

Rulemaking1CEm Resource

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From: Susan M [<mailto:stardust10000@yahoo.com>]

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Ohio Nuclear Free Cmte

Subject: Waste Confidence Draft Generic EIS testimony

To the NRC rulemaking comments staff:

I talked to Dawn Forder at the NRC today about this submission and I was instructed to email it in and to explain my circumstances. I realize that this is one business day late. There was an ice storm in which the schools and other businesses in my immediate area, Mt. Horeb Wisconsin, were closed under a dangerous ice emergency closure. The national weather radio system instructed people not to drive except for emergencies. Nothing was moving. Over the weekend, this was followed by about 8" of snow on top of the ice. I wasn't able to submit my written testimony without ability to get to internet access at the library until today. I am submitting this now. Thank you for your understanding.

Attached please find the attachment with my testimony. I believe it is Docket # NRC-2012-0246.

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Official Testimony to the U.S. Nuclear Regulatory Commission re: Waste Confidence rule (78 Fed. Reg. 56,776 of 9-13-2013 as well as the Draft Waste Confidence Generic Environmental Impact Statement (Draft GEIS) rule with the purpose of creating a high-level radioactive commercial waste permanent storage solution that will safe for thousands of years.

Presented by Susan Michetti, 605 Sheila St., Mt. Horeb, WI 53572 stardust10000@yahoo.com
A volunteer with the Sierra Club, John Muir Chapter of Wisconsin
December 20, 2013

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Dear Nuclear Regulatory Commissioners:

We thank you for this opportunity to provide official testimony and official requests. Please feel free to contact me for any clarifications.

INSUFFICIENT SCIENTIFIC RIGOR

Inadequate application of scientific principles, thinking, testing, methodology, and practices in DGEIS and entire oversight process

Scientific principles and practices require their thorough application with rigor to every potential point of vulnerability, to every potential point from which lack of safety is introduced: anything less is unacceptable. Safety, which logically assures the protection of the environment and humanity from harmful exposure, requires placement at the top of the scientific decision tree, upon which all else depends. If a point of vulnerability does not have a practical solution when we are dealing with the most lethal substances created on earth, then logically the entire ensuing operation becomes too dangerous. Vulnerabilities with this extreme dangerousness exist; therefore, safety requires that the operation be stopped in order to avoid unsafe situations.

Inadequate application of scientific principles and practices results in weak and erratic oversight

NRC oversight has been unacceptably weak or erratic at many reactors. It will be decreased post-operation storage. We are concerned that the environmental impacts of leaks always appear to be more significant at reactors with less oversight. Safety assurances require NRC oversight to be consistently strong with sufficient inspections and enforcement. This requires improvement.

Inappropriate placement in decision tree of the most important value upon which the survival of all living organisms depend—that of full environmental safety assurances

The environmental assessment stage of rigorous rational scientific thinking requires developing an accurately valued decision tree as oversight priorities that serves as an appropriate gatekeeper. When we are dealing with safety from some of the most lethal and toxic substances on earth, safety assurances are very critical to survival and well-being of humanity and the environment. Safety assurances for the environment and humanity on this limited finite planet where all people breathe the same air and drink the water, logically, are assigned the highest value and the highest placement on the decision tree. The safety of whole interconnected environment on this finite earth planet, which is the

only place we have to live, requires being assigned the highest value. Our whole interconnected environment consists of that which sustains all living organisms in survival, particularly including the high quality clean air in the atmosphere and the high drinking water quality in the water cycle.

Without safety assurances, the survival of living organisms within the fragile environment may be critically threatened quickly from extremely lethal and toxic nuclear radio-nuclides; thereby, decisions determined by rational thinking assign the highest value to the critically important survival of humanity and other living organisms, which, in turn, requires safety of the complete environment of this physical world planet earth. The highest value is represented by the highest placement on the decision tree, which, in turn, provides appropriate oversight as the gatekeeper.

Appropriate decision-tree placement of environmental safety assurances in the highest position provides appropriate oversight as the gatekeeper of the path. The top of the decision tree begins with required logical pre-emption of dangerous unsolved problems with unknown solutions that get sent back, so to speak, to the “drawing board.” Appropriate decision-tree placement and rational scientific thinking does not permit generation of lethal substances that cannot be safely contained throughout their full sets of life-times of thousands and millions of years because they are too dangerous for survival of well-being, health, and reproduction.

When safety assurances are given their rightful weight and importance as the primary gatekeeper that drives possibilities in a properly designed scientific decision tree, logic recognizes that sufficient safety assurances would have preempted the most lethal substances on earth from being created in the first place. By logical corollary, only insufficient safety assurances allowed creation of lethal substances for which safe storage or disposal was unknown in the actual physical world. By extension of this corollary, it is unacceptable to allow creation of nuclear waste’s ionizing isotopes that can’t be safely stored, disposed, discarded, or abandoned without unacceptably interfering with the environment we need to survive as well as our ability to reproduce with well-being and health.

Predictable inadvertent environmental exposure to ionizing isotopes without a safe method of disposal requires pre-emption based on the highest value, safety. The failure of the NRC to use actual scientific thinking, methodology, and practices throughout its entire oversight program, decision-making, and approval of nuclear reactor licenses and license extensions, unacceptably, has negligently allowed impacts of ionizing radiation on the complete environment to be overlooked.

Unacceptable continual generation of lethal substances without any safe storage or disposal method

It is irrational, or insanity, to produce more and more waste without a physical solution that can safely isolate and contain that very lethal waste permanently to keep it away from humanity and the environment for thousands of years and more. Humanity has been put harms’ way from irrational oversight and very flawed thinking, lacking is sufficient assessment of rational scientific principles.

Without any safe storage method and location for the most lethal substances made on earth, rational thinking requires a rapid phase-out that systematically shuts down all nuclear power reactors. It seems logical to start with those that have the worst safety records and largest leakages, and those with past experience of electric brownout/blackout or flooding. It is not rationally feasible to continue generating the most lethal substances on earth without any way to permanently isolate and contain them for their full cumulative lifetimes from exposure to the full environment including all life forms. Scientific thinking and analysis requires this decision to be at the top of the scientific decision tree for the safety case. By necessity of survival, safety of life forms and environment are required to be the highest and top value and priority for the decision tree which should open, transparent, and available to the public.

Scientific thinking requires the NRC to seriously study the full ramifications of dozens of scientific studies pertaining to Yucca Mountain, including the National Research Council Report noting the “scientific impossibility” of making a container last 10,000 years. Specifically, DOE’s own studies show that once

containers begin to leak, Yucca Mountain rock is practically useless in holding back radioactive materials. President Obama, a pro-nuclear advocate, ended Yucca Mountain and cut off its funding, based on sufficient scientific evidence that it did not meet the safety criteria as a radioactive storage location.

