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**National Cancer Institute Study
Challenged by Independent Researchers**

In 1990 the National Cancer Institute (NCI) released a study titled "Cancer Mortality in Populations Near Nuclear Facilities" which found no increased cancer risk near nuclear facilities. Jay Gould, PhD, and members of the Radiation and Public Health Project, including the world renowned epidemiologist, Ernest Sternglass, recently published a book titled *The Enemy Within, The High Cost of Living Near a Nuclear Reactor* that challenges the NCI research findings.

Gould, also an epidemiologist and statistician utilized the same NCI, state health department, and Centers for Disease Control data on cancer incidences to show that there is a significant impact on populations surrounding nuclear power reactors and Department of Energy (DOE) nuclear sites. Gould offers official statistical evidence proving that residents of nuclear counties - the 1,321 counties within 100 miles of a reactor - suffer disproportionately from nuclear fallout.

Gould challenges the fundamentals of NCI's study methodology. He explains that NCI compared "nuclear" counties with adjacent "non-nuclear" counties. Since radiation from the nuclear sites can travel a hundred miles or more, Gould contends that NCI deliberately tried to make it appear that there was no cancer increase by comparing highly irradiated counties with other highly irradiated counties as a control group. He states, "it is clear that the choice of 'control' counties alone virtually guarantees that there would be little or no difference in cancer rates. This permitted the misleading [NCI] conclusion that there is no evidence that an excess occurrence of cancer has resulted from living near a nuclear facility." Gould notes that "despite that bizarre method of selecting control counties, an examination of the aggregated NCI data for all 107 studies or 'nuclear' counties and for all 292 [NCI] selected adjacent control counties combined for the periods before and after [nuclear] start-up . . . in the NCI report, all show significant increases in cancer risk relative to that for the United States

as a whole, which is in direct contradiction to the ultimate conclusion reached by the NCI."

Gould uses the same official data used by NCI to trace the differential growth of white female breast cancer mortality in each of the counties that make up the nation in order to analyze the environmental factors that have contributed to the epidemic rise of this disease over the past four decades. Breast cancer is universally acknowledged to be a health outcome from radiation exposure.

A database of county-by-county, age adjusted breast cancer mortality rates, secured from the National Cancer Institute, permitted the researchers to examine the environmental differences between those geographic clusters in which cancer mortality are both most, and least concentrated. The age-adjusted county cancer mortality rates are what the rates would be if every county had the same age composition that the US had in 1950.

The NCI report concludes that "if . . . any excess cancer risk was present in US counties with nuclear facilities, it was too small to be detected with the methods employed." Gould's book shows "that in reaching this erroneous conclusion, the NCI misrepresented their own data, chiefly by defining only 107 counties as 'nuclear'. Such small samples of the nations' 3,000-odd counties would not be large enough for any divergent mortality trend to prove statistically significant. Our findings imply that women living near reactors are at greater risk of contracting breast cancer, which does not mean that women living further away from reactors are safe. It does suggest that some malevolent force of mortality is being emitted from reactors and that this force could interact with pesticides and other chemical pollutants, thus affecting residents of all counties to varying degree."

Gould goes on to note that "one of our most revealing findings concerns the 14 counties in which the seven oldest Department of Energy reactor sites are located. The combined age-adjusted white female breast cancer mortality rate [per 100,000] for all 14 of these counties

rose by 37 percent from 1950-54 to 1985-89, when the corresponding rate in the United States rose by only 1 percent. Over that period, the [actual] number of breast cancer deaths in those 14 DOE counties quintupled, whereas the number in the United States doubled. The probability that so great a divergence in mortality trends could be the product of chance is infinitesimal.”

Focus on INEEL

One of the “nuclear” sites identified by both NCI and Gould was INEEL. Gould further expanded his study into two impact zones - fifty mile radius and a hundred-mile radius around nuclear sites in the US. This more accurately accommodates the likely populations affected by radiation released from these nuclear sites. Gould found the age-adjusted white female breast cancer mortality rates per 100,000 populations within 50 miles of INEEL (three counties, Bingham, Butte, Jefferson) rose 333% between 1950-54 and 1980-84, and rose 322% between 1950-54 and 1985-89. The 1985-89 mortality rate of 20.1 per 100,000 exceeded the State of Idaho rates of 18.9. See Figure 1 & 2.

