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Idaho Leaders and the Department of Energy Not Being Transparent About High-Level Waste Reclassification

The Idaho Settlement Agreement requires the radioactive calcine waste to be treated for shipment out of Idaho by 2035. The Department of Energy has issued a Record of Decision on how it proposes to treat the calcine for its transportation and disposal.^{1 2 3}

But last May, Brad Little stated at the Leadership in Nuclear Energy (LINE) Commission meeting held in Arco, Idaho on May 24 that there wasn't enough money in the U.S. Treasury to treat the calcine.

The minutes of LINE meeting, chaired by Brad Little, are still not available.⁴ It was also pointed out at that meeting that it was problematic that the LINE's draft brochure to describe the calcine issues at the Idaho National Laboratory contained new policy not approved by the state.

The public has not been told what new policies on calcine are being considered.

¹ In order to ship the calcine out of Idaho, it needs a repository to ship to. It needs to be packaged into canisters for shipping and disposal. Calcine retrieval must be performed regardless of the choice of repository or choice of canister packaging method such as Hot Isostatic Press (HIP) (see our June 2017 newsletter). The Department of Energy had formally announced in 2009 the decision to use HIP as the method of repackaging the calcine for shipping and disposal. The 2009 decision was actually amending previous decisions. Now it appears that the 2009 decision may be changed again because the Department of Energy recently issued a report by an independent review panel describing the possible treatment options for the calcine.

Both the CAB and DOE-ID both agree in 2017 that calcine retrieval needed to continue uninterrupted.

Environmental Defense Institute has previously submitted comments to the Idaho Department of Environmental Quality about the calcine. More background on the calcine can be found in the July 2017 EDI newsletter and in other reports listed.

Sec. Moniz: "At the Idaho National Laboratory, 4,400 cubic meters of calcine high-level waste, which exists as granular and powdered solids, is currently planned for treatment, but may be more safely and efficiently packaged without treatment and disposed in a borehole or in a defense waste repository. The same is true for granular solids resulting from fluidized bed stream reforming of 900,000 gallons of sodium-bearing liquid wastes that will be treated at the Idaho site."

DOE has now suspended its two repository approach and its borehole research.

² Department of Energy Press Release, Amended Record of Decision: Idaho high-Level Waste Facilities Disposition Final Environmental Impact Statement REVISED BY STATE 12/21/09.

http://www.id.doe.gov/NEWS/PressReleases/PR100104-HIP/Calcine%20ROD%20final_SIGNED_PDF.pdf In 2009 DOE had decided to select hot isostatic pressing (HIP) to treat the calcine.

³ US DOE-EM, "Independent Analysis of Alternatives for Disposition of the Idaho Calcined High-Level Waste Inventory, Volume 1 – Summary Report," April 2016.

https://energy.gov/sites/prod/files/2016/05/f31/Volume%201%20Calcine%20AoA%20Final%2004-19-16%20w_signatures.pdf

⁴ Idaho Leadership in Nuclear Energy Commission 3.0, Minutes webpage at <https://line.idaho.gov/minutes/> checked on December 31, 2018 and still no minutes posted for the May 24, 2018 meeting.

In July, the Idaho Cleanup Project Citizens Advisory Board was asked to vote to endorse the DOE looking at waste reclassification, yet no presentation was given, the public was not informed of the vote, and in the short briefing prior to the vote, there was no mention of calcine or high-level waste.

The DOE maneuvers continue to keep the public in the dark.

Last November, the DOE issued for public comment its proposal to allow the DOE to unilaterally reclassify its high-level waste (HLW) to non-HLW.⁵

The millions of curies of radionuclides, including long-lived radionuclides, contained in the highly soluble HLW calcine pose a serious risk to the Snake River Plain aquifer. While corrosion of the metal bin sets that the calcine is stored in is not the limiting factor, the degrading concrete surrounding the bin sets above and below ground and vulnerability to seismic events and flooding remain serious safety issues despite decades of DOE's downplaying the risks.

The LINE Commission Chair was told last May that nuclear waste can be sent to Yucca Mountain for disposal within 7 years of restart of licensing. But with regard to DOE's high-level waste, the DOE is making excuses about how the HLW calcine can't be shipped to Yucca Mountain because there is no repository.