Wisconsin's Point Beach and Kewanee unacceptably leak tritium into the environment

In Wisconsin, the NRC granted license extensions to Point Beach nuclear plant's 2 reactors in Manitowoc County as well as to the Kewanee nuclear plant 27 miles south of Green Bay on the shores of Lake Michigan. Kewanee has recently closed due to financial costs. Kewanee has spent fuel rods stored in an on-site pool. The NRC granted both Point Beach and Kewanee license extensions, after dismissing, as inappropriate, citizen testimony that both plants were leaking tritium. The NRC did not mandate any stoppage of the leaks. Wisconsinites who knew about this causal acceptance found it unacceptable that some people have become, so to speak, sacrificial lambs to be harmed at the altar of nuclear power. This blatant causal acceptance consisted of a breach of the very safety that the NRC's oversight authority should have corrected, but it didn't. A test reactor exists at the University of Wisconsin-Madison. There is another closed plant south of LaCrosse, Wisconsin near the shores of the Mississippi River. Prairie Island is on an island between Wisconsin and Minnesota.

Wisconsin's Point Beach and Kewanee tritium leak complaints were inappropriately dismissed as inappropriate for safety consideration to protect the public and its drinking water quality by the NRC license extension approval process.

Tritium leakage happened at both Point Beach and Kewanee in Wisconsin. Worse yet, concerns about this tritium leakage were dismissed during license extension approval with the NRC claiming that license extension approval process was the inappropriate time to address concerns involving off-site contamination of drinking water with tritium. If the license extension approval process is the inappropriate time and the GEIS is the inappropriate time to address non-generic complaints, when is the appropriate time? How did the NRC get so bureaucratic that it has lost sight of what should be its primary duty to protect the public and environment safely? Sufficient oversight assessment requires the safety of environment and living organisms have highest placement as the highest priority on the decision tree. When safety of environment and living organisms including humanity sits at the top of the decision tree by its highest priority ranking, then it becomes the gatekeeper. When safety is the gatekeeper, it pre-empts insufficient safety and does not approve or extend licenses when a safe endpoint for storage and disposal of nuclear waste industry-wide remains unknown.

Implement Precautionary Principle

In retrospect, continuation of the creation of grave and lethal radioactive wastes without a specifically identified and known end-point where it would safely end was clearly irrational. It is time to stop this irrational behavior. It is time to stop sabotaging the survival of humanity itself. It is time to admit transparently the errors caused by lack of facts and faulty thinking in the past. It is time to admit the solution does not exist. It is time to stop wishful thinking. It is time to get out of irrational denial mode that is sabotaging the very survival potential of humanity itself.

We must immediately implement the Precautionary Principle.

NRC needs to admit waste disposal solution is unknown and move forward logically, transparently, and openly, to best solve "impossible" problems. We are all on this finite planet together and need to work together to move forward seeking progress

The causal acceptance, or complacency, of radioactive leakage into the environment violates scientific methods and practices; it also demonstrates that failure of scientific thinking is in operation at the level of NRC oversight, which represents its highest decision-making authority. The NRC's safety claims impossibly co-exist with practices of ignoring public complaints to stop radioactive leakage into the environment. The public complaints would not exist if safety existed. To ignore evidence that the safety assurances are flawed is unacceptable, but this has happened repeatedly and continues to happen.

It is time to call for the brightest and best scientists to try to brainstorm a range of possibilities for intensive research toward the type of discoveries most likely to provide the safest solution for the lethal waste to best attempt to attain reliable isolation for thousands of years, if such a solution is even possible. It is time to move forward logically, instead of behaving as a group of lemmings going over a cliff to die en masse from craziness and faulty thinking.

The sooner NRC admits its errors and stops being in denial that the waste solution appears impossible, the quicker we can move forward to deal with the remaining actual problem, which is the vast amount of lethal non-disposable waste that we have generated that we must somehow find a way to isolate and keep contained away from the environment and humanity. It is unacceptable for the NRC to continue to play the irrational denial role and interfere in this way with moving forward seeking progress.

It is rational to believe a safe solution for the nuclear waste is impossible

Yucca Mountain has been determined to lack safety as a ionizing waste repository. The US government put major resources into developing Yucca Mountain to be as safe as possible and finally pulled out of that storage solution when safety was proven impossible.

The French tout their ability to recycle their nuclear waste, but only 1% can be reprocessed into plutonium (MOX) fuel, per Sierra Club, John Muir Chapter's *Nuclear Energy: A Bad Bargain for Wisconsin*, 2013. MOX fuel is the most dangerous and the most insidious ionizing isotopes with the greatest safety problems and with the longest lifespans. This does not address the overall waste problem of storage and disposal, and it adds to the safety problem and increases the time span.

A safe solution has not been found by any nation or the nuclear industry during 65 years of hopeful thinking that doesn't match reality. No solution for the waste exists. All the numerous solutions studied have been found insufficient for safety. At this point, there is more than adequate justification to conclude that a safe solution for the waste is impossible.

Emerging and developing issues require timely addressing prioritized for safety

Emerging and developing issues-- including those growing from errors in previous assessment, analysis, and practices-- require special timely treatment that enables safety issues to be prioritized and appropriately addressed within a reasonably timely timeframe. Scientific assessment and open-ended methods should be applied to permit submission of official concerns at any point in time, rather than being potentially inappropriately delayed for a specific scheduled review, while safety is compromised.

Scientific overview through assessment and analysis of safety priority requires development of methods of accepting official public testimony at any time that does not limit submission of official comments to limited scheduled timeframes. Such submissions require some way to appropriately prioritize by the timeliness of any safety issues, particularly to strictly contain any and all ionizing isotopes from leakage source through the entire timeframe of their cumulative ionizing impacts in consideration of the duration of time required for all the sets of half-lives to display until totally expired. From sufficient overview, a method should be required to promote identifying and addressing safety more certainly within an open timeframe permitting submission of new information, new concerns, new approaches, and insights into safety issues as well as the discovery of past fatal flaws, incomplete or inaccurate information and/or conclusions, unsafe practices, or any concerns about failures of sufficient oversight. For example, the International Joint Commission of Great Lakes Water Quality was formed around scientific principles for scientific academics and professionals and developed a policy to accept official comments continually in order to be alerted to a need to focus on emerging issues of concern in a timely way. To the extent that the NRC employs a process that does not permit a continual influx of official comments of concern with a sufficient method to ensure that each is prioritized to be addressed in the timely way required by any safety concerns, that is the extent to which the NRC is blocking the ability to

apply the brightest and best application of scientific thinking, methods, and principles in the most timely way, which, in turn, is required to protect the environment and the public as safely as possible in the most timely way.

