

POPULATIONS EXPOSED TO ENVIRONMENTAL URANIUM:

Increased Risk of Infertility and Reproductive Cancers!



By Leuren Moret

PART 1 OF 2

GUARDIANS AND CARETAKERS:

"The Navajos help guard the land for the Hopi. We don't want them to leave. This is their sacred land, too. The White Man is the one who needs to leave before Nature intervenes. The Great Spirit made us caretakers of this land. We take care of it with our prayers and our ceremony. Now you poison it and rape it and destroy it with your strip mines and uranium tailings and power plants – all on sacred land! And you try to chase the last few Indians off so you can do your dirty work."

Thomas Banyacya, Hopi¹

MARIN COUNTY: HIGHEST BREAST CANCER RATE IN THE US RIVERBANKS AND COASTLINES HAVE HIGHEST CANCER RATES

It is clear that dilution is not the solution to pollution. Dumping radioactive contaminated materials into bodies of water has a boomerang effect. It is not long before the ionizing radiation is washing back up on

riverbanks and shorelines. In fact, in the first cancer mapping survey² in history (1850-60) in Cumbria, the Lake District of Britain, Alfred Haviland reported that out of 6000 cancer cases in a ten-year period, the highest cancer rates were along riverbanks and shorelines. This provided a strong environmental link to cancer, before manmade ionizing radiation was introduced into the environment after 1900. Today it is well known by geoscientists that most natural background radiation originates in minerals from rocks and in sediments which are rocks reduced to particles by sedimentary processes, and transported in water until they wash up on riverbanks and shorelines... where Haviland reported the highest pre-1900 cancer rates.

Pre-1900 cancer rates globally represent the true baseline for cancer studies. Here a comparison is made between pre-1900 cancer rates in Cumbria to 1963 Hawaii cancer rates at the peak of atmospheric testing. Because crustal or continental rocks are much higher in natural background ionizing radiation than oceanic volcanic rocks, pre-1900 Hawaii cancer rates should have been lower than pre-1900 Cumbria cancer rates. Unfortunately, Hawaii has some of the highest rainfall in the world, which very efficiently deposited atmospheric manmade radioactive pollution into the Hawaiian environment. According to a 1973 letter from the Atomic Energy Commission (AEC) to the science journal *Nature*,³ Hawaii is the most radioactive contaminated place in the world from atmospheric testing and burned up spacecraft.

In Haviland's pre-1900 survey, lung cancer was 0.17% of all cancers, but increased to 17.6% (103.7-fold increase) of all cancers reported⁴ in Hawaii by 1963. The pre-1900 pancreatic cancer rate was 0.15%, which increased to 5.8% (38.6-fold) in Hawaii by 1963,⁵ and increased 12-fold in Japanese males between 1945-1965 [Fig. 4].⁶ Pre-1900 thyroid cancer in

Cumbria was the rarest at 0.05%, and has increased rapidly on a global scale since 1945. The majority of cancers in the pre-1900 Cumbria survey were breast (23.73%), and uterine (20.42%), which made up 43.15% of all cancers. The greatest majority of cancers in 1963 in Hawaii were digestive system (41.1%)⁷ and respiratory (20.4%)⁸ which together made up 61.5% of total cancers. Breast cancer was only 5.2% of the total, although it too greatly increased after 1945, but formerly rare cancers had much greater increases. The enormous increase in respiratory and digestive system cancers indicates an environmental link – with the introduction of atmospheric testing fallout – inhaled and ingested globally by all living things.

THE JOURNAL OF ENVIRONMENTAL RADIOACTIVITY

The chance discovery of an abstract in the *Journal of Environmental Radioactivity*, "Radiocesium in North San Francisco Bay and Baja California coastal surface waters",⁹ provided me with an answer to a puzzling question about breast cancer. Hundreds of millions of dollars of US government money have been spent by the University of California to identify the cause of what may be the highest breast cancer rates¹⁰ in the United States in Marin County [Fig. 1], California, just north of San Francisco.

