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Radiation Exposure Compensation Act (RECA) Legislation Reintroduced January 24, 2017

A bipartisan coalition of western U.S. Senators has introduced two measures to benefit Americans exposed to airborne radiation during nuclear weapons tests in the 1950s and 1960s. Senator Mike Crapo (R-Idaho), Senator Tom Udall (D-New Mexico), Senator Jim Risch (R-Idaho), Senator Martin Heinrich (D-New Mexico) and Senator Michael Bennet (D-Colorado) introduced legislation to allow victims in a number of western states to file claims under the Radiation Exposure Compensation Act (RECA). The senators also introduced a Senate resolution marking January 27, 2017, as a national day of remembrance for those affected downwind from the above-ground nuclear weapons testing. [1]

The original RECA program benefited those working with uranium mining and some testing programs, and was later expanded to benefit residents in parts of Utah exposed to nuclear testing. For more than a decade, advocates have endeavored to expand the RECA's coverage to all Westerners negatively affected by nuclear fallout from weapons testing.

The new legislation, S. 197, would make residents in Idaho, Arizona, Colorado, Montana, Nevada, New Mexico and Utah eligible for medical benefits and other compensation if they can show they were harmed by the arms testing more than 50 years ago. The RECA program falls within the jurisdiction of the Senate Judiciary Committee. Crapo recently joined this Committee, placing him in a position to push harder for a re-examination of the RECA program and its eligibility requirements.

"Many Idahoans got cancer as a result of their exposure to fallout from nuclear weapons testing. Congress has already expanded compensation to Utahans. It's time we did it for Idahoans and our neighbors," Crapo said. "As a member of the Senate Judiciary Committee with jurisdiction over this program, I will be pushing for a hearing on this legislation."

"During the Cold War, many New Mexicans and others across the West sacrificed their health and safety for our nation, Udall said. "While we can't undo the damage and suffering, it's long

[1] US Senator Mike Crapo website news release at http://www.crapo.senate.gov/media/newsreleases/release_full.cfm?id=363005

past time for the federal government to provide care and fair compensation for the Americans who developed cancer and other illnesses after working in uranium mines or being inadvertently exposed to radiation from nuclear bomb testing. Our bill is about fairness for the victims of the Trinity test site in New Mexico, the former uranium miners and their families in the Four Corners region, and other victims across the West who have been left out of the original law but deserve recognition and compensation for their hardships."

“For decades now, Idahoans have been pleading their case to the federal government for help in dealing with the health effects they suffered as a result of nuclear testing. This bill answers those pleas by providing the same assistance those in neighboring states already receive,” said Risch.

"Families who lived in and near the Tularosa Basin at the time of the Trinity Test, uranium mill workers, and uranium miners continue to cope with serious health problems due to exposure to radioactive nuclear material,” Heinrich said. “Congress needs to pass the Radiation Exposure Compensation Act Amendments to provide medical assistance and compensation to those who bore the health costs of our nation’s nuclear history. I will continue to fight for the justice these communities deserve.”

“This bill will help provide justice to Coloradans who served our nation working in the uranium industry and at nuclear weapons facilities, said Bennet. “It also provides needed assistance to individuals who were exposed to radiation due to where they lived. This is the least we can do to ensure that Colorado families receive long overdue treatment and fair compensation.”

The Senate resolution “encourages the people of the United States to support and participate in appropriate ceremonies, programs and other activities to commemorate that national day of remembrance.” Idahoans have participated in public hearings and assisted in national documentaries showing the damages from airborne radiation but the legislation has not drawn sufficient support to pass the Congress despite many attempts.

This article was a reposting of the news release on US Sen. Mike Crapo’s website.

Nevada Test Site Smoked Us After the 1963 Partial Test Ban

The partial weapons testing ban of 1963 banned above ground, under ocean and outer space weapons tests, but underground tests continued at the Nevada Test Site. The underground tests sometimes released large airborne releases. But so did something else: the “Plow Shares” program tests that were not listed as weapons tests.