Through the Energy Communities Alliance, which are communities excluding Idaho, it is claimed that reclassification by the DOE of its High-Level Waste (HLW) would "allow DOE to dispose of waste in accordance with its radiological characteristics and ability to meet appropriate disposal facility requirements rather than the waste's origin." Furthermore "under the current interpretation based on artificial standards, [HLW] can only go to a HLW repository...If DOE moves to more appropriately align disposal decisions based on actual risk, some of this waste may be safely managed as transuranic or low-level waste and can be moved out of our communities sooner while saving significant taxpayer dollars."

The reality is that allowing the DOE to reclassify its HLW to "non-HLW" will mean that vast amounts of the DOE's HLW become low-level waste (LLW). While this could mean some of the waste is shipped to the Waste Isolation Pilot Plant (WIPP) in New Mexico — if laws for WIPP change — it also means that the DOE has far fewer regulatory requirements about how it chooses to dispose of the LLW on its DOE sites.

⁵ Federal Register, Request for Public Comment on the U.S. Department of Energy Interpretation of High-Level Radioactive Waste, A Notice by the Energy Department on October 10, 2018, extended to January 9, 2019. <https://www.federalregister.gov/documents/2018/10/10/2018-22002/request-for-public-comment-on-the-us-department-of-energy-interpretation-of-high-level-radioactive> Summary: "U.S. Department of Energy (DOE or the Department) provides this Notice and request for public comment on its interpretation of the definition of the statutory term "high-level radioactive waste" (HLW) as set forth in the Atomic Energy Act of 1954 and the Nuclear Waste Policy Act of 1982. This statutory term indicates that not all wastes from the reprocessing of spent nuclear fuel ("reprocessing wastes") are HLW, and DOE interprets the statutory term such that some reprocessing wastes may be classified as not HLW (non-HLW) and may be disposed of in accordance with their radiological characteristics." See the docket for the Department of Energy's Proposed Interpretation of High-Level Radioactive Waste ID: DOE_FRDOC_0001-3696, comments due January 9, 2019, on regulations.gov at https://www.regulations.gov/document?D=DOE_FRDOC_0001-3696

The reclassified HLW would become low-level waste with no limit as to how high the concentrations of long-lived fission products, activation products or transuranic radionuclides can be.

The DOE's proposed reclassification of HLW isn't about clearing up ambiguity of what is and is not HLW or correcting "artificial standards."

The DOE's proposed reclassification of HLW is about: (1) eliminating federal requirements pertaining to HLW disposal, (2) reclassifying vast amounts of high-level waste, not just "incidental" waste remaining in tanks, (3) removing tank closure requirements of the federal law that required U.S. Nuclear Regulatory Commission involvement and state approval, and (4) **allowing DOE to shallowly bury its HLW waste on DOE sites.**

The public must demand that the DOE explain how its proposed HLW reclassification may affect existing commitments with Idaho, as well as other states.

I think it is time for Brad Little to represent Idaho's interests, not the Department of Energy's. And he can start with some transparency so the public knows what's really going on.

This guest editorial by Tami Thatcher was printed in The Idaho Falls Post Register on January 17. ⁶ Also, see HLW comment submittals by Tami Thatcher and by Chuck Broschious on the Environmental Defense Institute website. ⁷

Idaho Department of Environmental Quality Concerns About DOE's Proposed HLW Reclassification

In a letter from the Idaho Department of Environmental Quality to the U.S. Department of Energy regarding the DOE's interpretation of high-level waste (HLW), ⁸ the Idaho DEQ stated numerous concerns.

"Idaho is concerned about DOE's proposal for several reasons. First, it appears that DOE has not yet complied with Section 3139 of the National Defense Authorization Act for Fiscal Year

⁶ Tami Thatcher, Guest Editorial, *The Idaho Falls Post Register*, "DOE must explain high-level waste reclassification," January 17, 2019.

⁷ High-level Waste Reclassification comment submittals at <http://www.environmental-defense-institute.org/index.html> (<http://www.environmental-defense-institute.org/publications/CommentDOEHLW.pdf> and <http://www.environmental-defense-institute.org/publications/EDIComHLW6.pdf>)

⁸ John H. Tippetts, Director, Idaho Department of Environmental Quality, Letter to Anne White, Assistant Secretary, Office of Environmental Management, U.S. Department of Energy, Subject: State of Idaho Comments on U.S. Department of Energy Interpretation of High Level Radioactive Waste (83 FR 50909), January 9, 2019. See it on our website at <http://www.environmental-defense-institute.org/publications/IDEQHLW.pdf>

2018 (H.R. 2810), which required DOE to prepare and submit a report to Congress, not later than February 1, 2018, on the ‘Evaluation of Classification of Certain Defense Nuclear Waste.’ This report is required to include multiple specific evaluations, as listed under subsection b, which directly impact several State of Idaho concerns below. In the absence of this information the State cannot fully evaluate the ramifications of this proposal. Moreover, it seems premature for DOE to move forward with this proposal when it has not met the Congressional directive.”