To the extent that NRC, along with other federal regulatory and consumer protection agencies, is not actively sufficiently collecting and sharing raw data about ionizing leaks in time, date, and location variables required for further scientific research and analysis (which can be used to expand our ability to protect the full environment and living organisms), that is the extent to which the NRC is standing in the way of the discovery of deeper and wider scientific knowledge about ionizing radiation and possibly the potential solutions to solve the horrendous problem of all of this lethal waste without any safety assurance case to be able to isolate and contain this waste for the full duration of its ionizing lives. The failure to sufficiently collect and openly and transparently share the full sets of raw data required for moving forward constitutes a failure to approach a most highly scientific and technological job in the most scientific and safest way. This inadequacy of raw data stands in the way of scientific progress and slows down improvements to safety.

SPECIAL SAFETY ISSUES

There is no safe level of radiation.

Repeated studies conducted a couple decades ago show that any exposure to ionizing radiation harms people by changing the structures of blood cells and by changing the complete blood count (CBC) levels at the lowest levels. Low level ionizing radiation exposure causes fatigue and other subtle function problems with impacts that decrease well-being and cognitive sharpness. Thyroid cancer, leukemia, and other illnesses may occur decades after radiation exposure. Permanent irreversible damage to genetic pools often requires waiting for the 3rd and 4th generations to present itself reproductively. An growing epidemic of thyroid cancer and leukemia is occurring in the USA. Radiation exposure is the primary known cause. I am unaware of any considerations of the actual fraction of these impacts to be attributed by NRC to known radioactive isotope exposures from Three Mile Island and other leaks inside the USA, but the timing combined with the impacts that follows afterward is an indicator that requires addressing. These illnesses represent human suffering and dysfunction from exposure to ionizing radiation. While impacts on humans may fail to register in awareness, so to speak, in terms of connecting the dots, the impacts and observed changes of any exposure level, including medical exposures, can be found in the membranes of blood cells and in the fractions within the complete blood count (CBC) in direct linear response to the ionizing exposure. With these ignored human impacts (that may be causing fibromyalgia, chronic fatigue syndrome, Gulf War Disease, non-iodine deficiency multinodular thyroid, thyroid cancer, leukemia, still-born births), perhaps larger impacts may be occurring sooner in plant-life, insects, and wildlife. Far-ranging impacts have been recorded with the scanty measurements available following catastrophic radioactive releases into the environment. Scientific principles require measuring releases from the source in time and space and making that data available to any researcher; anything less is unacceptable.

Full complete timeframe for each ionizing isotope required for full safety case

We request actual EIS regarding any and all safety issues, including fuel storage pools and casks that pertain to the actual timeframe required for all ionizing radiation isotopes identified as present to expire. The impossibility of safe actual physical storage in an actual location exists at the top of the scientific decision tree of safety for humanity and environment throughout the full timeframe of impacts. Using tools that continue to permit societal denial of reality is irrational. These adverse impacts to safety of humanity and environment are not only man-made, but unnecessary and extremely financially expensive when safe, economic alternatives for energy exist—solar and wind.

It is not rationally feasible to continue generating the most lethal substances on earth without any way to permanently isolate and contain them for their full cumulative lifetimes. These dangerous radioactive isotopes must be kept away from exposure to the full environment and humanity.

Inadequate safety for malicious destruction

The Waste Confidence Draft EIS fails to adequately address a serious threat to nuclear spent fuel pools from terrorists as well as mentally unstable single white male war gamers without significant relationships who are likely to displace anger or who are likely to be delusional. Suspected al-Qaeda member, Sharif Mobley, accused of murder in Yemen, worked at 5 US nuclear plants, per The Sierra Club's John Muir Chapter's *Nuclear Energy: A Bad Bargain for Wisconsin* (2013). Based on the fact that the top financial priority in the US government budget in 2013 is military and war, excluding war debt, combined with too many changing and unstable socio-economic factors, rationally it is very difficult to conclude that terrorism, malicious destruction, and delusional confusion of reality for war games might go away without addressing the root of pent up anger and instability. Hopefully, the NRC receives rapidly evolving accurate intelligence information that warns of special vulnerabilities upon which the NRC can rapidly mobilize sufficient extra resources to protect safety.

Inadequate safety from electric blackout vulnerability

The NRC's security regulations insufficiently ensure that spent fuel pools are protected from electric blackouts. If the electric grid has a blackout to a nuclear power plant that lasts more than the 4 or 8 hours for which the backup generator provides, that electrical blackout becomes a vulnerability for that location. Spent fuel pools require constant cooling.

Acts of maliciousness or terrorism are always possible in terms of both the external electric grid feeding to operations and storage as well as from internal operations. Sharif Mobley, suspected al-Qaeda member, worked at 5 US nuclear plants.

Astrophysicists have warned US Congress that extreme sun spot activity can direct a CMT into the earth's atmosphere with the potential to knock out a significant part of the world's interconnected electric grid in a domino effect. The US grid is interconnected with much of Canada and parts of Mexico.

In the recent past, various locations in the USA were hit by super tornados or hurricanes often with surge waves. Some areas were totally leveled. Some areas were without electricity for more than a month. Other areas were flooded. Yet, the backup steam generators are stored in the basement where irrationally flood potential is maximized, returning back to NRC's approval with insufficient safety assessment and overview. The lessons of Fukushima have not been adapted to vulnerabilities.

Such lengthy lack of electricity likely will occur at a nuclear plant in the future. Potentially catastrophic, this lengthy lack of electric grid access could seriously impact safety at a nuclear power plant and its spent fuel pool which requires constant cooling. The impact is not if, but when. Without access to sufficient, constant electricity, the security regulations to protect us from this predictable catastrophic problem are missing. It is unacceptable, given the extreme dangerousness of burning ionizing spent fuel pools or a reactor core with the potential for a chain reaction, to not mandate sufficient backup electricity solutions to provide the full potential timeframe when access to grid electricity may be unavailable. Safety claims without sufficient backup energy are invalid. This was the vulnerability at Fukushima. One-quarter of the US's 103 nuclear plants are of the same General Electric design. All nuclear power plants have that vulnerability, which makes it insane to continue to incorrectly assume that sufficient electric grid energy will always be available.

A sufficiently scientific overview and assessment requires placing this safety vulnerability at the top of the decision tree, where licensing plant operation must first go through the appropriate gate-keeping, that first requires that the problem be solved, in order to guarantee sufficient backup or reliable alternative energy solution that can keep working for at least a month or for the entire timeline of any potential electrical shortage, whichever is longer. The very operation of any nuclear plant and the

creation of its storage pools should depend upon its ability to be able to continue necessary operations for safety indefinitely.