Within 100 miles of INEEL (16 counties), Gould found the breast cancer death rates per 100,000 rises from 14.2 in 1950-54 to 22.3 between 1980-84 or an increase of 57%. See Figure 3 & 4. The 1985-89 mortality rate of 20.1 per 100,000 within fifty mile radius and 19.8 within the hundred-mile radius exceeded the state of Idaho rates of 18.9 per 100,000.

Gould’s methodological approach to the NCI data caused quite a stir within the government agency. He notes that “our use of the NCI database evidently caused some official concern. We are in possession of a confidential NCI memorandum dated 1/5/95, by Dr. Charles E. Land, a health statistician in the [NCI] Radiation Epidemiology Branch. His [Land’s] memo was written to debunk our findings but unwittingly confirms them.”

NCI’s Dr. Land adopted the same 50-mile radius that Gould used and Land’s results for INEEL (rate per 100,000) are compared with Gould and Idaho as a state. Figure 7 below shows that Gould’s findings of breast cancer mortality rates are actually lower than Land’s. This means that Land shows that more women are dying from breast cancer than what Gould shows with the exception of the 1950-54 time period. Land’s own figures still show an 87% increase in the fifty-mile radius around INEEL. Gould’s understated cancer incidence rates are largely due to not including Clark County (directly North of INEEL)

which had about three times the state rate for breast cancer mortality though Gould included Clark County in his 100-mile radius. Idaho and Utah have historically the lowest cancer rates in the whole nation primarily because of the high Mormon population that teaches abstinence to smoking and other health debilitating practices. The Idaho counties around INEEL enjoyed a breast cancer mortality rate in the first (pre-nuclear) half of the 20th century that was about half the national rate. The four decades in the second half of the century shows a dramatic increase in breast cancer mortality that now approaches the national rates. These same counties around INEEL trailed significantly behind even the state mortality rates prior to the 1950’s, and now exceeded the state breast cancer mortality rate. This anomaly is occurring during an era when the national rates are relatively unchanged with a slight increase of 2%.

The state of Idaho experienced a cancer increase in the 1980’s of 18% which could be attributed to the combined impact in northern Idaho to Hanford and southern Idaho’s exposure to the Nevada nuclear bomb fallout and INEEL. Another study in 1997 by the National Cancer Institute (NCI) acknowledged that five of the six counties in the United States receiving the most fallout from Nevada nuclear bomb tests were in southern Idaho. NCI came under considerable criticism for withholding the Nevada fallout report for five years because as NCI Director Bruce Wacholz stated to Congress, there did not seem to be any public interest in the report findings.

Jay Gould is launching a new study focusing on prostate cancer around DOE reactors - including INEEL. For age-adjusted prostate cancer mortality rates, the national increase was 3 percent, but for the 14 counties around the seven oldest DOE reactors, the corresponding increase was 19 percent--based on an increase from 112 prostate cancer deaths in 1950-54 to 649 in 1985-89. Gould notes that “we have found that the radiation-induced increases in prostate cancer are even greater than for breast cancer, and so we plan soon to publish a companion volume to *Enemy Within*.”

Gould believes that “the current epidemic increases of breast and prostate cancer mortality reflects the cumulative effects of our 50 years of exposure to low-level radiation in the nuclear age, which has weakened the ability of the immune systems of old persons to cope with cancerous cells. Since 1980--particularly persons born after 1945 exposed at birth to two decades of aboveground nuclear weapons test equivalent to exploding 40,000 Hiroshima bombs--have been contracting cancer at increasingly younger ages. Baby boomer women now are

getting diagnosed for breast cancer as young as 35. Baby boomer men are now beginning to be diagnosed with prostate cancer at the early age of 50 and 55.”

Gould notes that “because the latency period for prostate cancer is 20 years longer than for breast cancer, we can expect a continuation of the current prostate cancer epidemic increase to continue well into the next century. Men born in 1945 will reach the peak years of prostate cancer mortality in the years 2010-2015.”

These revelations are a vindication of Drs. Carl Johnston and Michael Blain’s 1985 INEEL paper submitted to the American Association for the Advancement of Science that found comparable health impacts.

A useful resource book called the *Petkau Effect* by Ralph Graeb reviews recent health studies on radiation exposure. Graeb writes that, “the aim of this book is to present the range of health and ecological dangers of fission products released into the air and water. Among the most important of the recent scientific discoveries that have been successfully kept from the public is the Petkau Effect, the discovery that showed low-dose, protracted radiation exposures such as those produced by radioactive fission products, to be hundreds, to thousands of times as damaging as the same dose received in a short medical X-ray.”