The IDEQ letter continues “Next, it should be noted this approach to reclassification of HLW under the authority of Order 435.1 has already been attempted and proven unsuccessful. See, *Natural Resources Defense Council v. Abraham*, 271 F.Supp.2d 1260 (D. Idaho 2003) *vacated on other grounds*, 388 F.3d.701 (2004). The Court in *Abraham* held that the definition of HLW was established by Congress and that DOE could not, via order, ignore the plain language of the Nuclear Waste Policy Act. Idaho, along with several other States, participated as *Amici* in that case due in part to the same concerns expressed below. Idaho encourages DOE to work with states and affected parties collaboratively to resolve these concerns.”

“Similar to the past approach, the current proposal outlined in the Federal Register appears to imply unilateral authority on the part of the DOE to determine what wastes are to be considered as HLW and non-HLW, irrespective of the position held by the states which host the affected waste streams. As the Court in *Abraham* put it succinctly, ‘These “alternative requirements” are not defined, and thus are subject to the whim of DOE.’ 217 F.Supp.2d at 1265. The current proposal’s reference to ‘*performance objectives of a disposal facility as demonstrated through a performance assessment conducted in accordance with applicable regulatory requirements*’ is equally vague and leaves too much discretionary power to the DOE to leave waste in place. This does not align with Idaho’s position with respect to the requirements for treatment and disposition of certain waste streams currently located at the Idaho National Laboratory (INL). More specifically, Idaho will point out that DOE cannot ‘reclassify’ wastes that are defined in the 1995 Settlement Agreement and were the subject of that Agreement. **This vagueness and the inherent risks it poses generate a significant, and unacceptable, level of uncertainty for the State.**” [emphasis added]

“DOE has also not provided sufficient detailed information concerning the process by which each individual waste stream will be evaluated for categorization as HLW and non-HLW. The State of Idaho is concerned regarding the lack of objective criteria for making waste determinations and, again, is concerned that DOE will make such determinations unilaterally. Additional, documentation of technical requirements governing the conduct of performance assessments necessary to adequately characterize affected waste streams to ensure the protection of human health and the environment is also lacking at this time.”

“Based on the items identified herein, the State of Idaho is unable to fully evaluate the proposal outlined in the Federal Register.”

“Prior to a decision to move forward with the proposed interpretation of the existing HLW definition, the State formally requests that DOE provide the information described above, followed by collaborative dialogue to address all State of Idaho concerns.”

State of Washington Opposes DOE’s Proposed HLW Reclassification

Hanford high-level waste tanks hold 60 percent of the Department of Energy’s liquid HLW radioactive waste. The DOE wants to reclassify the waste as low-level waste and leave the radioactive material in the tanks in the ground, to leach into soil and groundwater.

The radioactive waste has already leaked from the tanks at Hanford.

According to the Associated Press article, “The State of Washington said Tuesday (January 8) it opposes a federal proposal to reclassify as less dangerous some radioactive waste on a site in the state that contains the nation’s largest supply because it fears much of the waste will be left in the ground.” The objections were accompanied by a letter from Gov. Jay Inslee and Attorney General Bob Ferguson, the article reported.⁹

Idaho Leadership in Nuclear Energy (LINE) Commission Told by DOE That IWTU May Start Up This Year

The Idaho Leadership in Nuclear Energy (LINE) Commission held a meeting January 23 and Idaho Cleanup Project Deputy Manager for the Department of Energy, Jack Zimmerman told the commission that the Integrated Waste Treatment Unit (IWTU) may start up this year, to treat 900,000 gallons of liquid sodium-bearing waste it was supposed to have treated into a powdery solid like calcine in a 2012 milestone in the Idaho Settlement Agreement. Zimmerman said it will take three years to treat the sodium-bearing liquid waste once the facility begins operating, according to the news article in *The Idaho Falls Post Register*.¹⁰

Because of the technical difficulties that have caused the missed Settlement Agreement milestone for treating the liquid waste, the State has not allowed the DOE to ship any spent nuclear fuel into the State, including research quantities of spent nuclear fuel. Attorney General Lawrence Wasden was told by the DOE that operation of the IWTU was imminent several years ago and he refused to sign a waiver to allow spent fuel to be shipped into the State until the facility was at least operating. Other Idaho Settlement Agreement milestones are also being

⁹ Associated Press, Spokane, Wash., *The Idaho Falls Post Register*, “State of Washington opposes federal nuke waste proposal,” January 9, 2019.