Unacceptable safety threat from high-density fuel storage pools fires

Reactor owners have increased the risk of serious environmental threat by using high-density storage racks in fuel pools. Decreasing the risk of environmental threat requires decreasing the fuel density stored in pools. Spent fuel in high density pools is accumulating dangerously at every nuclear power plant site in the USA. Such waste pools pose a serious risk of catastrophic fire. It is irrational to continue this practice after the Fukushima catastrophic fires that continue to rage out-of-control for nearly three years now. Pertinent to safety of on-site storage pools, unacceptable safety problems exist during plant operation and generation of the fuel waste with insufficient oversight and enforcement. Natural earthquakes, volcano eruptions, tsunamis, hurricanes, tornados, and high winds are points of vulnerability that can damage nuclear plant facilities or take down the electric grid upon which these nuclear reactors and fuel pools depend to prevent threats to the public. It is insufficient for the NRC to claim that these dangerous high density stacked fuel pools, which, in turn, require continual energy to cool, are being permitted to continue for 60 years after the operation ends, without scientific proof that they will be ever be safe during this period as well as throughout their cumulative half-lives life spans that far exceed this arbitrary time period.

Insufficient scientific rigor applied to unique environmental vulnerabilities surrounding actual specific physical world location in terms of unique and differentiated variables in oversight and scientific assessment of safety case. Insufficient rigor is unacceptable.

Leakage from some sites may reach and contaminate groundwater quicker due to unique vulnerabilities in the environment, such as very high water tables, proximity to streams and lakes, proximity to ground water, vulnerability to flooding, risks of tsunamis and high waves, and more. Such vulnerabilities that generate leaks or expand leaks will likely cause significant adverse impact upon environment and humanity; a good scientific analysis would attempt to quantify probability ranges for each type of significant impact with differing characteristics, including drinking water sources for humans and wildlife.

Prairie Island in the Mississippi River floods and unacceptably contaminates drinking water

In one example, Prairie Island reactors are situated on an island that floods in the Mississippi River between Wisconsin and Minnesota. Public testimony prior to the licensing of Prairie Island reactors expressed grave concern about the vulnerability of that location on an island in the Mississippi River with a history of past flooding. Grave concern was expressed about that location's wetness in terms of its inability to hold back contamination from waters. Native Americans stated that licensing a nuclear power plant on Prairie Island would put into place the likelihood that their sacred drinking water would become contaminated with radioactivity. The NRC failed to scientifically assess and analyze this vulnerability correctly after the very environmental vulnerabilities were stated during public testimony as concerns with the potential to contaminate the Mississippi River with radiation. Today, contaminated drinking water has become a reality. The NRC's license approval process inadequately protects environmental and human safety when the environmental conditions present contain unique vulnerabilities, such as this location on a small island that periodically floods. The NRC did not deny that Prairie Island reactor license. The Prairie Island license warranted denial based on environmental vulnerability that predicted drinking water contamination in time. This is an example of the harm being caused by failures and distortions occurring in the decision-making. Native American trust lands require being provided protection for their water sources, particularly their drinking water. All water runs together in uncontained ways. All water connects. Any water contamination reaches other water sources over time.

Washington's Columbia reactor is close to Columbia River and unacceptably contaminates drinking water

The Columbia reactor in Washington is located close to the Columbia River. It was predictable scientifically that Columbia would contaminate drinking water sources, and this has happened. This type of unscientific oversight and decision-making at the NRC is unacceptable.

Indian Point is unacceptably close to Hudson River which threatens safety

Indian Point reactors are located close to the eastern shore of the Hudson River near a huge population. This has unique environmental vulnerabilities.

Turkey Point is unacceptably next to fragile aquifers and Everglades National Park and threatens environmental safety

The Turkey Point reactors are located close to fragile aquifers next to Everglades National Park with unique environmental vulnerabilities.

Diablo Canyon unacceptably is in an earthquake zone that threatens safety

Diablo Canyon is located in a known earthquake zone with high seismic risk for a nuclear power plant with unique environmental vulnerabilities.

SPECIAL SAFETY ISSUES REGARDING WATER

Unacceptable failure to address impacts to drinking water quality for complete timeline

The Draft Generic EIS unacceptably fails to address impacts to drinking water quality. The NRC casually accepts contamination of leaking water on site. This violates scientific thinking, methods, and practices that the onsite contamination of drinking water in excess of EPA drinking water standards is somehow assumed to be acceptable because it has not migrated offsite at this point in time. This is another example of unacceptable, unscientific and irrational thinking by NRC decision-makers that is driving flawed and dangerous policy and rules without sufficient analysis regarding the complete impacts of nuclear reactor operations through the complete impacted timeline, (which is the timeframe of the complete life span of the various radioactive isotopes that encompasses their entire sets of half-lives). Scientific practices do not permit radioactive contamination leaks to continue unabated, but such unacceptable leaks are happening on-site at every reactor site in the USA. Scientific thinking, methods, and practices must include the complete timeframes upon which to build the case for safety, but this Draft Generic EIS does not do what is required in terms of protecting drinking water quality through time. The importance of protecting drinking water quality has always been critical, but even more so now that the subject of water wars is being discussed.

High burnup fuel increases unacceptable tritium contamination and threatens safety

Of special safety concern for drinking water is the use of high burn up fuel with increased tritium load. The use varies at individual reactors. Tritium appears to be impossible to remove from groundwater, making tritium contamination very seriously significant. This represents an example of NRC's insufficient dealing with environmental exposure in a timely way for actual adverse physical reality impacts with drinking water contamination. These impacts are worsening from not being cleaned up by reactor owners. People are drinking water contaminated with tritium and experiencing adverse health effects. Harmed nearby residents are not being compensated. The NRC assures a false public safety as this occurs. An unacceptable contradiction exists between reality and the safety concept. The safety claims have become distorted. The safety assurance is untrustworthy.

Inadequate cumulative leak impact data for each specific physical world location threatens safety

Leakage from spent fuel pools and from various other parts of each reactor contain cumulative impacts which require a physical site-specific evaluation with data maps for each site. Generic evaluation is inapplicable to physical world reality.

Inadequate radioactive plume mapping of water migration through timeline

Scientific thinking recognizes that water molecules migrate in plumes, often in specific directions, depending on the factors of attraction and repulsion in operation at all levels of the physical world. Scientific thinking recognizes that it is merely a matter of time when migration off-site will occur. To dismiss migration off-site with insufficient consideration fails to apply measurements of plume migration of contaminated water on a timeline. Scientific analysis requires the information for each leaked isotope to be plotted into a future timeline based on all known factors that might impact that migration map.