Plow Shares tests were large nuclear explosions to investigate using nuclear explosions for neat things like digging canals, etc. Along with some serious releases from underground testing, some of the Plow Shares tests were above ground and also released airborne radionuclides that the public was not being told about. This was certainly not in keeping with the spirit and intent of the 1963 partial test ban. Thus, deception was employed by the Department of Energy to withhold environmental monitoring data from these airborne releases from the Nevada Test Site underground and Plow Shares tests. Thus it began difficult by design to distinguish DOE weapons testing fallout from the airborne radiological releases from INL operations, tests and accidents. Sometime later, someone determined that the radioactive contamination from using nuclear weapons for Plow Shares for excavation — made it not really a great idea.

When then Idaho Governor Cecil Andrus asked the Department of Energy to compile a report of the airborne releases from the Idaho National Laboratory from 1949 to 1989, the DOE had to go to square one to try to guesstimate just how many curies of fuel and fissions products had been released. The product was the report called the INEL Historical Dose Evaluation. [2] This report estimated the curies and radionuclides released from various tests and from routine operations of reactors and spent fuel reprocessing and accidents. The report largely chose not to confirm the estimated releases on environmental monitoring that had been conducted by the DOE. And then the DOE "disappeared" many boxes of environmental monitoring records.

The Center for Disease Control commenced reviewing the DOE's radiological release estimate that were the basis for denying that any epidemiological study was needed in Idaho communities near the site. The CDC in 2007 issued its review of the 1989 study and found many releases, some of the largest ones, underestimated by a factor of 7. [3] Errors causing underestimation of the INL releases continue to be found as energy worker compensation studies have continued. The INL was originally called the National Reactor Testing Station, later called the Idaho Engineering Laboratory, and then the Idaho National Engineering and Environmental Laboratory before being named the Idaho National Laboratory.

Much of the early monitoring was ignored but the Department of Energy, formerly the Atomic Energy Commission, monitored air, water (via the US Geological Survey), rabbit thyroids, agricultural products, milk, and so forth. Milk sampling results were reviewed in the INEL HDE for Idaho Falls or other offsite milk sampling for iodine-131, Elevated levels of I-131 in local milk was found that could not be explained by known INL and weapons fallout.

[2] US Department of Energy Idaho Operations Office, "Idaho National Engineering Laboratory Historical Dose Evaluation," DOE-ID-12119, August 1991. Volumes 1 and 2 can be found at https://www.iaea.org/inis/inis-collection/index.html

[3] Center for Disease Control, CDC Task Order 5-2000-Final, Final Report RAC Report No. 3, by Risk Assessment Corporation, October 2002. https://www.cdc.gov/nceh/radiation/ineel/to5finalreport.pdf

Sources of iodine-131 other than the INL that were considered were regional weapons fallout (typically from the Nevada Test Site), global weapons fallout from US weapons testing outside the contiguous states, and global weapons tests conducted by foreign countries including the former Soviet Republic, China, France and others.

The INEL HDE reported various instances of elevated I-131 in milk including two instances in 1965 and sixteen instances in 1966 where neither known INL releases nor known weapons tests could explain the elevated iodine-131 in the milk near the INL. [4]

The partial test ban allowed underground tests but not atmospheric tests or underwater tests. [5] The 1993 UNSCEAR report lists atmospheric releases of iodine-131 from leakage of underground weapons tests at the Nevada Test site. [6] Iodine-131 was identified because of the significant health effect as I-131 is ingested via cows or goats milk but tritium and other radionuclides were probably also released. But the UNSCEAR report does not mention the Plowshares program weapons testing—some of which was conducted underground—but some tests were above ground.

A compilation of known underground tests that released radioactivity and additional tests from the Plowshares above ground tests is provided in Table 1. The underground test iodine-131 release data is from the UNSCEAR 93 report. [7] The Plowshares tests that were after the 1963 partial test ban and were "crater" type are from FAS.org website compilation of Department of Energy report DOE/NV-209.

Now that more than 50 years have passed since the bulk of the US weapons testing took place, health studies are still not complete, and the data for regional US weapons testing are scattered around and currently cannot be accessed on Department of Energy websites. The need to hide the fact that the US was still releasing fallout after the 1963 partial test ban—accidentally they claimed on numerous occasions— meant that the Idaho Operations Office and the US Geological Survey were not to put too fine a point on any environmental monitoring that might disclose US DOE weapons fallout or INL fallout.