¹⁰ Nathan Brown, nbrown@postregister.com, *The Idaho Falls Post Register*, “Radioactive Waste – Commission hears update on cleanup,” January 24, 2019.

missed because of temporary closure of the Waste Isolation Pilot Plant (WIPP) in New Mexico where DOE ships transuranic waste from Idaho.

Idaho National Laboratory Director Mark Peters told lawmakers (members of the House Environment, Energy, and Technology Committee) the day before the LINE meeting that the inability to get research quantities of spent fuel could endanger INL's status as America's leading nuclear energy laboratory, the Associated Press reported.¹¹

At the LINE meeting, Betsy Forinash, director of the DOE's National Transuranic Waste Program, gave a presentation on the report that led to the DOE's decision to close the Advanced Mixed Waste Treatment Project rather than bring waste in from other sites such as Hanford. She said it would cost DOE \$3.5 million a month to keep the facility open but idling while waste was packaged to bring to the AMWTP. DOE will package the Hanford waste and ship it directly to WIPP.

DNFSB Hearing Planned on Idaho Cleanup Project's April 2018 Waste Drum Ruptures

The Defense Nuclear Facilities Safety Board (DNFSB) plans to meet in May to discuss the four transuranic waste drum ruptures that occurred hours after repackaging into new drums last April at the Idaho Cleanup Project's Radioactive Waste Management Complex.¹²

The meeting to be held in May will be a public hearing — But the meeting will be held in Washington, D.C.

Apparently, the DNFSB only wants to hear from lawmakers who work in Washington, D.C., and who don't know shine about what caused the accident.

Nuclear Microreactors and Nuclear Contamination Coming to Your Neighborhood

According to the Department of Energy, Nuclear Microreactors of 1 to 20 megawatts-thermal (about one third to 6 MW electric) are going to be clean and reliable energy for heating homes and for military bases.

It's an Oh-My-God moment for those of us who understand the enormous harm to humans and the environment from making more spent nuclear fuel, transporting more spent fuel, and contamination spread from operation, accidents and disposal.

¹¹ Keith Ridler, AP, *The Idaho Falls Post Register*, "INL director says spent-fuel impasse harms mission," January 23, 2019.

¹² Keith Ridler, AP, *The Idaho Falls Post Register*, "Hearing planned on barrel ruptures at E. Idaho nuclear site," January 11, 2019.

It's a nightmare that only people ignorant of the ramifications aren't worried about — or people who just like the idea of shortened lifespans and increased birth defects.

Read more about Nuclear Microreactors on the DOE's website ¹³

At the January Idaho Leadership in Nuclear Energy (LINE) meeting held in Boise, Idaho National Laboratory Associate Laboratory Director John Wagner told the LINE Commission that he is hoping that INL will host the National Reactor Innovation Center to test and demonstrate private sector-proposed and funded reactor concepts. In his slideshow to the LINE Commission, he featured the development and deployment of microreactors in the early 2020s followed by bringing the Versatile Test Reactor, a fast neutron reactor now under development, stated a Post Register news article. ¹⁴

The increased radiological emissions in Idaho will begin with the processing of uranium fuel at the Materials and Fuels Complex to process high-assay low-enriched uranium (HALEU) ¹⁵ that some of these future nuclear projects will use.

Former NRC Chairman Provides an Inside Account of NRC Failures as New Bill is Signed to Streamline Nuclear Energy Regulation

In a new book, former U.S. Nuclear Regulatory Commission Chairman Gregory Jaczko describes his tenure as NRC Chairman. ¹⁶ From Yucca Mountain licensing issues to the March 11, 2011 nuclear catastrophe in Japan began at the Fukushima Daiichi nuclear plant that was of General Electric, Toshiba, and Hitachi design, his book describes an agency that is in no way an impartial arbiter of safety, but composed of NRC commissioners who practice a truckling subservience to the industry.

From the first puzzling Unit 1 hydrogen explosion to the second hydrogen explosion at Unit 4 on March 14, 2011, the experts including those at the NRC didn't know what had happened, what was happening, or what was going to happen as the Fukushima reactor meltdowns continued. No one had not envisioned an accident going on so long and the melting multiple reactor cores and the confusion over the status of the spent fuel pools. Radioactive contamination was spewing out by air and ocean water.

