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OF THE
COMMITTEE ON ENERGY AND COMMERCE
WASHINGTON, DC 20515LAWRENCE R. SIDMAN
CHIEF COUNSEL AND STAFF DIRECTOR

October 24, 1986

The Honorable John S. Herrington
Secretary
Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Dear Secretary Herrington:

As you know, the Subcommittee on Energy Conservation and Power has been conducting an investigation into radiation experimentation for human subjects. I am forwarding to you the results of that investigation, a Subcommittee staff report titled, "American Nuclear Guinea Pigs: Three Decades of Radiation Experiments on U.S. Citizens."

This report reviewed Department of Energy documents, which revealed the frequent and systematic use of human subjects as guinea pigs for radiation experiments sponsored by the Department's predecessor agencies. Some of these experiments were conducted in the 1940s and 1950s, and others were performed during the supposedly more enlightened 1960s and 1970s. The report describes in detail 31 experiments during which about 695 persons were exposed.

In many of these experiments, individuals were exposed to radiation which provided little or no medical benefit to the subjects. The purpose of several of these experiments was actually to cause injury to the participants. Many others sought simply to measure the effects of radiation on humans. American citizens thus became nuclear calibration devices for experimenters run amok.

In a number of experiments, subjects received doses that exceeded presently recognized limits for occupational radiation exposure. Doses were as much as 98 times the body burden recognized at the time the experiments were conducted.

Too many of these experiments used human subjects that were captive audiences or populations that some experimenters frighteningly perhaps might have considered "expendable:" the elderly, prisoners, hospital patients suffering from terminal diseases or who might not have retained their full faculties for informed consent.

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Some of the more repugnant or bizarre of these experiments include the following:

--From 1945 to 1947, as part of the Manhattan Project, 18 patients believed to have limited life spans were injected with plutonium.

--From 1961 to 1965, at the Massachusetts Institute of Technology, 20 elderly subjects were injected or fed radium or thorium.

--During 1946 and 1947, at the University of Rochester, six patients with good kidney function were injected with uranium salts to determine the concentration which would produce renal injury.

--From 1953 to 1957, at Massachusetts General Hospital, Boston, approximately 12 terminal brain tumor patients were injected with uranium to determine the dose at which kidney damage began to occur.

--From 1963 to 1971, 67 inmates at Oregon State Prison and 64 inmates at Washington State prison received x-rays to their testes to examine the effects of radiation on human fertility and testicular function.

--From 1963 to 1965, at the Atomic Energy Commission's National Reactor Testing Station in Idaho, radioactive iodine was purposely released on seven separate occasions. In one experiment, seven human subjects drank milk from cows which had grazed on iodine-contaminated land.

--From 1961 to 1963, at the University of Chicago and Argonne National Laboratory, 102 human subjects were fed real fallout from the Nevada Test Site; simulated fallout particles containing radioactive material; or solutions of radioactive cesium and strontium.

--During the late 1950s, at Columbia University and Montefiore Hospital, the Bronx, 12 terminal cancer patients were injected with radioactive calcium and strontium.

These experiments, and others described in the Subcommittee staff report, shock the conscience and represent a black mark on the history of nuclear medical research. They raise one major horrifying question: did the intense desire to know the consequences of radioactive exposure after the dawn of the atomic age lead American scientists to mimic the kind of demented human experiments conducted by the Nazis? Did the Department or its

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predecessor agencies fund or sponsor programs which crossed the line that no scientific research can ever be permitted to traverse?

While it is clear that present public and scientific officials are generally not responsible for these experiments, these circumstances nonetheless represent a historical, institutional failure. To compound the evil, in too many experiments, no long term follow up was conducted of subjects. While these experiments cannot be undone, though they must never be repeated, there are potential remedial steps that can be taken to help the victims who served as human nuclear guinea pigs.

I therefore urge the Department of Energy to make every practicable effort to identify the persons who served as experimental subjects, to examine the long term histories of subjects for an increased incidence of radiation-associated diseases, and to compensate these unfortunate victims for suspected damages. A Defense Department program provides a model for such follow up. The Nuclear Test Personnel Review, administered by the Defense Nuclear Agency, is a registry for military personnel exposed to fallout from atmospheric nuclear tests. The primary objectives of the Review are to identify the approximately 200,000 Defense Department personnel involved in such tests, to determine their exposures, to identify incidences of death or illness, and to assist veterans in claims for compensation.

If such an effort can be carried out for military personnel acting in the line of duty, surely a similar effort should be possible for the far smaller number of peaceful atomic soldiers used as unwitting human subjects in radiation experiments. If you feel that new legislation would be necessary, the Subcommittee will be pleased to work with the Department to develop it.