Graeb notes that “in the past three years, new and decisive information relating to the Petkau Effect has surfaced. In both the biochemical, pharmaceutical, and medical fields, the term ‘oxidative stress’ has been introduced at long last. This condition is caused by oxygen free radicals, a highly toxic, unstable form of oxygen that attacks living cells. These radicals already occur during the course of normal cellular life, especially in the respiratory process. They are controlled by a protective system of the body involving enzymes, vitamins and micro nutrients. If the level of oxygen free radicals exceeds that which the protective system can control, the result is oxidative stress and subsequent membrane damage (Petkau’s discovery).”

Ernest Sternglass is heading up a Radiation and Public Health Project study of strontium-90 accumulation in baby teeth. They are asking people that live near nuclear facilities, to send in their baby or other extracted teeth so they can be analyzed. This new approach is a more definitive means of determining a radiation dose to a given individual. By comparison, a dose reconstruction study can only vaguely estimate a dose range for a hypothetical individual living in a certain area. The tooth study will also largely eliminate the cause and effect question. The

government will have a difficult time avoiding responsibility for high strontium-90 concentrations in an individual’s teeth.

For more information contact the Radiation and Public Health Project at 1630 W 22nd St, Miami Beach, Florida 33140, 1-800-582-3716, Email: jbrown@icanect.net Website: www.radiation.org

State Health Studies Also Indicate Problem Near INEEL

Idaho’s Division of Health conducted a cancer survey in counties around INEEL and the agency is finding higher rates than national averages. The 1995 study analyzed a 17-county area comparison of cancer incidence rates (1971 to 1992) and compared it to the other 27 Idaho counties. This 17-county study is similar to Jay Gould’s 16 county (100 mile radius around INEEL). The state study counties include Bannock, Bingham, Blaine, Bonneville, Butte, Caribou, Cassia, Clark, Custer, Fremont, Jefferson, Jerome, Lincoln, Madison, Minidoka, Power, and Twin Falls. The aggregate 17 county study found increased cancer incidents. “Fourteen statistically significant elevations were found.” The most common were leukemia, stomach, and multiple myeloma.

This comparison may be understating the problem because the counties in northern Idaho have high cancer rates (especially thyroid and breast) possibly due to Hanford radioactive fallout.

In 1996 the state narrowed the previous study down to six counties south and east of INEEL including, Bingham, Bonneville, Butte, Clark, Jefferson, and Madison. The age-adjusted incidence rate for central nervous system cancers in the six county areas was 8.1 per 100,000. The rest of Idaho had a rate of 7.0 per 100,000 compared with a national rate of 6.3 per 100,000. This means that there is considerably more cancer occurring in these six counties than is occurring in the state or the United States. The observed number of central nervous system cancers for the six-county area was 110 (89 expected, based on the rest of Idaho). The analysis was then confined to brain cancer (other central nervous system cancers such as chordoma and optic tumors were excluded). See Figure 5. The state report notes that “a significantly higher number of cases of brain cancer 182 were observed when 151 would be statistically expected in the six county areas for the years 1975 to 1994.” Another 1996 state analysis of a reported cluster area around the town of Moreland

(near Blackfoot) in Bingham county revealed an increased rate of brain cancers, four observed with one expected between 1980 and 1995. See Figure 6. Critics of the State survey allege that ten Moreland residents have brain tumors (4 glioblastomas, and 6 astrocytomas), not the four recognized in the State report. The State apparently also missed two brain cancers because one was treated in Japan and the other due to diagnostic delays. Moreland residents are justifiably angry that the public health agencies will not do any soil or water sampling. With a population of some 675 mostly clean living Mormons, Moreland has no obvious cause for these diseases other than INEEL.

In Blaine County, a state survey requested by a local physician found that the female population younger than 70 had statistically significant elevated rates of breast cancer. Epidemiologists are studying the same factors as in the ongoing eastern Idaho brain cancer study.

In Clark County, the agency found statistically significant increases of radiogenic cancers (25 observed, 16 expected) including eight cases of female breast cancer when only 3.2 cases were expected. Clark County in more recent years has nearly double the rate of breast cancer compared to other eastern Idaho counties as well as national rates. Indeed, from 1990 - 1998, the breast cancer mortality rate in Clark County was about three times higher than the Idaho or U. S rates, and the overall mortality rate for male and females was the highest in the state.