Inadequate enforcement to cleanup and to stop migration of radioactive water leaks

Safety of future drinking water from each leak of radioactive contamination depends upon seriously addressing all leaks and stopping their migration immediately—not sitting back doing nothing and waiting for the leak to get worse and to spread offsite. It is unacceptable to not require each leak to be stopped as soon as it is discovered, including if it requires plant shut-down and eliminates profit margins. The environmental and public safety requires the highest value on the decision tree in all NRC decisions and rules, including over that of investor profits and the financial and timing preferences of reactor owners.

Unanticipated leaks have become commonplace at every nuclear reactor. The NRC is too often not enforcing and mandating leaks to be completely stopped and cleaned up. This shows that environmental and public safety are inaccurately not being given the highest values in the complete oversight decision tree.

The Draft Generic EIS unacceptably uses a flawed approach to assess and analyze leaks, particularly in terms of actual specific past leaks at each and every nuclear power plant, as well as fails to consider the full impacts of these leaks.

Massachusetts' Yankee Rowe leaked 2 million gallons radioactive water that unacceptably contaminated the Deerfield River

For example, Yankee Rowe leaked and released about 2 million gallons of radioactive water that flowed into the Deerfield River, as identified in *Yankee Atomic Electric Company's Groundwater Protection—Data Collection Questionnaire*, July 19, 2006, Rowe, MA.

Brookhaven National Labs' spent fuel pool leaked tritium into Suffolk County drinking water aquifer

In another example, Brookhaven National Labs measured ground water samples in 1997 and later that violated the allowable federal drinking water limits for tritium ranging from 2 to 32 times the standard. This leak originated from the High Flux Beam Reactor's spent fuel pool and unacceptably migrated into the drinking water aquifer for nearby Suffolk County residents, as identified in US GAO, *Department of Energy: Information on the Tritium Leak and Contractor Dismissal at the Brookhaven National Laboratory*, GAO/RCED-98-26 (1977).

Leaks beyond one year duration show unacceptable complacency and inadequate safety enforcement

The DOE and Brookhaven National Labs found evidence that more than a decade had passed without their knowledge of this unacceptable leak (GAO/RCED-98-26 (1977), *DOE: Information on the Tritium Leak and Contractor Dismissal at the BNL*). The finding that the timeframe for which this leak was unknown demonstrates that scientific assessment, methods, and practices are being too speedily conducted and without the thoroughness and rigor required. Such failure to meet scientific thinking at the oversight level requires immediate correction. In view of the NRC's claims that safety measures are in place for timely leak detection, it becomes more troubling that at least two spent fuel pool leaks were undetected for prolonged time periods in excess of one year. It is disturbing that such safety claims contradict actual reality more than once. Such inaccurate safety assurances by the NRC result in the

NRC decision-making process displaying unreliability, undependability, and untrustworthiness. Such contradictions between promised assurances and facts are unacceptable. The NRC assures inaccurately that it is unlikely for leaks to go undetected for time periods that enable pollution of the outside environment significantly; such leaks have already occurred at Yankee Rowe nuclear plant and at BNL for longer than one year and perhaps longer than a decade, for examples. A leak reported as only a few gallons a day at spent fuel pool at Salem consisted of 100 gallons a day. Quicker observation, more thorough initial investigation, and accuracy of reporting in a timely way are required and need improvement.

Inadequate leak instrumentation and leak detection as well as inadequate maintenance for safety

It is disturbing that the volume and significance of this leak were not detected by instrumentation as well as not detected by the leak detection system. It is disturbing that a clogged drain in the monitoring system could cause failures, upon which safety depends. Failure in the maintenance of a clogged drain is an indicator that the NRC's safety assurances are flawed at the level of sufficient maintenance necessary to provide complete safety to the public and the environment.

Unacceptable missing measurements and quantitative assessments of spent fuel pool leak impacts

It is unacceptable for the NRC's "scientific" analysis, by definition, of spent fuel pool leak impacts to fail to contain required quantitative assessment. The Draft Generic EIS fails to provide measurements, particularly of volume, speed, and duration, that define the mathematical measurable limits of significant spent fuel pool leaks. In all leaks, the identification of each radioactive elemental isotope should be provided as well as the concentration of quantity in the leaked water. Impacts should be determined through assessments of the factors of volume of leak, duration of leak, speed of leak, and isotope identification and concentration, as the minimum information upon which to base significant impacts. This is not a complete listing.

Inadequate definition, clarity, and transparency for "significant contamination"

What is the measurable amount of leakage that defines NRC's significant contamination criteria? All leaks require sufficient enforcement action. Leaks not stopped within a reasonable time at the maintenance level with sufficient repairs and remodeling require stricter enforcement and fines. When enforcement action and fines do not successfully stop the leaks within less than a year, it is prudent to require shutdown of all operations for safety. The causal complacency needs to be tightened to an extremely rare exception when leaks are fully contained internally and do not escape into the environment outside of the building.

Unacceptable inaccuracy, delayed, or incomplete of owner (licensee) reporting events

Owners of nuclear power plants are too often not reporting problems accurately, timely, and completely with reliability and trustworthiness of integrity. Leaks require full identification of ionizing isotopes and their concentrations. The requirements of the NRC to protect the environment and public health necessitate that the NRC step up its enforcement actions to the point that complacency is eliminated. If owners of nuclear power plants do not take their responsibilities to the full environment and humanity with the honor of extreme seriousness and full honesty and transparency, then those plants require shut down. Other energy alternatives exist: solar and wind energy are readily available at reasonable costs without lethal risks to humanity and the environment.

Inappropriate and unacceptable evasion of scientific rigor in terms of monitoring spent fuel pools at each physical location during the full impact timeline for leaks and other safety issues.

It is unacceptable for the Draft Generic EIS to depend upon regulations and guidelines created for other purposes without going through the full rigorous process of scientific thinking, assessment, methods, analysis, and practices in terms of spent fuel monitoring in on-site pools at each and every specific location with unique differentiating characteristics. This is another violation of scientific principles.

It is unacceptable for the Draft Generic EIS to depend upon groundwater monitoring and inspection programs to monitor leaks, particularly when those programs are not mandatory. Such information should be considered auxiliary or supplemental ways to support more primary data. More primary measurements should be required to increase earlier leak detection as well as source location of a leak.

WASTE CONFIDENCE DRAFT GENERIC ENVIRONMENTAL IMPACT STATEMENT REQUIRES REJECTION

Waste Confidence Draft “Generic” EIS as inadequate tool for safety

Overview analysis to determine any inadequacies in NRC’s regulatory program for future leak detection requires a better tool than the Draft Generic EIS. As a conceptual tool, not a physical world tool, Draft Generic EIS fails to address unique, differentiating factors that arise from the full set of characteristics at a specific physical location. As a result, it is inappropriate to determine safety.

