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18 Injected in 1945 Plutonium Testing

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The government injected plutonium into 18 people from 1945 to 1947 in an experiment aimed at determining what the poisonous, radioactive substance would do to workers manufacturing the atomic bomb.

The Manhattan Engineer District—the code name for the government's secret, successful effort to develop the world's first atomic bomb—sponsored the tests.

Apparently only one of the 18 persons knew what the injection was. The test subjects ranged in age from 4 to 68 and were all believed suffering

from terminal illnesses, according to the Energy Research and Development Administration. Three of the subjects are still alive.

ERDA confirmed the injection program in response to queries prompted by an article about the program in the Washington-based newsletter, *Science Trends*, dated Feb. 23.

The one person ERDA is sure gave his consent to the injection, a spokesman said, received plutonium in a leg afflicted with bone cancer and scheduled for amputation. The amputation so successfully arrested the cancer that the man is alive today. His 1947 injection was the last one given.

The spokesman said records on the plutonium experiment are so unclear that it is not known how the test subjects were selected and that it is possible that more than one of the 18 was told the truth about the injections.

ERDA has no plans to launch an investigation to try to learn more about the injection program, a spokesman said.

The agency conceded that such an injection program would be considered unethical today. The spokesman said ERDA knows of no plans of suits against the government by the three survivors or heirs of those who died.

See INJECT, A12, Col. 1

One test subject died last year. Of the four who were living last year, three had been told after the injections what had been done to them. The fourth was not told the ERDA spokesman said, because the family doctor advised against it.

The ERDA fact sheet on the 18 experimental injections said that seven people who received them lived less than one year afterward; three lived between one and three years; two between 14 and 20 years; one 28 years; two unknown, and three are still living.

"There is no evidence to suggest that the plutonium injection influenced the course of the diseases," ERDA's fact sheet said. However, ERDA said the diagnosis of stomach cancer for one of the 18 people injected with toxic plutonium "later proved to be inaccurate."

ERDA said the supposedly fatal diseases of the persons injected with plutonium included cancer, duodenal ulcer, heart disease, hepatitis, Cushing's syndrome, cirrhosis of the liver and severe injuries from an auto accident.

Four hospitals—the Manhattan Engineer District hospital in Oak Ridge, Tenn.; Strong Memorial Hospital of the University of Rochester; Billings Hospital of the University of Chicago, and University Hospital of the University of California—gave the injections of soluble plutonium under

government contract, according to ERDA.

The purpose of the study was, according to the ERDA fact sheet, to gather "accurate information needed on retention and excretion of internal plutonium for setting safety criteria." Plutonium experiments with animals had failed to produce the needed data, according to the government.

An ERDA spokesman said the standards that evolved from the experiment are still in use.

The injections were given to 13 males and 5 females between April, 1945—before the first atomic bomb was exploded in Japan on Aug. 6, 1945, during World War II—and July 18, 1947. A 4-year-old boy injected with plutonium in California had bone cancer and died five months afterward, according to ERDA.

ERDA said the injections of plutonium ranged from doses twice what scientists at the time believed the human body could stand without causing bone cancer or other serious damage to 145 times the limit in one case.

Science Trends newsletter said the injections were the equivalent of from 100 to 800 years of radiation exposure workers ordinarily would receive on a job where plutonium was used.

Little was known about how plutonium affected the human body when the injections were given. Information about its effects is far from complete today.

The federal government learned much of what it now knows about the way the body handles plutonium by measuring the amount of it the 18 subjects excreted in their urine.

ERDA said the experiment was so secret that the plutonium was referred to as "the product."

An ERDA spokesman said the government prepared a fact sheet on the plutonium injections in 1974 after the experiment was openly discussed in scientific circles.

"The definitive discussion of the study," ERDA said, "was in a chapter by Dr. Patricia Durbin entitled, 'Plutonium in Man: A New Look at the Old Data,' which was included in the book 'Radiobiology of Plutonium,' published in 1972 by the J. W. Press of the University of Washington."