¹³ Office Nuclear Energy, "What is a Nuclear Microreactor?" October 23, 2018.

<https://www.energy.gov/ne/articles/what-nuclear-microreactor>

¹⁴ Nathan Brown, nbrown@postregister.com, *The Idaho Falls Post Register*, "INL could soon host major reactor center," January 24, 2019.

¹⁵ Ryan Suppe, *The Idaho Falls Post Register*, "No significant environmental impact of proposed uranium fuel processing, DOE says," January 22, 2019.

¹⁶ Gregory B. Jaczko, Former Chairman of the U.S. Nuclear Regulatory Commission, *Confessions of a Rogue Nuclear Regulator*, Simon & Schuster, Copyright 2019. ISBN 978-1-4767-5578-6.

Jaczko recognized that U.S. nuclear plants had similar vulnerabilities and had a report created to identify lessons learned by the Fukushima nuclear reactor and spent fuel pool accidents. And the NRC refused to oblige the then unbuilt nuclear reactors, the AP1000s, to even consider any aspect of these lessons learned. That's right, it was considered too onerous to even have the builder *consider the lessons learned before building the AP1000 Westinghouse plants in Georgia and South Carolina and report their findings.*

The partially built AP1000 plants in South Carolina have been abandoned due to cost overruns. The two AP1000 plants in Georgia are way over budget and behind schedule, but the plug hasn't been pulled on them.

Jaczko understands that not only are the nuclear reactors accident-prone, the waste is piling up that later generations of people will eventually have to confront. He understands what other countries such as Germany have decided — that we must stop generating nuclear waste.

I had barely finished reading “Confessions of a Rogue Nuclear Regulator” by Gregory Jaczko, when I read the headline: “New bill, signed by Trump, looks to streamline nuclear energy regulation.”¹⁷

NuScale Knows UAMPS Easy to Sucker

A lone voice of reason, Kurt Hamman, pointed out last November that “Since its inception, the commercial nuclear industry has been plagued with high construction costs, schedule delays, cost overruns, and expensive bailouts by taxpayers and ratepayers.”¹⁸ Various writers responded to his skepticism, arguing in favor of not worrying about the costs of NuScale to Idaho Falls ratepayers.

In January, Hamman wrote a second editorial pointing out the premature closure of several U.S. nuclear power plants and the expensive bailouts by taxpayers and ratepayers. He points out that the Department of Energy's loan guarantees transfer to risk from corporations and utilities to taxpayers and ratepayers.

Hamman writes that he took a look at the Carbon Free Power Project contract. It allows the City of Idaho Falls to “walk away” from the contract during licensing and development. But the contract will not allow escape from the construction phase — just when cost overruns and schedule delays happen.

But reality seems not to matter to nuclear promoters in the glow of good-ole-boy and -girl shuck and jive editorial writing to promote NuScale.

Bear Prairie has been named chairman of the Utah Associated Municipal Power Systems' Carbon Free Power Project and Prairie is the Idaho Falls Power's general manager. Bear Prairie's editorial responded that Idaho Falls power will have the option to purchase 10

¹⁷ Ryan Suppe, *The Idaho Falls Post Register*, “New bill, signed by Trump, looks to streamline nuclear energy regulation,” January 17, 2019.

¹⁸ Kurt Hamman, opinion editorial, *The Idaho Falls Post Register*, “Should Idaho Falls invest in nuclear power,” November 25, 2018.

megawatts, not to exceed \$65 dollars per megawatt, at a leveled cost — but they are not finished with negotiation. Basically, the citizens in the cities powered by UAMPS don't know and won't know what deal they are getting stuck with — but ratepayers shouldn't worry about it.^{19 20}

Idaho falls city councilman John Radford argues that by owning the NuScale reactor and by numerous “off ramps” the cost overrun risks will be limited.²¹ But he conveniently doesn't admit that the “off ramps” go away once the design is approved by the U.S. Nuclear Regulatory Commission.

John Snyder argues that small modular reactors offer safe, reliable, affordable power — because he says it is. For Snyder, no matter the cost or risk of cost overruns, anything nuclear is inherently a wonderful thing.²²

NuScale Power is hoping to build a facility that houses 12 small reactor modules at the Idaho National Laboratory, which could produce 720 megawatts if all 12 modules are operating.²³ The design is undergoing Nuclear Regulatory Commission licensing. Construction is scheduled to start in the mid-2020s.²⁴

Radioactive Waste Leaking from Waste Disposal at the Marshall Islands Following Nuclear Bomb Tests

Phoebe Loomes reported that radioactive waste is leaking from a tiny Pacific atoll in the Marshall Islands.²⁵ The waste was disposed of in the 1970s and was the result of numerous nuclear weapons tests conducted beginning in 1948.