Even more surprising, the radiocesium reported in the paper had been measured by the Lawrence Livermore Nuclear Weapons Lab (managed by the University of California), from the north end of San Francisco Bay to the coastal waters at the tip of Baja California, Mexico. By mapping the pattern of breast cancer in Marin County, I identified the San Francisco Bay shoreline of the Marin County peninsula as the environment where the highest rates of breast cancer occur in the county. The deepest part of San Francisco Bay is offshore from Marin, and the highest volume of radioactive contaminated sediment-laden water



Fig.1. (above): San Francisco Bay Area, with Marin County in upper left corner, north of San Francisco.

Source:

http://www.sfbayquakes.org/mapview/map_without_view.jpg

passes through this area each day with the tides. The sediment and water flow pattern in the north part of the bay is visible in the aerial photo in Fig.1.

Not only is San Francisco Bay contaminated with ionizing radiation from the Sierras, but it also is heavily contaminated with chemicals, ionizing radiation, and military waste from decommissioned military bases. Signs around the Bay shoreline warn pregnant women to eat nothing caught in the Bay, and "residents should eat no more than one fish a month" caught in the Bay. Little wonder the warning signs are posted since ionizing radiation and chemicals have a synergistic interaction, multiplying the effects of each other by many times.

The lowest breast cancer rates are along the Pacific coastline of Marin. The spatial distribution of breast cancer made it clear that there had to be an environmental cause. Large areas of mudflats and estuaries along the bay side shoreline of Marin, like the Cumbria and Welsh seacoasts, provide a low energy environment of quiet still water for radioactive contaminated fine sediments to settle out.



Fig.2 (above): Map of California showing San Francisco Bay, Marin County north of San Francisco, and the Sierra Nevada Mountains to the east where radioactive contaminated water supplies originate for northern California.

Source: Hornbeck, D. *California Patterns: A Geographical and Historical Atlas*. Mayfield Publ. Co, Palo Alto, CA (1983).p.11

CONTAMINATION OF REGIONAL WATER SUPPLIES

Most of the fresh water coming into San Francisco Bay is from the Sierra Nevada Mountains east of the California coastline, a very high mountain range running north and south along the border with Nevada [Fig. 2]. The soils of the Sierras are now contaminated with radioactive materials from nuclear bomb testing, Chernobyl, and the emissions from the Rancho Seco nuclear power plant, which operated east of Sacramento until it was shut down in 1989 by a citizens lawsuit after a history of accidents, radioactive leaks, startups and shutdowns. The citizens lawsuit was successful because they owned the Sacramento municipal Power Company, including the nuclear power plant.¹¹ Most of the drinking water for the San Francisco Bay area comes from the Sierras. Approximately 95% of the radioactive emissions from Rancho Seco were rained and snowed out into the Sierra Nevada Mountains, contaminating vegetation, soils, streams, rivers and lakes. Mortality from all diseases for all ages in San Francisco declined by about 10% within two years of the Rancho Seco shutdown,¹² just what the European Committee on Radiation Risk (ECRR) predicted in the new radiation risk model they wrote in 2003 as an independent

report for the European Parliament.¹³

During the lawsuit, which eventually shut down Rancho Seco nuclear power plant in 1989, the citizens contracted with Lawrence Livermore nuclear weapons lab to measure fission product emissions in the Rancho Seco environment. I obtained the Livermore Lab radiation reports¹⁴ and communications with lawyers, from Dr. Ernest J. Sternglass who had been an expert witness for the lawsuit. It was a surprise to discover that Livermore nuclear weapons lab has not only secretly conducted extensive global monitoring of ionizing radiation for decades, but local ionizing radiation monitoring as well. In fact, I saw fresh core samples from Hiroshima and Nagasaki lying on a table in a Livermore environmental laboratory in 1991. When I asked Dr. Kai Wong, a Livermore lab ionizing radiation expert, why they were still monitoring Hiroshima and Nagasaki, he said:

"Because Hiroshima and Nagasaki are still radioactive. And we are still studying the people because they are too."