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[4] INEL Historical Dose Evaluation, Appendix E, Table E-5 for milk sampling.

[5] Pravalie, R. (2014). Nuclear Weapons Tests and Environmental Consequences: A Global Perspective. *Ambio*, *43*(6), 729–744. http://doi.org/10.1007/s13280-014-0491-1.

[6] UNSCEAR, Report to the general assembly, United Nations, "Annex B: Exposures from man-made sources of radiation," 1993. http://www.unscear.org/unscear/en/publications/1993.html See Table 13, p. 130 for atmospheric released of iodine-131 from underground tests at the Nevada test site.

[7] Federation of American Scientists, website containing United States Nuclear Tests July 1945 through September 1992, (DOE/NV-209 Rev. 14, December 1994) , https://fas.org/nuke/guide/usa/nuclear/usnuctests.htm United States Nuclear Tests by Date include date, yield, purpose, i.e., Plowshare, and type, i.e. crater, tower, or shaft.

Table 1. Atmospheric releases of iodine-131 to the atmosphere from underground tests and above ground Plowshare program tests carried out at the Nevada test site before and after the 1963 partial testing ban.

Name of test	Year of test	Yield, kT	Iodine-131 released	
			TBq	Ci
Antler	9/151961	2.6	0.2	5.4
Feather	12/22/1961	150	0.04	1.08
Pampas	03/01/1962	9.5	0.0004	0.01
Platte	04/14/1962	1.85	0.4	10.8
Eel	06/19/1962	4.5	0.4	10.8
Des Moines	**06/13/1962**	**2.9**	**1200**	**32,400**
Sedan, Plowshare	07/06/1962	104	?	?
Bandicoot	**10/19/1962**	**12.5**	**330**	**8,910**
Yuba	06/05/1963	3.1	0.0008	0.0216
Eagle	12/12/1963	5.3	0.08	2.16
Pike	**03/13/1964**	**<20**	**13**	**351**
Alva	08/19/1964	4.4	0.001	0.027
Drill	12/05/1964	<23.4	0.5	13.5
Parrot	02/12/1964	1.3	0.2	5.4
Alpaca	02/12/1965	0.33	0.0009	0.0243
Palanquine, Plowshare	04/14/1965	4.3	?	?
Tee	05/07/1965	7	0.06	1.62
Diluted Waters	06/16/1965	<20	0.7	18.9
Red Hot	**03/05/1966**	**<20**	**7**	**189**
Pin Stripe	**04/25/1966**	**<20**	**7**	**189**
Double Play	**06/15/1966**	**<20**	**4**	**108**
Derringer	09/12/1966	7.8	0.009	0.243
Nash	01/19/1967	39	0.5	13.5
Midi Mist	06/26/1967	<20	0.01	0.27
Hupmobile	**01/18/1968**	**7.4**	**4**	**108**
Cabriolet, Plowshare	01/26/1968	2.3	?	?
Buggy, Plowshare	03/12/1968	5.4	?	?
Schooner, Plowshare	12/08/68	30	?	?
Pod	10/29/1969	16.7	0.03	0.81

Scuttle	11/13/1969	1.7	0.0001	0.0027
Snubber	04/21/1970	12.7	0.2	5.4
Mint Leaf	05/05/1970	<20	3	81
Carpetbag ?	**12/17/70**	**220**	**?**	**?**
Baneberry	**12/18/1970**	**10**	**3000**	**81,000**
Diagonal Line	11/24/1971	<20	0.05	1.35
Rio Blanco, Plowshare in Rifle, Colorado	05/17/1973	99	?	?
Riola	09/25/1980	1.07	0.02	0.54

Units: TBq = Tera (10^{12}) Becquerel, 1 Ci = 1 curie = 3.7E10 disintegrations/second = 3.7E10 Bq kT = kilotons, The only Plowshare tests listed were "crater" type. Carpetbag test on 12/17/70 added to table but not officially noted as causing an offsite release. The iodine-131 release for 12/18/70 Baneberry test seems disproportionately high for its yield.
Sources: http://www.unscear.org/unscear/en/publications/1993.html and FAS.org summary of DOE/NV-209.