Insufficient regulatory oversight post-operations is unacceptable; Irrational assumption that a repository will be available and completely safe for the environment in roughly 60 years is unacceptable; Overwhelming evidence points to the impossibility of a safe repository throughout the total life span of all sets of half-lives for all ionizing isotopes.

It is unacceptable for the NRC to fail to address the significant decrease in regulatory oversight and the possibilities of harm to the public and the environment from contamination, specifically pertaining to factors impacting the spent fuel storage, referred to as “Waste Confidence Pool Storage” after the shut down of reactors for the next 60 years and “Dry Cask Storage License Renewal(s)” up to the next 40 years and “Long Term Indefinite Storage.” Placing safety assurances upon an irrational assumption that a repository will be available at the end of 60 years of “Waste Confidence Pool Storage” is unacceptable when the overwhelming evidence points to the impossibility of safe repository.

The NRC has failed to examine the full impacts upon the complete physical world from all cumulative leaks, considering past, present, and future timelines. Analysis of these impacts are complicated by the need for accurate identification of leak detection difficulties as well as monitoring and inspection issues, particularly surrounding similar patterns of problems occurring at two or more sites. All spent fuel pool leaks will create definite significant impacts at the point in time where they migrate outside of the site or they contact other water. This undeveloped messy area must be addressed fully with sufficient data points and sufficient decision tree criteria in order to satisfy the required scientific analysis for the highest and best standards for safety, but this has not happened.

The Waste Confidence Draft Generic EIS unacceptably fails the tests of scientific thinking, methodology, and practices at its most fundamental level. The NRC has developed a flawed tool, the Draft Generic EIS, that fails to adequately protect physical environment as well as people from unfortunate impacts.

Unacceptable, inappropriate “generic” conceptualization in Waste Confidence Generic EIS distorts the scientific principles requirement for specific actual physical world locations featuring distinct, unique, and differentiated factors

The Draft Generic EIS is seriously flawed by not addressing the actual specific unique circumstances of individual reactors. The “generic” concept fails to address the actual Physical World in which individual reactor sites are distinct, unique, and differentiated in assorted ways that contradict inaccurate broad sweeping generalized conceptualizations made in the Draft Generic EIS. The Draft Generic EIS is unscientific for these reasons, by definition.

“Generic” is not scientifically applicable to the Physical World

NRC’s flawed irrational waste confidence rule of 9-13-2013 requires rejection.

The Waste Confidence Draft Generic EIS unacceptably fails the tests of scientific thinking, methodology, and practices at its most fundamental level. The NRC has developed a flawed tool, the Draft Generic EIS,

that fails to adequately protect physical environment as well as people and other living organisms from unfortunate impacts.

The Physical World requires physical world measurements to determine its actual physical properties and safety. Actual physical safety can not be rationally determined by non-specific “generic” conceptualization which introduces distortions that are unreliable, undependable, and untrustworthy from which to claim any public health or environmental “safety.” The reality of the physical impossibility of storing this waste for thousands and millions of years is being avoided by flawed rules and insufficient oversight. Wishful thinking that a solution will appear is unacceptable, given the efforts of the last 65 years to identify an actual solution have been without promise, including Yucca Mountain.

The Physical World requires physical assessments for physical world rules, decisions, and solutions, which become not possible when using an imaginary “generic” concept. It is impossible to physically measure and test a conceptualized “generic” location which lacks actual specific measurable physical location because it is not part of the Physical World. The thought world is perceived under different laws that govern its much lesser density. The attributes of the Physical World has its own laws that do not tend to operate practically outside of the Physical World. The same applies to the thought world. The laws that operate within the Physical World emerge from its greater density. This very density lends itself to precision measurements upon which all knowledge about the physical world is based.

Only by measuring and testing the facts pertaining to physical world density to the widest and deepest extent possible will we as a society begin to assess any case for safety for any specific nuclear waste storage solution location and its parameters. This happens because the unique, differentiating reality located in space and time with unique physical realities must be assessed first for its ability to maintain isolation of these most lethal substances on earth. It is impossible to skip this step and to claim “safety” with far too many unknowns with the most dangerous substances on earth. Integrity of safety claims must be supported by reliable facts derived from reliable, dependable research conducted with transparent open honesty and peer-reviewed. We expect that safety claims contain full integrity, particularly for the most lethal substances on earth. We expect that what has not been problem-solved remains out in the open, so to speak, on the table for discussion.

Vigorous and thorough scientific EIS requires actual specific physical world location

Generic conceptualization for safety is inappropriate and unacceptable. Physical storage and disposal remain an integral part of the safety case. Storage and disposal is an integral part of any solution. Generic conception does not lend itself to physical observation, measurement, and analysis of all unique, differentiating, surrounding environmental factors through the complete timeline of impacts.

A safe solution for nuclear waste is required rationally for its full ionizing lifespan before permitting the dangerous waste to be made.

No industry should be allowed to continue creating wastes when that industry has no ability and solution for which to dispose it. When we have no safe place to dispose of radioactive spent fuel, it is irrational and crazy to continue making it. A safe permanent, deep-geological high-level radioactive waste disposal repository, or a safe solution to dispose safely of all the waste, should be required rationally before any new reactor licenses are issued or any license extensions are approved to old operating reactors. However, overwhelming evidence exists against the possibility for a safe place to contain the ionizing isotopes. No known solution has been found.

Waste Confidence Generic Draft EIS does not lend itself to safely addressing an horrendous nuclear waste problem with unknown solution transparently; Unacceptably, the GDEIS evades reality of impossible safe solution.

If safety is an impossibility, we are left in a double-bind quandary. An irrational decision was made when the first nuclear power plants were licensed. That irrational decision arose from lack of rigorous

and thorough assessment of the full set of potential impacts from start to ending of ionizing radiation. This involves the complete timeline into the distant future of each set of each ionizing isotope's complete life span which goes thousands of years. This impossible problem originated with insufficient oversight.

The problem that precludes the Waste Confidence Decision from the Draft GEIS remains the lack of appropriate oversight and the lack of appropriate prioritization of full environmental safety at the top of the decision tree. It is irrational to make decisions to permit operations that generate such lethal waste, when any solution for storage and disposal with safety is impossible. The problem that allowed this irrationality to arise was insufficiency in the scientific assessment. A sufficient scientific assessment would have prioritized the storage and disposal with full environmental safety to be identified and solved, prior to permitting operations by granting license applications and license extensions to nuclear power plants to create the waste. The irrationality occurred approving the first nuclear power plant license. This irrationality was continued through decades of unacceptable accumulation of extremely dangerous waste from 103 nuclear plants without any safe disposal. As the nuclear plants atrophy and operations close, we are now faced with dangerous piles of this lethal waste all over the USA without a safe solution anywhere. We must get out of denial, formally admit that we have a serious problem, and put that problem in its appropriate place at the top of the decision tree where it will become the top priority in terms of scientific investigation and study.