A report commissioned by the U.S. Department of Energy in 2013 says the waste disposal site is deteriorating and a radionuclide monitoring program implemented. The report contains some history of the extensive radiological contamination and some nice photos.²⁶ The Lawrence Livermore website for the Marshall Islands doesn't include any reports newer than 2008.²⁷

¹⁹ Dana Kirkham, opinion editorial, *The Idaho Falls Post Register*, “Listen to facts, not fear,” December 2, 2018.

²⁰ Bear Prairie, opinion editorial, *The Idaho Falls Post Register*, “Benefits of SMRs outweigh risks,” December 1, 2018.

²¹ John Radford, opinion editorial, *The Idaho Falls Post Register*, “Idaho Falls is protecting ratepayers,” January 13, 2019.

²² John Snyder, opinion editorial, *The Idaho Falls Post Register*, “SMRs offer safe, reliable, affordable power,” January 18, 2019.

²³ Nathan Brown, *The Idaho Falls Post Register*, “Prairie to rep utilities in reactor project,” December 29, 2018.

²⁴ Nathan Brown, *The Idaho Falls Post Register*, “DOE inks deal to use reactors for INL research, power,” December 22, 2018.

²⁵ Phoebe Loomes, *news.com.au*, “Tiny Pacific atoll leaking radioactive waste left over from Cold War,” January 8, 2019. <https://www.news.com.au/technology/environment/tiny-pacific-atoll-leaking-radioactive-waste-left-over-from-cold-war/news-story/546433043230b5fff824537d67ac7cae>

²⁶ Terry F. Hamilton, Lawrence Livermore National Laboratory, “A Visual Description of the Concrete Exterior of the Cactus Crater Containment Structure,” LLNL-TR-648143, October 2013. https://marshallislands.llnl.gov/ccc/Hamilton_LLNL-TR-648143_final.pdf

²⁷ Marshall Islands Dose Assessment & Radioecology Program, Lawrence Livermore National Laboratory at <https://marshallislands.llnl.gov/documents.php>

A later report — not by the U.S. government — actually sampled for radionuclide contamination. It found that the levels of plutonium are several orders of magnitude higher than what is found in the rest of the world's oceans.²⁸ Half of the plutonium in the water, they believe, originates from the Runit dome, a nuclear waste disposal site created in the 1970's at the Enewetak Atoll. The Runit disposal site contains roughly 100,000 cubic meters of radioactive debris buried in a 100-meter diameter nuclear testing crater and covered with a concrete cap. It includes "some Pu-bearing nuclear material" from the 1958 Quince nuclear test, which apparently was scattered by chemical explosion but didn't have a fission or fusion yield.

The U.S. conducted 67 nuclear weapons tests at the Bikini and Enewetak Atolls between 1946 and 1958 accounting for greater than 50 percent of the global fallout during that time period and 20 percent of global fallout. The fallout from low altitude and even underwater explosions has remained at the Pacific islands, as it was less distributed around the globe than during high altitude testing.

Island inhabitants were irradiated from the atomic testing and their islands contaminated. Cancer, disease, and increased birth defects and infant mortality were the result. Some monetary compensation was grudgingly awarded to some islanders.

Time magazine mentioned in 2017 Julian Aguon's book *What We Bury At Night*, a chronicle of how irradiated Marshallese mothers had borne "jellyfish babies" with translucent skin and no bones. From 1946 to 1958, the U.S. tested 67 nuclear weapons in the Marshall Islands near Guam. Official reports omitted the truth of the birth defects.

For more information about the health effects and after math from the U.S. bomb tests over the Pacific islands and the repeated deceptions about the consequences, read Giff Johnson, *Don't Ever Whisper —Darlene Keju, Pacific Health Pioneer, Champion for Nuclear Survivors*.²⁹

The cancer incidence in the Marshall Islands is extreme, according to one study, reported by Giff Johnson in *Pacific Islands Reports* in 1999.³⁰ The study of cancer rates found cancer incidence rates were higher in virtually every category in the Marshall Islands compared with the United States for the period 1985-1994. It pointed out that "Marshall Islands lung cancer rates were 3.8 times higher in males and 3.09 higher in females, cervical cancer rates were 5.8 times higher, and liver cancer rates were 15.3 times higher in males and 40 times higher in females compared with U.S. rates."