LIVERMORE NUKE LAB SECRETLY MEASURING GLOBAL RADIATION LEVELS

In a recent study, Livermore Nuclear Weapons Lab reported¹⁵ measuring one Curie of radiocesium per year, passing through San Francisco Bay, attached to fine sediment. Cesium 137 and Strontium 90 are the two most abundant fission products, and are commonly measured as an indicator of more than 400 other fission products produced. Therefore far more than one Curie of ionizing radiation per year has been

washing through the Bay. Clay particles are highly charged and act as scavenging agents for radioactive particles suspended in water. This has been a chronic and cumulative source of low-level ionizing radiation washing up daily on the San Francisco Bay side of the Marin shoreline for at least 60 years – since atmospheric testing started in 1945, and the likely cause of the high rates of breast cancer reported in Marin County.

Based on 550 epidemiological studies of exposed populations, an independent low-level ionizing radiation report for the European Parliament, the European Committee on Radiation Risk (ECRR) report, has stated that chronic exposure to low-level ionizing radiation is:

“...up to 1000 times more biologically damaging than the International Committee on Radiation Protection (ICRP) standards and risk model predict.”¹⁶

The ICRP standards and risk model are based on the Hiroshima and Nagasaki Atomic Bomb studies, which were deceptively conducted by the U.S. Government, in order to protect the future development of a nuclear weapons program.

Even worse than the fission products, the public health impact from global pollution by depleted uranium, was not officially measured or reported from bomb testing, but someone must have been monitoring it. All atomic and hydrogen bombs have large amounts (thousands of pounds) of depleted uranium packed as “tamping” around the small plutonium core weighing less than 20 lbs.¹⁷ The major contribution made by depleted uranium to global radioactive pollution from atmospheric testing was very rarely mentioned or reported.

THE DIABETES LINK TO RADIATION

Prior to the introduction of manmade ionizing radiation into the environment, diabetes was very rare. Most children who developed diabetes died by the time they were 7 years old, since insulin was not discovered until the late 1920s. This greatly minimized inheritance of a genetic link to diabetes. By globally mapping diabetes,¹⁸ it was very clear to me that the highest rates of diabetes in the world are in the same latitudes as the major atmospheric tests. Jet stream distribution carried the radiation from east to west in the northern latitudes where the US, Russia, and China conducted tests. And in the southern

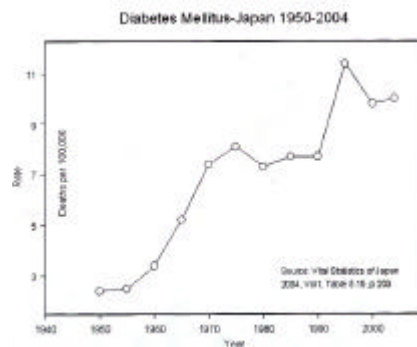


Fig. 3: Diabetes death rates in Japan 1950-2004. This represents the global cumulative radiation effects of atmospheric testing (1950-1963), nuclear power plants introduced in 1968, and depleted uranium introduced in 1991.

Source: Vital Statistics of Japan 2004 vol.1, Ministry of Health, Labour and Welfare, Health and Welfare Statistics Assoc., Table 5.15, p. 203.

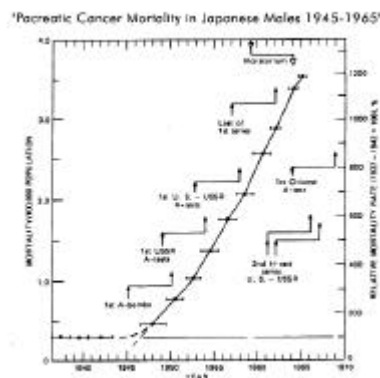


Fig. 4: Trend of mortality rate from pancreatic cancer in Japan (Males) for the period 1940-1965 prior to, and following the release of fission products into the environment.”