Each specific operation has a location that requires its own unique EIS with scientific analysis that includes all impacts of any and all ionizing isotopes found on-site throughout their ionizing life spans. This analysis is required, particularly, in order to sufficiently identify "the potential environmental effects" of storing spent fuel onsite "on a permanent basis" at each nuclear power reactor site in the USA or any other proposed location, interim or permanent. Specifically, this analysis requires examination of impacts upon the full surrounding environment, its ecosystems, and its interconnecting influences to the rest of this finite planet over the complete timeline of impacts. Plants, trees, insects, wildlife, humans, and all living organisms require full consideration of impacts for the full cumulative lifetime of the isotopes which, contrary to our deepest wishes, likely will not remain contained and isolated. Other features, including water bodies, landforms, atmospheric features, and climate, require full impact identification and consideration for the complete timeline of impacts. Other variables and criteria also require rigorous and thorough scientific assessments and analyses through the complete timeline of impacts for the longest living radionuclide's ionizing wavelengths to expire.

Each specific actual physical world location, as compared to a generic conceptualization with missing physical variables, is required to be scientifically assessed, measured, tested, and analyzed in terms of its complete set of physical properties, specifically including those which are unique and differentiated, particularly in terms of safety to the full environment and all living organisms. Scientific assessment requires thorough safety data: pertaining to actual physical sites for each individual reactor or repository; pertaining to physical interactions of each and all elemental isotopes emitting ionizing radiation with the various interactions among the various attributes and parameters of each specific physical site; pertaining to full identification of the full timeframe of all impacts within the complete parameters of the specific physical site including atrophy and interaction with specific elemental isotopes emitting ionizing radiation over the complete life span required to expire all the cumulative half-lives involved; pertaining to radioactive and toxic leakage from structural weaknesses and other atrophy observed or predicted at that sited repository, including migration off-site, for the complete timeframe required to expire all the cumulative half-lives at that site; and pertaining to predicted or observed public health and environmental damages emerging from any leakage or non-containment of ionizing isotopes from that repository. This is not a complete list.

For accurate safety overview as well as safety assessments and safety analyses, separate rigorous and thorough full EISs are required to be conducted for the actual physical world's characteristics at each

unique individual and differentiated nuclear plant, particularly including spent fuel disposal or storage impacts, in order to determine if any physical world feasibility actual exists to justify the continuation of operations generating these lethal toxins. Full identification of impacts, including cumulative impacts, through the entire timeline of ionizing radiation of each identified isotope, are required for adverse public health impacts; adverse environmental impacts to healthy well-being; adverse reproductive and genetic impacts upon all living organisms, including “race” or “species” survival impacts; social and economic impacts upon various populations; financial impacts; adverse impacts to water forms and water quality, atmospheric issues and air quality, landforms and soil quality, climate changes and/or impacts, and adverse impacts to property and its values. The value of human life and environmental criteria is required to be equal in value to that used by other federal agencies.

Specific on-site independent rigorous assessments strictly using scientific analysis, methods, and practices are required at each reactor site to thoroughly identify each site’s unique attributes and parameters identified in its specific physical location, size, and volume on planet earth to discover critical safety information that is impossible to discover with any generic conceptualization. Differentiated, tested, and measureable site attributes and parameters are required for each reactor site and for each storage site to quantify any “safety” claim. This is not a complete description of all variables to be assessed for safety.

By inaccurately shifting actual physical location to a “generic” conception, information that belongs to the actual physical world but missing in the “generic” thought world introduces unacceptable distortions, or suppressions, of the actual facts. These distortions that arise from generic conceptualization convert all dependent assessments, conclusions, and rule-making into that which is unreliable, undependable, and untrustworthy. By definition, suppressed information does not qualify to be considered as open and transparent, rigorous, thorough scientific methods that can be peer-reviewed or studied by any academic.

Insufficient generic waste confidence rule in terms of spent fuel storage and disposal impacts over their full life span of half-lives of ionizing radiation into the future timeline.

The present generic waste confidence rule critically fails to provide adequate rigorous scientific consideration regarding spent fuel disposal impacts as well as to spent fuel storage impacts and their major safety flaws.

Every licensing proceeding should review any safety considerations that are presented for scientific discovery surrounding unexamined assumptions that may introduce unreliability into the evidence and into the decisions, but this does not happen.

The extreme lethality of these most toxic substances on earth that, in turn, pose a most serious threat to the continuation of humanity deserves nothing less than complete, thorough, and rigorous scientific view of every detail. Anything less is negligent given the logical potential to wipe out humanity genetically; Malformed humans are already visible in the wake of Chernobyl. Scientific principles and analysis require constant hard work exploring attributes and characteristics with assorted measurements and their insights. Man-made failures with surprises, unpredictable events, and accidents emerge from inadequacies and lack of rigor in the scientific principles and thinking used for assessment, including insufficient testing and faulty application and maintenance; such errors arise from irrationality and the lack of wisdom in oversight. These man-made errors usually involve unexamined assumptions that were overlooked which resulted in accidents. Man-made accidents, even when extremes of climate change provide the final trigger, also likely point the path to lessons to learn to adapt increased safety, but this does not happen sufficiently. These safety issues, created by man’s generation of unacceptable lethal toxins, can shed light on the possible discovery of new physical principles and deeper understanding of the information emerging from the data; but this doesn’t happen sufficiently without complete transparency, honesty, and open-mindedness in search of

environmental safety. Unanticipated weaknesses and structural flaws emerge from inadequate and incomplete scientific assessments where rigor and thoroughness was lacking or from inadequacies in product development and testing. The unknown requires identification and articulation to be accurately precise in scientific assessments. Anything less than complete openness and transparency in the application of the scientific method toward all details and analyses undermine, subvert, and distort scientific thinking and render it distorted and inferior to its full capacity to move us forward. Moving forward with reliable scientific progress requires openness with further testing, observation, and thinking, where the transparent attempts to identify the unknown are articulated as precisely as possible.

Moving forward requires dealing openly, honestly, and transparently with ugly reality of humanity's serious mistake of making ionizing waste with no way to dispose of it.

Moving forward also requires transparency that long-term unknown solutions have the potential to be unsolvable, particularly after 65 years of searching. No place exists for wishful thinking in scientific assessments.

Moving forward involves the very dealing with the ugly problems transparently and openly that will generate the best responses that will lead to the best solutions. Lack of safety reliability usually emerges from human errors that distorted the accuracy, measurability, and repetitiveness of the Physical World and its physical laws of matter. Lack of reliability may emerge from physical changes that arose from that which was erroneously assumed to be constant, when what they required was additional scientific observation and verification of their constancy. Observations of the Physical World contains very wide and deep reliability in the behavior and reactions of its physical attributes, if considered sufficiently, from the atomic level up, excepting some deeper quantum phenomena and perhaps excepting black hole phenomena.