If you have any questions on the material in this letter or the Subcommittee staff report, please contact John Abbotts or Larry Sidman at 202-226-2424. I look forward to receiving by November 15, 1986 a description of the Department's plans for long term follow up of these experimentally irradiated subjects, and your recommendation for what new legislation, if any, might be needed for compensation.

Sincerely,


Edward J. Markey
Chairman

o During 1946 and 1947, at the University of Rochester, six patients with good kidney function were injected with uranium salts to determine the concentration which would produce renal injury. One patient was diagnosed as being in a "hallucinatory state," another was considered suffering from "emotional maladjustment," and a third, admitted to the hospital for a fifth time, was described as follows: "As he had no home, he agreed willingly to enter the metabolic unit for special studies." (Category 1.003, Number 119).

o From 1963 to 1971, 67 inmates at Oregon State Prison and 64 inmates at the Washington State Prison received x-rays to their testes to examine the effects of ionizing radiation on human fertility and testicular function. These experiments were conducted by the Pacific Northwest Research Foundation and the University of Washington. Subjects had to agree to receive vasectomies after completion of the experiments. The Energy Research and Development Administration planned to begin medical follow up of the irradiated prisoners, but these plans were dropped in 1976 at the request of the U.S. Attorney in Portland after several irradiated inmates filed

suits against state and federal governments. (Category 2.001, Number 2 and Category 2.002, Number 189).

o From 1953 to 1957, at Massachusetts General Hospital, Boston, approximately 12 terminal brain tumor patients were injected with uranium to determine the dose at which kidney damage began to occur. Most of the patients were described as comatose or in a "semi-coma." (Category 9.001, Number 166).

o From 1963 to 1965, at the Atomic Energy Commission National Reactor Testing Station in Idaho, radioactive iodine was purposely released on seven separate occasions. In one of these experiments, seven human subjects drank milk from cows which had grazed on iodine-contaminated land. This experiment was designed to measure the passage of iodine through the food chain into the thyroids of the human subjects. In a second experiment, three human subjects were placed on the pasture during iodine release, and seven subjects were placed on the pasture in a third experiment. In addition, "several" individuals were contaminated during yet another experiment when vials of radioactive iodine accidentally

for an ulcer. "As he had no home, he [Patient 6] agreed willingly to enter the metabolic unit for special studies." (UR-37, p. 41) Patient 6 received the largest dose, 70 microgram of uranium per kilogram weight, and clinical analysis suggested that "tolerance had been reached" for kidney injury. (UR-37, p. 55)

The summary factsheet which the Department of Energy submitted to the Subcommittee reports no follow up on the experimental subjects. Funding for the experiment is not specified, but it presumably would be from the Manhattan Project, since the AEC was not established until 1947.

Category 2. Testicular Irradiation.

Category 2.001, Number 2.

Testicular Irradiation of Inmates at Oregon State Prison.

From August 1963 to May 1971, 67 volunteers at the Oregon State Prison were subjected to testicular irradiation by x-rays. Radiation doses ranged from 8 to 600 roentgen in single acute exposures, except that six prisoners were irradiated a second time, one a third time, and one was given weekly irradiations of 5 roentgen per week for eleven weeks. For comparison,

the present occupational limit for exposure to reproductive organs is 5 roentgen per year. These experiments were carried out by the Pacific Northwest Research Foundation, Seattle; the Atomic Energy Commission provided a total of \$1.08 million for these studies.

The objective of this experiment was to obtain data on the effects of ionizing radiation on human fertility and the function of testicular cells. It was considered that data from animals could not be readily extrapolated to humans. Studies included examination of testicular tissue, sperm counts, and evaluation of urinary or blood steroids and hormones.

Prisoners ranged in age from 25 to 52. Each inmate agreed to have a vasectomy at the end of his irradiation; consent of wives was required for this procedure. All prisoners in the Oregon group did eventually have vasectomies. All volunteers were required to sign statements of informed consent. Consent procedures involved an explanation of short term and long term effects, including the possibility of testicular cancer. No Catholics were allowed as subjects. Small sums of money were paid to prisoners: \$5 to \$10 for each treatment, and \$100 at the time of vasectomy. However, according to the Energy Research and Development Administration "records suggest that the primary incentive to participate may have been the

feeling that they were making important contributions to the state of medical knowledge." (ERDA background information on AEC human testicular irradiation projects in Oregon and Washington state prisons, March 1976, p. 2)

The prisoner irradiation program was terminated in 1973 after the principal investigator suffered an incapacitating stroke, and because of "subsequent state re-evaluation of correctional institutional involvement in experimental programs." (C.G. Heller et al., "Protection of the rights and welfare of prison volunteers: Policies followed throughout a 17-year medical research program," unpublished manuscript, p. 7) The same document noted that the vasectomies on subjects after the experiment were necessary "to avoid any possibility of contaminating the general population with irradiation-induced mutants." (Ibid., p. 5)

In a summary factsheet provided the Subcommittee in January 1985, the Department of Energy described the follow up of experimental subjects: "Complete recovery as shown by a return to pre-irradiated sperm concentrations and germinal cell numbers was found to be within 9-18 months for doses of 100 rad and below, 30 months for doses of 200 and 300 rad and 5 or more years for doses of 400 and 600 rad."