Source: M. Segi, M. Kurihara, and T. Matsuyama, “Cancer Mortality in Japan (1899-1962)”, Department of Public Health, Tohoku University, Sendai, Japan, 1965.

latitudes where British and French bomb tests were conducted, the jet stream carried the radiation around the world, contaminating the tips of S. America and Africa. By 1963 at the peak of atmospheric testing, Dr. Ernest J. Sternglass reported a 50% decline in the North Atlantic fishing catch, and a 65% decline in the northern Pacific fishing catch, due to global nuclear fallout pollution of the oceans.¹⁹

A global diabetes epidemic [Fig. 3], beginning in 1945 with the bombing of Hiroshima and Nagasaki, has had a major contribution from the effects of uranium pollution from atmospheric testing, nuclear power plants, and depleted uranium weaponry introduced

to the battlefield in 1991. Uranium is particularly damaging to the pancreas, insulin production, information flow, and cell function. And diabetes in pregnant women has a serious effect on the foetus.

Pancreatic cancer mortality in Japanese males [Fig. 4] increased 12-fold between 1945 and 1965, during the peak of atmospheric testing.²⁰

MARIN COUNTY: A NATURAL CONTROL STUDY

The Marin County study is the kind of natural experiment geoscientists find useful in their research, with the Pacific coastline as a natural control and San Francisco Bay mudflats in Marin County as the study area. It is also a good comparison of the public health effects of ionizing radionuclide concentrations in contaminated freshwater compared to seawater. It is already well known that because of the influence of saltwater on uptake of radionuclides saltwater fish have much lower radioactive contamination levels than freshwater fish living in contaminated environments where toxins may bio-concentrate by thousands of times.

When the results of mud samples from the Marin County bay side shoreline and the Pacific coastline are analyzed and reported, low-level ionizing radiation from the Sierras will be identified as the cause of what may be the highest breast cancer incidence in the United States. High rates of autism also occur in areas, between the Sierras and Marin County, in low energy slow water environments where swampy still water and mudflats occur, and are recharged with contaminated water washing down from the Sierras. The California Department of Developmental Services (DDS) found a 273 percent increase in autism cases between 1987 and 1998.²¹ This is due not only to residual ionizing radiation washing out of the Sierras, but also to the nuclear power industry in California. Dr. Ernest Sternglass has provided powerful evidence²² that in the state of California, autism has increased and is correlated with the increase of energy generated by nuclear power plants since the early 1970's. An investigation of U.S. autism rates and nuclear power plant operating capacity confirmed the California findings. Ionizing radiation in the environment has a cumulative effect, where increased levels have been reported in dairy products and soils such as in New York City, causing an increase in biological problems in exposed populations.²³

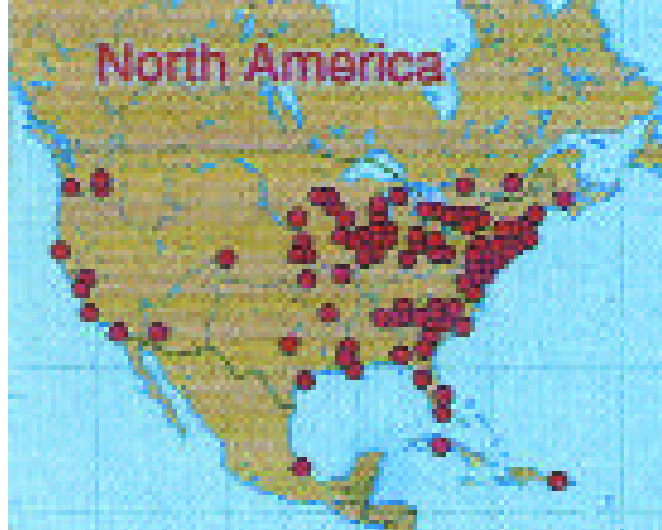
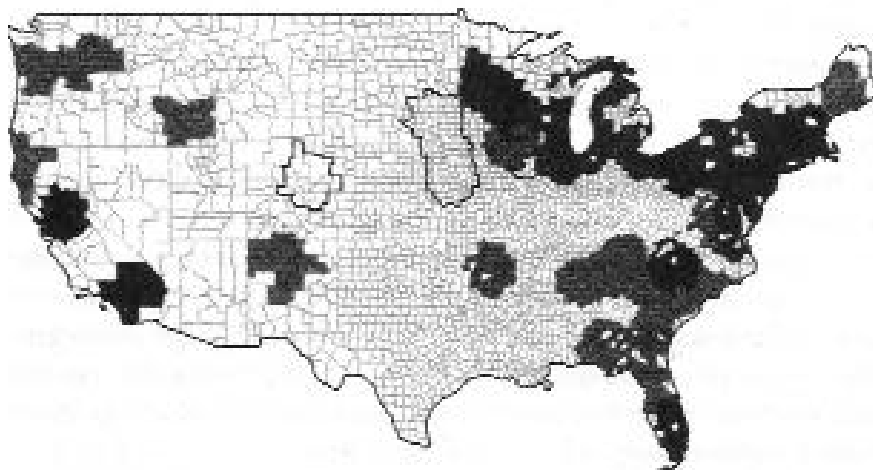