Invisibility of ionizing radiation introduces human forgetfulness or unawareness of its presence

The human inability to visibly see the presence of ionizing radiation allows our human awareness to forget and ignore its presence. This does not change the fact that ionizing radiation can be observed to have reliable and repetitive physical impacts on other physical matter and living organisms. The smallest exposure of ionizing radiation alters the membranes of the blood cells and alters the CBC fractions in animal and human medical tests. It alters the membranes of sap in plants. Ionizing radiation has a linear dose response pattern that is very repetitive. Ionizing radiation is not safe for humans, excepting perhaps in medical diagnoses where the advantages are gambled against the disadvantages in individualized and unique circumstances. Ionizing radiation is not safe for living organisms.

FURTHER ACTIONS REQUIRED FOR SAFETY

Stop irrational claims of "confidence" in any "generic" safe solution

We request that the US NRC stop its claims that any "confidence" can be found in any "generic" safe solution for permanent storage of high level nuclear waste. The safety prerequisite for the environment and all living organisms requires that the complete timeframe of potential impacts be considered. That timeframe exists for thousands of years, or perhaps millions, for some of the ionizing isotopes. The NRC waste "confidence" uses an unacceptable and inappropriate arbitrary timeframe that fails to cover even a major fraction of the impact timeframe.

Conduct thorough safety review

Safety assessments require thorough review of the facts surrounding expansion, contraction, and gravity upon each form of matter and upon their individual elemental forms and ionizing isotopes. This review must thoroughly identify, research, and analyze any and all weaknesses or tendencies to compromise isolation over thousands of years.

Recognize that extremely long-term persistent toxics introduce impossibility to control for safety.

The long term timeframe introduces a major impossibility to any prerequisite of safety. This requires that we revisit and examine the irrationality or recklessness of decision-makers for the past 65 years to approve of the processes that generated the most lethal toxic substances on earth. As soon as such ionizing isotopes were measured to have extremely long term cumulated sets of half-lives that were lethally toxic, the logical reaction required to stop producing this waste until a safe solution was known. The extremely long term cumulated sets of half-lives will dangerously persist longer than almost all evidence of humanity's life on earth. It will dangerously persist longer than the records passed down from the ancients. How will we communicate that far into the future? How will we provide safety that far into the future? The extremes of this measurement in time is an indicator that prudent decision-making requires an immediate ban on man-made manufacture of such long-term persistent lethal and toxic substances.

Impose immediate ban on man-made lethal nuclear fission products

From this perspective, we ask that an immediate ban be imposed on the man-made manufacture of lethal nuclear fission products. It is irrational to continue to accumulate the most lethal substances on earth when they cannot be safely contained for their entire impact period. We can not control the variable of extremely long timeline with the variable of non-containable lethal waste with the variable of humanity's genetic reproduction with the variable of full environmental safety within our living space on earth required for our continued survival.

Acknowledge irrationality originated from wishful hopes and Pollyanna-type blindness that the most toxic substances produced on earth could be dealt with safety when no such evidence exists

Unfortunately, we live under irrational governmental decision-making. In terms of the nuclear industries, these irrational times stem originally from the lack of scientific knowledge and technology to adequately and sufficiently deal with the radioactive waste problem at a harmless end point identifiable prior to generation of lethal waste. Continued irrationality is occurring because governmental decision-makers used a flawed assumption for approximately the last 65 years: they believed inaccurately that the nuclear waste solution so blindly desired would "definitely" appear over time, but that did not happen.

Create incentives for published, peer-reviewed scientific research on toxicology in terms of the waste

In order to more scientifically discover the facts of how solids, liquids, gases, chemicals, light, and other factors impact function, we request published and peer-reviewed high level scientific replicable research on toxicology, particularly that which involves all forms of various elements and any ionizing isotopes, manmade or found in nature, that are involved in the waste that requires a storage solution.

Conduct vigorous research of adverse effects of ionizing isotopes on the biophysical environment.

We call for research into the detailed significance of each residual adverse effect on the biophysical environment from any and all elements and ionizing isotopes as well as any other matter that require a long term storage solution. This includes geology, hydrogeology, surface water, terrestrial environment, aquatic environment, radiological conditions, air quality, noise, and vibrations. This includes impacts on human populations, wildlife, fish, insects, birds, plants and trees, including reproduction or gestation of bringing forth new beings. This includes impacts upon the function of warm-blooded humans and animals to generate heat in their blood; upon cold-blooded creatures to circulate blood; and upon plants to circulate sap, deposit green chlorophyll, and color flowers. Impacts on American Indian tribes should be thoroughly identified and studied. This includes impacts upon the function of living organisms to remain organized and to not experience disharmony of vibrations, disintegrating effects, atrophy and excessive early aging, malformations, changes in attraction and repulsion principles, changes in growth patterns. These are not all inclusive lists.

Such studies should measure variables involving the full range of elements and their ionizing isotopes that require permanent long term storage in isolation under the actual wide variety of variables found in reality in terms of assimilation, attraction, and selection as well as by expulsion, excretion, and toxicity.

Assessment of social context is required as well as ecological context of adverse effect with references to peer-reviewed scientific literature and “grey” literature.

Transparency in decision tree logic required

We call for explanations of the logic used for the significance determinations in context, based on reasoning for each individual site for predicted measurable change in terms of scope, geographic event, timing, duration, frequency, degree of irreversibility criteria. These variables are not all inclusive.

RECOMMEND ENDING IRRATIONAL POLICIES FROM CONGRESS AND PRESIDENT’S ADMINISTRATION

Stop government subsidies to new and operational plants and repeal the Price Anderson Act

The downplay of financial and safety concerns associated with building nuclear reactors is unacceptable. In 1985, Forbes magazine called the US promotion of nuclear power “the largest managerial disaster in history.” With renewable energy now safer, cheaper, faster, more secure, less wasteful, nuclear power does not meet the public trust and does not deserve scarce capital. The public cannot afford to subsidize the nuclear industry’s predictable financial failure. The private insurance companies are the best experts in the world with financial risk analysis calculations. The private insurance industry refused to insure the nuclear power plants decades ago because the entire industry was too risky for environmental and human safety. It is totally irrational that the costs of an out-of-control nuclear catastrophe, perhaps like Fukushima, would have to be paid by US taxpayers who would also be the unfortunate victims of it. The Price Anderson Act irrationally makes the taxpayers pay for financial risks of a private for-profit industry inadequately regulated by the NRC with rampant unsafe situations, including radioactive leaks at nearly every nuclear plant location.