The *1997 Cancer Data Registry of Idaho* report lists Health District 7 which includes Bonneville, Clark, Custer, Fremont, Jefferson, Lemhi, Madison, Teton counties lists statistically significant increases in thyroid cancer (19 observed and 9 expected, $p \leq 0.01$), and ovary cancer (18 observed and 9 expected, $p \leq 0.01$).

In Minidoka County, the agency found 20 cases of stomach cancer when only 11.6 were expected. "Sixteen percent of the respondents to the State survey had another relative with brain cancer, and 48% of respondents had a relative with some type of cancer other than brain or skin cancer. Sixteen percent of respondents reported some type of radiation exposure at work."

The American Cancer Institute (ACI) Idaho Division also acknowledges breast and prostate cancer at the top of the most common in Idaho. ACI ranks Clark County at the northern end of INEEL as nearly double all other eastern Idaho counties as well as national rates for breast and prostate cancers.

The state reports reiterate that "considering the number of statistical tests that were done, the results did not indicate any unusual findings." Unless there is a

statistically significant difference between a local cancer rate compared to a state or national rate, than the state health department is unconcerned. A more sensible attitude from a public health perspective is: if there are radical increases in radiogenic diseases over a long period of time, then the agency is obliged to make every effort to determine the cause and notify the effected public. To wait until there is a statistical significance is like waiting until the tornado hits before heading for the storm cellar.

Only after the Environmental Defense Institute, Keep Yellowstone Nuclear Free, and David McCoy filed a notice to sue, did the state force DOE to shutdown two radioactive and hazardous chemical incinerators that illegally operated for nearly two decades without the required permits. Despite numerous "trial burn" tests, none to the incinerators could meet emission standards, yet the state allowed them to continue to operate.

State Response to Gould/Sternglass

Copies of Jay Gould's INEEL related findings were sent to the Idaho Division of Health. Christopher Johnston, epidemiologist, that lead the state health studies critiqued the Gould/Sternglass study and stated: "The authors appear to have chosen the 'nuclear' counties to produce the desired results, which negates the validity of statistical tests of hypotheses." Johnson fails to appreciate what the most pedestrian observer would find that if a credible study wants to determine the health outcome from a specific contamination source, the logical place to look is the downwind population to that source. Johnson further challenges Gould/Sternglass for using rural counties. Hello! The counties around INEEL are all rural. Even Idaho Falls and Pocatello are considered by the US Census Bureau as rural towns. Johnson wants it both ways, first he criticizes Gould/Sternglass for comparing rural data with urban data yet he does the same by comparing the US data which is dominated by urban populations. Johnson further failed to acknowledge other state studies showing increases in breast and other radio-genetic diseases around DOE facilities. To date, the National Cancer Institute has yet to respond to Gould or the other authors of *Enemy Within* or to notify the public of the increased rates of breast and prostate cancer near nuclear facilities. These health agencies have a mandate to protect the public health. Our tax dollars support their programs, yet there seems to be a disconnect in the realm of accountability. *