Fig. 5A (left): High-risk counties within 100 miles of nuclear reactors where 2/3 of breast cancer deaths occurred 1985-1989. Fig. 5B (right): Nuclear power plant locations in the U.S.

Source: 5(A) J. Gould, *The Enemy Within: The High Cost of Living Near Nuclear Reactors, Four Walls Eight Windows*, NY/London (1996), p.187. 5(B) Source: *"The Madness of Nuclear Energy"*, *The Ecologist*, Vol. 29 No. 7, November 1999, back cover.

I'M THE "MOUSE LADY"

The University of California, as the unchallenged manager for 61 years of the nuclear weapons program at Los Alamos National Lab, Lawrence Livermore Lab, and Lawrence Berkeley Lab, has received billions of dollars to make a global radioactive environmental mess, hundreds of millions of dollars more to "study" the breast cancer clusters in Marin County, and has still failed to identify the cause. The "platinum plated" labs have so much sophisticated equipment and personnel to study ionizing radiation that they are, as one Livermore scientist said, a "solution looking for a problem." Yet, during a breast cancer conference on January 21, 2006, by the Bay Area Breast Cancer and Environmental Research Center (BABCERC), University of California scientist Dr. Mary Helen Barcellos-Hoff from the Lawrence Berkeley Lab, introduced herself as "the mouse lady". She stated very clearly, during her presentation to 600 women, that "radiation is the only known cause of breast cancer in mice".²⁴ She repeatedly mentioned in her talk that "Radiation is the only known cause of breast cancer in mice and that is why I use it to cause breast cancer in mice." She concluded her talk, by saying that in their research they "never identified the cause of breast cancer in women".

No, but hundreds of millions of dollars later, they sure did in mice... ionizing radiation.

THE MOUSE THAT ROARED

When it was time for questions, I held up an enlarged breast cancer map [Fig. 5A] using US Government data (1985-1989) from the Centers for Disease Control (CDC). The map identified that within a 100-mile radius of nuclear power plants and nuclear weapons labs, [Fig. 5B] two thirds of all breast cancer deaths occurred in the United States from 1985-89.

I asked the speaker, Dr. Mary Helen Barcellos-Hoff, if BABCERC was investigating ionizing radiation as a cause of breast cancer around these sites. She quickly replied, "Oh, I'm a microbiologist!" distancing herself from the "R" word.



Fig. 6 (above): Kokopelli is a fertility deity, an ancient humpbacked flute player from an Anasazi glyph. He presides over childbirth, agriculture, and reproduction of game animals, and is venerated by Southwestern Indians.

Source: Walker, D., *Cuckoo for Kpkepelli*, Northland Pub. Flagstaff AZ (1998), p.3- Pottery by Melissa Antonio, Acoma Pueblo, New Mexico, p.1-Navajo basket by Eleanor Rock, Twin Rocks Trading Post, New Mexico.