The need for follow up over a longer term was

recognized as early as 1971, in a letter from an AEC official to Carl Heller, the principal investigator for the experiments. The letter concluded, "Thus, I am suggesting that you prepare a protocol for the long-term follow-up of the irradiated volunteers after their release from the research program." (Frank T. Brooks, Division of Biology and Medicine, AEC, to Carl G. Heller, Pacific Northwest Research Foundation, November 30, 1971).

In its 1976 background information material, the Energy Research and Development Administration noted: "ERDA believes that there is a need for continued medical surveillance of prisoners involved in both sets of experiments [Oregon and Washington], and will explore with prison officials the best methods to achieve this. Among health effects which should be monitored is the possibility of testicular tumors, occurring after a long latency period (25-30 years)." (ERDA background information, March 1976, pp. 2-3.) However, at the request of the U.S. Attorney in Portland, Oregon, this follow up program was cancelled after several irradiated inmates filed suits against state and federal governments. In September 1976, the District Court for the District of Oregon dismissed the suit against federal defendants.

The experiments resulted in the publication of several scientific papers. The most recent one cited

was M.J. Rowley et al, Radiation Research 59, 665-678, 1974.

Category 2.002, Number 189.

Testicular Irradiation of Inmates at Washington State Prison.

During the period June 1963 to May 1970, 64 inmates at the Washington State Prison received testicular irradiation from x-rays. Each subject was irradiated once, and doses ranged from 7 to 400 roentgen. Following irradiation, tissue samples and sperm were examined for indications of damage; urine samples were examined for hormone levels. The Atomic Energy Commission granted \$505,000 to support these studies, which were conducted by University of Washington researchers.

The objective of these studies was to determine the effects of radiation on gonadal function. The studies were reportedly proposed after a radiation accident at the AEC Hanford facility. Three men were overexposed, and no clear scientific data was available to advise them on possible sterility effects. The experiments were designed to determine the minimum effective dose that would render an individual temporarily sterile.

The criteria for selection were similar to the experiments with Oregon inmates: Participants had to

agree to vasectomies after completion of the experiment. However, several of the Washington inmates subsequently did not receive vasectomies: 2 declined and were released from prison; 1 declined and remained in prison; 1 was released before the scheduled vasectomy; 1 did not undergo surgery for psychiatric reasons after mutual agreement with the prison physician; 1 who had heart problems and a life sentence was not vasectomized after mutual agreement. (AEC Contract AT(45-1)-2225, Task Agreement 6, Terminal Report, January 1973, p. 3) Because of the lack of follow up information, it is not known if any experimental subjects subsequently fathered any children.

The experiments were terminated after a Human Subjects review board at the University of Washington refused in July 1969 to authorize further irradiation of prisoners. (George W. Farwell, University of Washington, to John R. Totter, Director, Division of Biology and Medicine, Atomic Energy Commission, July 16, 1969)

In the factsheet submitted to the Subcommittee in January 1985, the Department of Energy had this description for follow up: "Recovery of cell morphology and function were found after a maximum of 501 days. It was concluded that man is very sensitive in regard to temporary sterility, but is very

resistant to complete sterility." As with the Oregon prisoners, there was no long-term follow up of subjects.

Several scientific publications resulted from these experiments. The most recent cited was T.W. Thorslund and C.A. Paulsen, in Proceedings of the National Symposium on Natural and Man-Made Radiation in Space, NASA Document NAS No. 2440, pp. 229-232, January 1972.

Category 3. Whole Body Irradiation

In most of the cases in this category reported to the Subcommittee, whole body irradiation was used as treatment for diseases which were resistant to more conventional methods. Most frequently, whole body irradiation was used in attempts to treat leukemia, cancer, or polycythemia vera (a disorder characterized by excessive levels of red blood cells in the blood). The Subcommittee staff does not question the propriety of these particular applications, since patients were irradiated in an attempt to treat their diseases, and in some cases the treatment was successful. However, one case covered below appeared questionable.

REPOSITORY: DOE-RICHLAND
COLLECTION: GSS HUMAN TEST SUBJECTS STUDIES
PRISONER STUDY

BOX: 046264

FOLDER: 1780 - HELLER PACIFIC NW RES. FOUNDA.

ASSIGNED NUMBER: RLHTS 94-0061

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