Age-Adjusted White Female Breast Cancer Rates 1950-89 Within 50 Miles of INEEL *

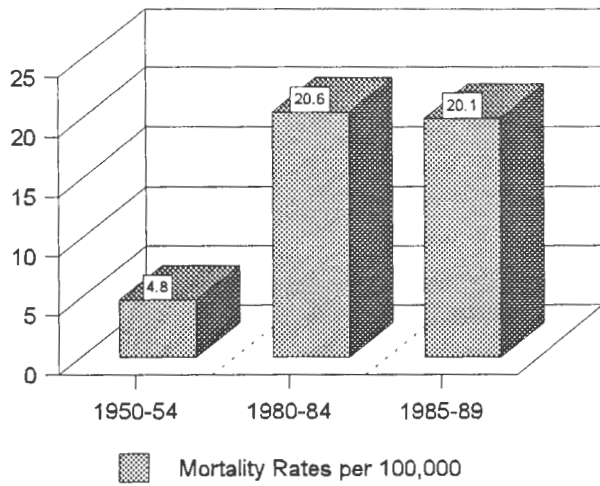


Figure 1

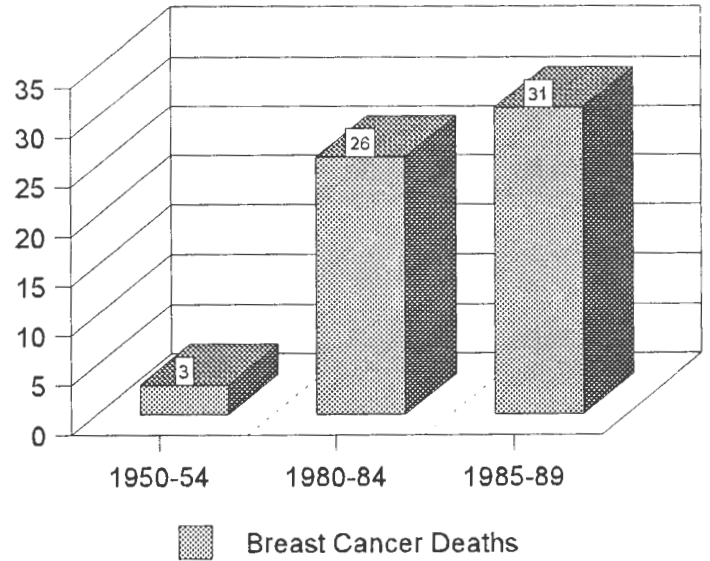


Figure 2

Breast Cancer Mortality Rates per 100,000 1950 to 1989 Within 100 Miles of INEEL *

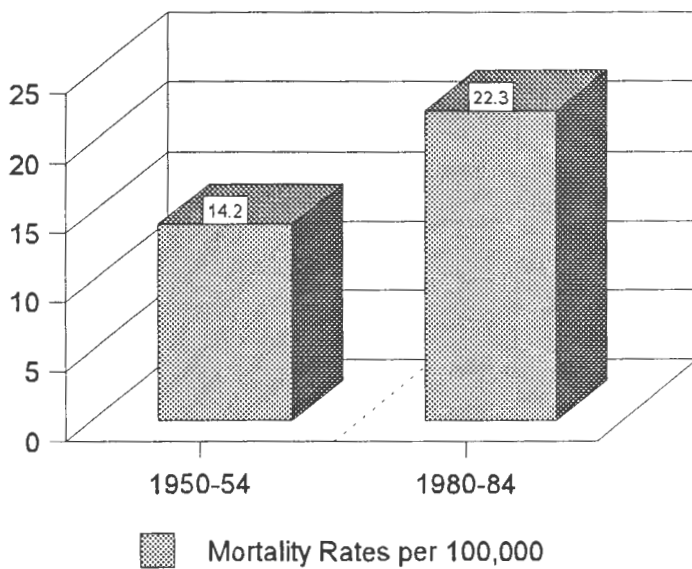


Figure 3

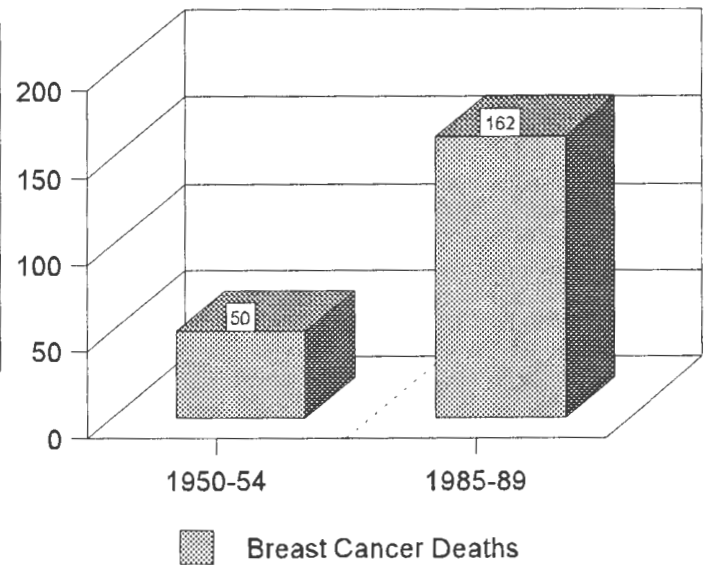


Figure 4

* *The Enemy Within*, by Jay Gould with Members of the Radiation and Public Health Project, Ernest Sternglass, Joseph Mangano, William McDonnell, 1996

Age-Adjusted Incidence Rate per 100,000 1985-94 for Central Nervous System Cancers in Bingham, Bonneville, Butte, Clark, Jefferson, and Madison Counties Surrounding INEEL*