The same folks that put a film badge on my grandmother's white picket fence in the 1950s chose to act like they were not able to provide enough coherent environmental monitoring of air, water or milk through the 1980s to explain INL releases versus NTS releases or global fallout. The lapses, omissions, destroyed samples, lost data, general fuzziness, etc. appear to be deliberate.

See our Environmental Defense Institute special report on the contamination at Kimama [8] for a detailed look at the radionuclides and other constituents found in the deep Kimama borehole in the Snake River Plain Aquifer. Our EDI report compares normal background levels of radionuclides and other constituents in the aquifer to groundwater flowing to the aquifer from neighboring mountain ranges, the levels in the aquifer beneath polluting facilities at the INL and the levels downgradient in the Magic Valley. Our report compares weapons fallout to the Kimama deep borehole in regard to ratios of americium-241 to plutonium-239 (and Pu-240), and also of cesium-137 to plutonium-239 (and –Pu-240). These ratios show that that the deep aquifer contamination at Kimama is not from weapons fallout but may be from INL wastes.

[8] Thatcher, T.A., Environmental Defense Special Report, "Tritium at 800 pCi/L in the Snake River Plain Aquifer in the Magic Valley at Kimama: Why This Matter," 2017. www.environmental-defense-institute.org/publications/kimamareport.pdf

NIH Removes Fallout Iodine-131 Calculator Paid for by Tax Payers, Won't Give Timeline for New Calculator

When the iodine-131 calculator for weapons fallout was removed from public access many months ago, I emailed the National Institute of Health asking what gives. When I emailed again, I was told a new iodine-131 calculator would be available by last December. There is still nothing to replace the iodine-131 calculator that gave county and year specific estimates of iodine-131 in milk from weapons fallout.

Taxpayers paid for the I-131 calculator and even if flawed, the old one should have been retained for the last year and perhaps retained after the new calculator is online in order to conduct comparisons to the results.

When the NIH effectively hides information, you have to wonder who it is they are serving. It certainly does not appear to be the public.

The development of the new calculator is following the work the National Cancer Institute performed under the mandate of Public Law 97-414 (1983) that defined the terms to atmospheric nuclear testing (you can read more on the very first page of this long report: https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/i131-report-and-appendix). Note that the dose assessments in that report have been updated and will be available in the new version of the calculator.

The NIH has responded that the calculator will assess releases from those underground tests that released radioactivity to the atmosphere, which, they state, were very limited in number.

However, the calculator does not have the capability to assess exposures from regional I-131 releases, e.g., from the Idaho National Laboratory. They state: "That is beyond the scope of our undertaking; moreover, we simply do not have the data to develop an exposure calculator for that purpose." [9]

Oh really. Did they look for any data? Did they look for at the years of milk data collected by the Idaho National Laboratory?

[9] Based on email correspondence from the National Cancer Institute of the National Institutes of Health, 2016 and January 2017. Check for the new calculator at https://dceg.cancer.gov/tools/public-data/risk-calculator-offline

Idaho Department of Environmental Quality Blackout on Environmental Monitoring Data Prior to 2010

When the Idaho Department of Environmental Quality began taking limited air, water and soil data in the late 1980s, the taxpayers were paying for it. The tax payers also paid for the dumbing down of the data so that location, data and actual results could not be discerned. Oh, but beautiful photographs were inserted to help numb-down the reader — to convince the public that certainly no harm was being done by INL radiological emissions.

The tax payers paid for putting the graphically elegant but dumbed-down reports online. Then IDEQ decided it best to remove the evidence of historical contamination from the Idaho National Laboratory all together by removing the environmental monitoring reports prior to 2010 from its website.

Through a Freedom of Information Act request, permission can be sought to visit the Idaho Falls office and see the records. Then the visitor will be charged for office help and copying for anything above a small number of copies. But sifting through years of water and air data requires more than a few dozen copies.

Helping to cover up a crime . . . is also a crime. Epidemiology continues to find that existing radiation protection models underestimate the harm especially to children. Answers as to why IDEQ chose to do this have not satisfied anyone with any understanding of the situation what-so-ever: to save internet computer space. These 30 years of reports take up a tiny fraction of the IDEQ website and are important to the transparency of the state monitoring program and INL operations.

