a (suitable, acceptable, just) geological repository, not to so-called centralized interim storage (de facto permanent parking lot dumps, such as those currently targeted at Waste Control Specialists, LLC in Andrews County, west Texas; at Eddy-Lea Counties, near the Waste Isolation Pilot Plant in southeast New Mexico; Native American reservations; nuclear power plants, such as Exelon's Dresden in Morris, IL; etc.).

Geological repositories must be scientifically suitable (capable of isolating the hazardous high-level radioactive waste from the living environment forevermore), socially acceptable (genuinely consent-based), and environmentally just. Note that no such suitable/acceptable/just geologic repository has yet been found, in more than half a century of looking. DOE has admitted it can’t open any repository (even an unsuitable/unacceptable/unjust one) till 2048 at the earliest, more than a century after Enrico Fermi, in 1942, generated the first high-level radioactive waste, in the world’s first reactor, as part of the Manhattan Project to build atomic bombs; and more than 90 years years after the first “civilian” atomic reactor began generating waste at Shippingport, PA.

Do not reprocess (extract fissile plutonium and/or uranium from) irradiated nuclear fuel. Not only would this risk nuclear weapons proliferation, and be astronomically expensive; it would also very likely cause environmental ruin downwind and downstream of wherever it is carried out, as has been shown at such places as Hanford Nuclear Reservation in Washington; Savannah River Site, South Carolina; West Valley, New York; Sellafield, England; La Hague, France; Kyshtym, Russia; etc.

Preserve and maintain “wet” storage pools – albeit emptied of irradiated nuclear fuel -- as an emergency back up location for cask-to-cask HOSS transfers, when old HOSS casks deteriorate toward failure, and need to be replaced with

brand new HOSS casks. That is, do not dismantle pools as part of nuclear power plant decommissioning post-reactor shutdown.

Carefully pass information about storing irradiated nuclear fuel as safely as possible, as close to the point of generation as possible, from one generation to the next, à la the concept of “Rolling Stewardship” described by the Canadian Coalition for Nuclear Responsibility.

Address the shortfall in funding for forevermore storage of high-level radioactive waste. Dr. Mark Cooper of Vermont Law School has estimated the first 200 years of commercial irradiated nuclear fuel storage (assuming just a single repository, although at least two will be required!) will cost $210 to $350 billion, even though there is only some tens of billions of dollars remaining in the now-terminated Nuclear Waste Fund, collected from nuclear power ratepayers.

Environmental justice, in keeping with Bill Clinton's 1994 Executive Order 12898, demands that Native American communities and lands, as well as those of other low income and/or people of color communities, never again be targeted for high-level radioactive waste parking lot dumps or permanent burial sites, a shameful form of radioactive racism dating back decades in the U.S.

Thank you, Jim Yarbrough 574 Garfield Ave. South Pasadena, CA 91030