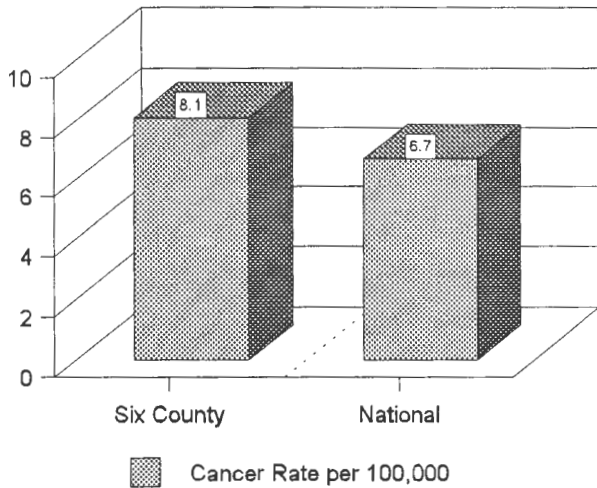


Figure 5

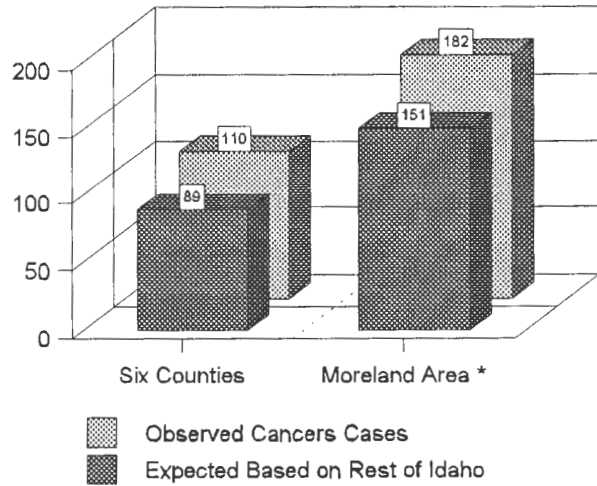


Figure 6

* Idaho Division of Health, "Idaho Public Health Brain Cancer Study" April 25, 1997

Figure 7

White female Breast Cancer Mortality Rates 1950-89 Counties Within 50 and 100 Miles of INEEL

	Age-Adjusted Mortality Rates Per 100,000			Percent Change		Number of Deaths		
	1950-54	1980-84	1985-89	1980-84/ 1950-54	1985-89/ 1950-54	1950-54	1980-84	1985-89
Gould								
50 Mile	4.8	20.6	20.1	333%	322%	3	26	31
100 Mile	14.2	22.3	19.8	57%	39%	50	161	162
NCI (Land) 50 Mile	12.6	23.5	21.1	187%	167%	N/A	N/A	123
Idaho	18.9	22.3	18.9	18%	0%	242	585	571
United States	24.4	24.9	24.6	2%	2%	91,392	167,803	178,868

Enemy Within

References:

1. American Cancer Society, Idaho Division Bonneville Unit, M. O. Huntington, M.D. "Public Education Awareness: The Key to Cure"
2. *The Enemy Within*, by Jay Gould with Members of the Radiation and Public Health Project, Ernest Sternglass, Joseph Mangano, William McDonnell, 1996
3. Idaho Division of Health, "Idaho Public Health Brain Cancer Study" April 25, 1997
4. Comparison of Cancer Incidence Rates Between Selected Counties and the Remainder of the State of Idaho, Cancer Cluster Analysis Work Group, Idaho Department of Health and Welfare, March 1995
5. The Petkau Effect, The Devastating Effect of Nuclear Radiation on Human Health and the Environment, Ralph Graeb, 1994, Four Walls Eight Windows.
6. Estimated Exposures and Thyroid Doses Received by the American People from Iodine-131 in fallout Following Nevada Atmospheric Nuclear Bomb Tests, National Cancer Institute, October 1997
7. 1997 Idaho Public Health Brain Cancer Survey, Eastern Idaho Cases (1997-1996). Idaho Department of Health and Welfare, November 28, 1997
8. Johnson: Letter to E. Shaw/Tulloch, Idaho Bureau of Environmental Health and Safety, March 9, 1999 from Christopher J. Johnson, MPH, Epidemiologist, Idaho Hospital Association
9. Cancer in Idaho - 1997, Annual Report of the Cancer Data Registry of Idaho, December 1998.
10. Shaw-Tulloch, Elkie, Manager Environmental Health Education Program, Idaho Division of Health, letter to Chuck Broscius, August 30, 2000

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