Chilling accounts of the intentional radiological exposure of U.S. troops during the atomic weapons testing is also provided in *Atomic Soldiers* by Howard L. Rosenberg and *Countdown*

²⁸ Ken O. Buesseler et al., *Elsevier, Science of The Total Environment*, "Lingering radioactivity at the Bikini and Enewetak Atolls," Volume 621, April 15, 2018, p. 1185-1198. <https://doi.org/10.1016/j.scitotenv.2017.10.109> and <https://www.sciencedirect.com/science/article/pii/S0048969717328139>

²⁹ Giff Johnson, *Don't Ever Whisper – Pacific Health Pioneer, Darlene Keju, Champion for Nuclear Survivors*, 2013. ISBN-10: 1489509062.

³⁰ Giff Johnson, Pacific Islands Report, "Study Calls Marshall Islands' Cancer Rate Extreme," March 22, 1999. <http://www.pireport.org/articles/1999/03/22/study-calls-marshall-islands-cancer-rate-extreme>

Zero – GI Victims of U.S. Atomic Testing by Thomas Saffer and Orville Kelly.^{31 32} The initial obstacles in the fight to obtain illness compensation for U.S. atomic testing veterans are described in *Countdown Zero*.

The United States conducted nuclear weapons testing in a paradise and forever contaminated the place. People living on the islands and the U.S. troops sent there became ill from radiation exposure and ingestion/inhalation of radionuclides. And, until the entire Earth is just as contaminated and the entire world's population is as sick from radiation exposure as the Marshall Islanders, the U.S. Department of Energy will keep working to that end with military weapons programs and their radiological waste, military nuclear reactors and civilian nuclear reactors, including the proposed NuScale small modular reactors and the fast neutron Versatile Test Reactor.

Cause of U.S. Geological Survey Multilevel Deep Well Contamination Due to Chemical Addition, Well Back in Service

The elevated levels of chemical contamination in a U.S. Geological Survey multilevel deep Westbay well has been reported as being due to chemical contamination in the well's tubing, not contamination in the Snake River Plain aquifer.^{33 34}

Unexpected PCE contamination in the 1,140 ft deep Westbay well has been determined to not result from aquifer contamination according to the Department of Energy.³⁵ The source of the contamination has not been pinpointed but is believed to be from well construction or post-construction activities. The investigation and well monitoring results were presented at the Idaho National Laboratory's Citizens Advisory Board meeting in October 2017.³⁶

Eleven Westbay multilevel sampling wells at the Idaho National Laboratory have a unique design to allow samples to be drawn at different depths in the aquifer. This differs from typical

³¹ Howard L. Rosenberg, *Atomic Soldiers American Victims of Nuclear Experiments*, Beacon Press, 1980. ISBN-0-8070-3210-7.

³² Thomas H. Saffer and Orville E. Kelly, *Countdown Zero – GI Victims of U.S. Atomic Testing*, R. R. Donnelley & Sons Company, 1982. ISBN-0-1400-6724-8.

³³ Fluor Idaho Press Release, "INL Site Well Rehabilitated Using Innovative Technology," January 22, 2019. https://fluor-idaho.com/Portals/0/Documents/08_Newsroom/For%20Immediate%20Release_WellRehabilitated_1_22_19.pdf

³⁴ AP, *The Idaho Falls Post Register*, "Well that monitors giant aquifer back in service," January 24, 2019.

³⁵ Idaho Cleanup Project, Federal Facility Agreement and Consent Order (FFA/CO) New Site Identification (NSI), "Monitoring Well MIDDLE-2051," NSI-26030, Date entered into Long-Term Stewardship Tracking System: 07/06/2016. Signed off July 19, 2018. <https://ar.icp.doe.gov/images/pdf/201608/2016082401055BRU.pdf> on the CERCLA Administrative Record website for the Idaho National Laboratory at <https://ar.icp.doe.gov/home.html>

³⁶ Idaho National Laboratory Citizens Advisory Board, meeting presentations for October 26, 2017 and June 22, 2017 by Nolan Jensen, Department of Energy, at <http://inlcab.energy.gov>

well construction that allows the water to enter the well casing through openings in the casing at various depths and mix as water is sampled.

The Westbay wells are drilled through the aquifer rock and then the tubing is placed in the well. The tubing has valve ports at different depths that are only to be open as the sample is taken. The tubing is filled with water from a source other than the well water itself as these wells have no pump and the sample ports remain closed. The source of the Westbay well inner tube water was the “Fire Station” well north of the ATR Complex. Water quality data is not taken for the “Fire Station” well.