KOKOPELLI SPEAKS

Living on the Navajo Reservation heavily contaminated from uranium mining, a young Navajo girl lost her grandmother, her ama'sa'ni, to breast cancer when she was nine.²⁵ Her mother later had breast cancer twice. When Stefanie Raymond-Whish decided to become a molecular biologist at the University of Northern Arizona, she dedicated her research to finding the root causes of breast cancer.

LOOD DOO NADZIIHII – "THE SORE THAT DOES NOT HEAL"

Raymond-Whish discovered that there was New Mexico State Tumor Registry data on the New Mexico portion of the Navajo Reservation, which showed a 17-fold increase in childhood reproductive cancers compared to the U.S. average.²⁶ Ms. Williams, the journalist who wrote "On Cancer's Trail" about Raymond-Whish, reported "These are extremely rare cancers related to hormone systems".²⁷ Another set of registry data from 1970-1982 showed a 2.5-fold increase in these cancers among all New Mexico Native Americans.²⁸ A 1981



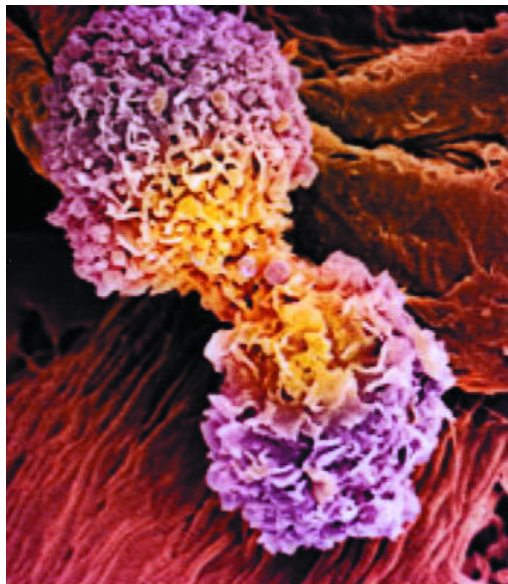


Fig. 7 (above): A dividing breast cancer cell as seen through a colored scanning electron micrograph.
Source: Steve Gschmeissner/Science Photo Library.

http://www.hcn.org/servlets/hcn.Article?article_id=17708

paper identified a possible link between proximity to uranium mine tailings and incidents of birth defects in families. Breast cancer [Fig. 7] is the number two killer of Navajo women after heart disease.²⁹ Uterine and ovarian cancers doubled or tripled since 1970 in New Mexico Indians, with no change in whites and Hispanics.³⁰ This has prompted the U.S. Health and Human Services to fund a study on kidney disease to be done jointly by a Navajo health agency and a New Mexico state agency. They will be looking at 1300 Navajos and 160 drinking wells, compiling illness data and analyses of drinking water contaminants (uranium, arsenic, etc.). With less than 1/4 of the wells tested, the study has already established that living within 0.8 kilometer from an abandoned mine is a significant predictor of kidney disease and diabetes.³¹ This suggests that local uranium pollution point sources are contaminating the groundwater on the Navajo reservation where many family dwellings have their own well. Municipal drinking water supplies, utilized by whites and Hispanics in more populated urban areas, may explain the reduced uterine cancer rates in non-Indian populations.

Dr. Ernest Sternglass has recommended that reverse osmosis filtration systems, for a cost to the U.S. Government of about \$500 per household, will remove heavy metals including uranium and other contaminants from water. He suggests that the U.S. Government cost of providing these systems to contaminated Native American populations would be far cheaper than the public health studies and high health care costs of chronic exposure to uranium contamination.