The Highly Flawed Hiroshima and Nagasaki Survivor Studies Underestimate Radiation Harm

Many distinguished researchers have written about the many flaws in the very important study of Japan bombing survivors from Hiroshima and Nagasaki bombing in World War II. John W. Gofman, MD [10] as well as British epidemiologist Alice Stewart [11] have reported on many of the flaws. New studies continue to find the methods used in the study of Japan's bombing survivors were highly flawed and even manipulated to reduce the apparent harm of radiation.

[10] John W. Gofman, MD, PhD, "Radiation-Induced Cancer from Low-Dose Exposure: An Independent Analysis," 1990. Committee for Nuclear Responsibility, Inc., 1990. Find Gofman's writings at ratical.org.

[11] Gayle Greene, "The Woman Who Knew Too Much – Alice Stewart and the Secrets of Radiation," The University of Michigan Press, 2003.

The study of Hiroshima and Nagasaki bombing survivors is very important not only because of the potential strength of the study of 120,000 persons exposed but surviving that attacks but also because it forms the basic underpinning of radiation health modeling currently in official use in the US nuclear and medical radiation industries.

The study of Japans bombing survivors, sometimes called the Lifespan Studies or LSS, affects all of us: radiation workers, women who get breast exams using radiation, film or digital mammography, the public who may be exposed by radiation emissions from nuclear power plants, radioactive shipments, or radiation accidents.

When the study began five years after the bombing, the exposed survivors were to be compared to people not in the city during the bombing. But in 1973 after deciding that the unexposed control group was too healthy and likely to "have the effect of exaggerating the difference in mortality between the heavily exposed population and the control group. . .." the original control group was abandoned in favor of using the lowest dose group of exposed people as the control, writes Chris Busby. [12]

According to the Lifespan studies, a dose of 100 rem (or 1 Sv) — or 100,000 mrem — has a 42 percent excess chance of cancer and there is no detected increase of genetic effects. But that last twenty years of human epidemiology has shown that radiation doses cause much higher cancer risk. Doses below 500 mrem (or 5 milliSv) yield a 33 percent excess risk. And there are actually significant increases in major congenital malformations in offspring of those exposed to internal does less than 100 mrem (or 1 mSv). [13] [14]

INL Spent Fuel Shipment Remains in Limbo as IWTU Waste Treatment Facility Is Not Operating

The Department of Energy contractor Fluor is performing additional small scale testing at the Hazen Research facility near Denver. [15] Past testing had cleverly concluded that the testing did not show that the facility could not run. The resumed testing, now years after trying

[12] Chris Busby, "Letter to the Editor on 'The Hiroshima/Nagasaki Survivor Studies: Discrepancies between Results and General Perception' by Bertrand R Jordan," published by Genetics, December 2016. http://www.genetics.org/content/204/4/1627 or https://www.ncbi.nlm.nih.gov/pubmed/?term=27927905

[13] Schmitz-Feuerhake, Busby C, Pflugbeil P, 2016 Genetic Radiation Risks-A Neglected Topic in the Low Dose Debate. Environmental Health and Toxicology: 31Article ID e2016001. http://dx.doi.org/10.5620/eht.e2016001.

[14] See more about radiation units and our dose conversion chart for rem, millirem, Seivert and milli-Seivert in our October 2016 newsletter at http://www.environmental-defense-institute.org/publications/News.16.Oct.pdf

[15] Keith Ridler, AP, *The Idaho Falls Post Register*, "Tests planned on IWTU waste treatment component," December 30, 2016.

unsuccessfully to get the IWTU operating, may decide the fate of the Integrated Waste Treatment Unit (IWTU).

Fluor has given no schedule for commencing treatment of liquid sodium-bearing waste. [16] The waste was to have been treated by the previous contractor by 2012 in order to meet the Idaho Settlement Agreement. In addition, milestones for continued shipping of waste to the Waste Isolation Pilot Plant (WIPP) in New Mexico have not been met. The settlement agreement requires shipping 2000 cubic meters out of the state annually and sending out the last shipment in 2018. With over 900 shipments ready to ship but WIPP accepting perhaps five per week initially, completion of these shipments by 2018 is not expected and the Idaho Settlement Agreement milestones will be missed. [17] WIPP has recently reopened following two accidents there.