Along with unexpected contamination in the inner tubing of the Westbay wells, sometimes while intending to take aquifer samples through the valve port openings, water from the inner tubing was being collected in the sample bottle. The U.S. Geological Survey installed the wells and took samples. The first Westbay well was installed in 2005. **Now we know that some of the samples taken did not actually sample the aquifer. The occasional malfunction of the sample valve malfunction was not identified for years.**

In a USGS report documenting multilevel well sampling from 2009 through 2013, the report did not sample for the chemical PCE.³⁷ However, samples were analyzed for “total organic compounds.” But because the results of the sampling had “poor reproducibility” the USGS made the decision to discontinue measurements of “total organic compounds.” No other chemical constituent analysis was to be conducted despite potential sources of aquifer chemical contamination. Interestingly, the USGS monitoring noted the poorest reproducibility for total organic compounds as being from the two Westbay wells found in 2016 and 2017 as having the highest PCE contamination in the inner tubing.

See past EDI newsletters following the PCE contamination in March, July and November 2017 and October and November of 2016.

Despite the U.S. NRC Spin, There is No Ability to Detect Dry Spent Nuclear Fuel Canister Cracks

The masters of subtlety, a U.S. Nuclear Regulatory Commission engineer basically admits that currently there is no ability to detect cracks in dry spent nuclear fuel canisters.

The transcript of the NRC meeting held October 11, 2018 includes the response to questioning about canister inspection capability. The NRC engineer responds: “Separately, we do have a contract with PNNL, one of the DOE laboratories, to set up a mockup of a cask to collaborate with EPRI to actually see how the robotics, how these tools are resulting in the inspections to actually assess and see, can they detect the flaws, can they understand and

³⁷ U.S. Geological Survey, “Chemical Constituents in Groundwater from Multiple Zones in the Eastern Snake River Plain Aquifer, Idaho National Laboratory, Idaho, 2009-13,” Report 2015-5002, (DOE/ID-22232), 2015. See p. 31.

characterize the flaws. So, I think it's progressing well, I think we have confidence in the industry and the direction they're going to be able to inspect these in the future.”³⁸

Translation, thanks to Donna Gilmore for SanOnofreSafety.org, is that the nuclear industry has again admitted that they currently have no ability to inspect canisters for cracks. They have no ability to “detect the flaws” or “understand and characterize the flaws.”³⁹

What this means is that spent nuclear fuel canisters at nuclear plants around the country may start leaking and/or exploding without warning and with no means of repackaging the spent fuel into a new canister. The NRC hasn't actually included chloride-induced canister cracking in its risk assessments. And they know that through-wall cracking takes less than 20 years from exposure to salt water or other chloride-rich water. See our July 2018 EDI newsletter⁴⁰ and our comments regarding Holtec and Interim Storage Partners proposed interim storage facilities.^{41 42}

Tami Thatcher for February 2019.

³⁸ SanOnofreSafety.org at <https://sanonofresafety.org/> and see the U.S. Nuclear Regulatory Commission transcript for the October 11, 2018 meeting, Strategic Programmatic Overview of the decommissioning and Low-Level Waste and Spent Fuel Storage and Transportation Business Lines (ML18295A698) (pages 104 and 105) at <https://www.nrc.gov/docs/ML1829/ML18295A698.pdf>

³⁹ Donna Gilmore, SanOnofreSafety.org, Press Release, “Regulators consider whether to allow San Onofre nuclear waste to be stored in defective Holtec storage system,” January 24, 2019. <https://sanonofresafety.files.wordpress.com/2019/01/pressrelease2019.jan24nrc2pm.pdf>

⁴⁰ Tami Thatcher, Environmental Defense Institute, July 2018 Newsletter article “Spent Nuclear Fuel Dry Storage Safety Issues Largely Ignored,” <http://www.environmental-defense-institute.org/publications/News.18.July.pdf>

⁴¹ Tami Thatcher, “Public Comment Regarding Application to the U.S. Nuclear Regulatory Commission on the “Holtec International HI-STORE Consolidated Interim Storage Facility Project,” Docket NRC-2018-0052-0058, July 30, 2018. <http://www.environmental-defense-institute.org/publications/NRCHoltec2018.pdf>

⁴² Tami Thatcher, “Public Comment Regarding Interim Storage Partners LLC’s Consolidated Interim Storage Facility,” Docket NRC-2016-0231, November 2018. <http://www.environmental-defense-institute.org/publications/CommentNRC2018Texas.pdf>