ANOTHER MOUSE STUDY AND A DIFFERENT OUTCOME

When Raymond-Whish received her PhD in May 2008, she had already co-published a groundbreaking paper³² identifying uranium as an estrogen disruptor and a serious cause of infertility as well as breast, ovarian, and uterine cancer. She and researchers exposed mice to depleted uranium contaminated drinking water below the U.S. EPA water standard of 30 picoCuries/Liter³³ (or about 1 Becquerel),³⁴ in other words at levels the U.S. government considered to be a minimal health risk. Their results:

*"Mice that drank uranium-containing water exhibited estrogenic responses including selective reduction of primary follicles, increased uterine weight, greater uterine luminal epithelial cell height, accelerated vaginal opening, and persistent presence of cornified vaginal cells. Coincident treatment with the antiestrogen ICI 182,780 blocked these responses to uranium or the synthetic estrogen diethylstilbestrol. In addition, mouse dams that drank uranium-containing water delivered grossly normal pups, but they had significantly fewer primordial follicles than pups whose dams drank control tap water."*³⁵

THEIR CONCLUSIONS WERE:

*"Because of the decades of uranium mining/milling in the Colorado plateau in the Four Corners region of the American Southwest, the uranium concentration and the route of exposure used in these studies are environmentally relevant. Our data support the conclusion that uranium is an endocrine-disrupting chemical and populations exposed to environmental uranium should be followed for increased risk of fertility problems and reproductive cancers."*³⁶

Andrea Gore, a neuroendocrinologist at the University of Texas, Austin, and former advisor to the National Science Foundation considers this to be a groundbreaking study:

*"This is a science of subtlety, (Dyer's and Raymond-Whish's) work is consistent with other good labs. People criticize the field of endocrine disruption because we don't always understand the mechanisms, but the effects are real. This is why animal studies are so important. The responses we see in lab animals can happen in humans, because we share the exact same hormones. The estrogen receptor is similar."*³⁷



Fig. 8 (above): The start of every human life: Human ovulation where emergence of the oocyte from the ovary occurs before fertilization in the uterus.

Source: Geddes, L., "Human egg makes accidental debut on camera", New Scientist, June 11, 2008.

A GLOBAL DEPOPULATION DOOMSDAY MACHINE

Since 1945, the University of California and the U.S. Nuclear Weapons Labs together with other nuclear states have blanketed Planet Earth and the global atmosphere with accumulating uranium and fission products with an unknown biological outcome. This is very significant because low level uranium contamination, even below EPA drinking water standards, is an estrogen or hormone disruptor at a minimum, which means it will have a global affect, and not just on females of many species. Raymond-Whist has identified some of the effects in one biological system (reproductive), which is a part of a larger cooperating set of systems in a human or animal super-system. Her research predicts that infertility will increase in each future generation because of chronic low-level ionizing radiation exposure, cancers of reproductive organs in females will increase, and the viability of future generations will decline.

The link between diabetes and uranium exposure is also significant to the reproductive system, since pregnant women who have diabetes and little or no health care produce unhealthy babies. The impact of uranium on the pancreas and production and function of insulin, another hormone, is very significant damage to another system. Environmental uranium is already causing a global epidemic of diabetes with large increases in rates. The WHO has predicted that global diabetes rates are expected to increase 10 times by 2030.

Animals too are being affected by the impact of environmental uranium pollution, since we share the same hormones and similar estrogen receptors. This is accelerating the collapse of the environment and our web of life. The entire planet is experiencing the greatest

mass extinction of all species since the dinosaur extinction 65 million years ago. Examples of indicators are everywhere, such as increases in uranium levels in drinking water reported in Los Angeles,³⁹ which doubled in 2007 alone, from depleted uranium bombing in Iraq and Afghanistan. In 2006 depleted uranium was reported in the British atmosphere 7-9 days after bombing in Iraq and Afghanistan.⁴⁰ High increases of diabetes have been reported in Tasmania, and 50% of the Tasmanian Devil population has been exterminated by aggressive mouth cancers since 1993, when uranium mining and milling both doubled in Australia. The radioactive dust is carried in southern hemisphere atmospheric circulation patterns to Tasmania in a matter of days.

Ionizing radiation is different. There is no way to turn it off and no way to clean it up. It is the weapon that keeps giving and keeps killing. Fertile females, the unborn, and children are the primary targets of this global depopulation Doomsday Machine. The University of California, home of the Manhattan Project - the atomic bomb project that never ended, will forever be known as "the University that poisoned the world".

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