Fluor Idaho won the $1.4 billion, five-year contract in February 2016. Its work at the Idaho lab includes cleaning up buried radioactive waste (which actually means sifting through it for "targeted waste" and reburying most of it over our aquifer), watching over spent nuclear fuel which has no particular place to go now that Yucca Mountain is stalled, and getting the problem-plagued IWTU to begin treating liquid sodium-bearing waste. The previous contractor, CWI, spent millions of dollars of its own money trying to get the problem-plagued IWTU operating. Fluor elbowed out various competitors when DOE was requiring the bidders to accept more risk – then DOE awarded Fluor a cushy cost-plus-fee no accountability contract.

INL director Mark Peters stated that continued blockage of the research quantities of spent nuclear fuel from entering the state is having a negative impact on INL's current research mission and on it future role in the nuclear arena. [18]

Research quantities of spent nuclear fuel have been blocked from being shipped to the INL under the terms of the 1995 Idaho Settlement Agreement because milestones have not been met. Idaho Attorney General Wasden and the state governor would have to sign a waiver but Wasden has held out for some assurance that the troubled IWTU will actually be capable of treating the liquid waste stored over the aquifer. Wasden has not required that treatment be completed as stipulated by the settlement agreement — he has only sought some sign that DOE will actually get the IWTU running by starting to treat radioactive material with facility.

[16] Luke Ramseth, *The Idaho Falls Post Register*, "Fluor to be paid $6.9 M for 2016 work," January 14, 2017.
[17] Luke Ramseth, *The Idaho Falls Post Register*, "DOE may miss 2018 nuclear waste deadline – Idaho has 900 shipments ready for New Mexico repository," January 18, 2017.
[18] Bryan Clark, *The Idaho Falls Post Register*, "Mark Peters: Big projects vital to INL's future," January 17, 2017.

NuScale Submitted Its Nuclear Reactor Design to NRC

A three year plus review process will commence now that the small modular reactor design certification application has been submitted to the US Nuclear Regulatory Commission by NuScale Power. The Utah Associated Municipal Power Systems hopes to build the reactor at the Idaho National Laboratory. The goal to have the plant constructed by 2026 but costly hurdles remain. [19]

The 12,000 page document was submitted at the last minute at the end of 2016 and into January 2017 (see nrc.gov Adams Docket number PROJ0769). NuScale hopes that one or more applicant will file a combined construction and operation license application (COLA) in 2018. [20]

The Tennessee Valley Authority has also submitted a site permit application for what is expected to be a NuScale plant near Oak Ridge. NuScale executive McGough said that dozens of US locations have shown interest, including officials in Los Alamos. About $600 million more will be needed to finish the design and begin the early stages of construction in Idaho.

The NuScale design could include as many of 12 modules (or reactors), each having producing close to 50 megawatts. Each reactor is inside a shared steel-lined pool. The facility would use 15 million gallons of water daily, with 5 million consumed and 10 million gallons reused.

The reactor's design offers passive safety features and power output flexibility not available from large (500 MW or higher) light-water reactors because they tend to run at full power because of the difficulties in load-following.

Regardless of the any estimated reduced reactor core meltdown accident risk per module, the plant would still have spent fuel pool risk from terrorist attack, seismic event, load drop over the pool — all vulnerabilities the NRC tends to ignore, more or less. The design in no way addresses the costly problem of storing its spent nuclear fuel. Isolating the spent nuclear fuel from the biosphere for millennia is a problem that the failed Yucca Mountain repository did not resolve and the US NRC and DOE seem content to leave the problem of waste disposal to future generations.

Articles unless otherwise noted are by Tami Thatcher, for February 2017.

[19] Luke Ramseth, The Idaho Falls Post Register, "NuScale celebrates nuclear milestone – Design application to provide more detail on proposed ID plant," January 15, 2017.

[20] http://www.nuscalepower.com/our-technology/nrc-interaction