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2.14 TRANSURANIUM

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Riddled by Isotopes

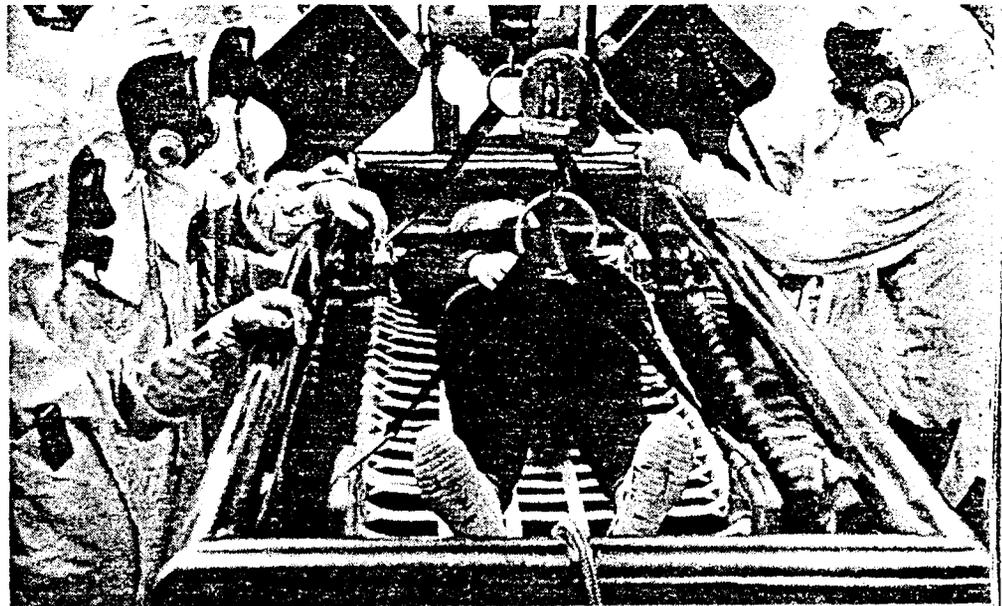
In an explosion last August at the Hanford Nuclear Reservation in the State of Washington, Harold McCluskey, a 64-year-old chemical operator, was showered with shards of leaded glass, nitric acid and radioactive resin beads. The blast temporarily blinded him and cut and burned the right side of his face and right shoulder. Far worse was his radioactive contamination: he had inhaled the largest recorded human dose of the isotope americium-241.

McCluskey was rushed to the Emergency Decontamination Facility at Richland, Wash., an unusual hospital devoted to treating radiation-accident victims. It is one of a handful of such centers operated by the Energy Research and Development Administration near atomic facilities in the U.S. Built a decade ago, the EDF had never had a hospitalized patient until McCluskey's accident. But as soon as his ambulance pulled up, a staff of physicians and nurses was ready to begin treatment immediately.

The patient was placed on a litter suspended from a monorail on the ceiling of the facility and borne to a shielded operating table. The table was surrounded by lead-filled steel sides to protect operating personnel from radiation. In addition, doctors and nurses wore cotton overalls, hoods and respirators similar to gas masks and could view the patient through movable lead glass shields. They spent half an hour bathing McCluskey's skin with detergent soaps and baby shampoo to remove dirt and then began the laborious process of removing glass and resin particles with forceps. His eyes were irrigated, but McCluskey still couldn't see well.

Zinc: McCluskey had absorbed an unprecedented amount of americium—400 times what an average healthy adult might receive in a lifetime. To remove the americium, physicians gave him injections of calcium diethylenetriamine-pentaacetic acid (DTPA), a "chelating" agent that chemically binds to the isotope so that it can be excreted. However, the massive exposure McCluskey had suffered posed a serious problem. By the end of the first week, he was being given 3 grams a day, more calcium DTPA than had ever been administered before, and the physicians feared that the drug would deplete his body of zinc, resulting in intestinal and stomach bleeding as well as kidney problems. Dr. Bryce Breitenstein, who was in charge of the case, obtained permission from the U.S. Food and Drug Administration to use a similar compound, zinc DTPA, which had not yet been approved for use, but which seemed safer for McCluskey.

McCluskey was kept in near-isolation for five months. Besides daily doses of the drug, he received two 30-minute



Photos by Peter S. Greenberg—Newsweek

Special handling: EDF staff in Richland around their shielded operating table



McCluskey: Five months in solitary

scrubdowns as well as blood counts, urine tests and body scans. "Each time I exhaled," McCluskey recalls, "americium came out." But gradually, the tests showed the levels of americium were slowly coming down. McCluskey was tended by a nurse and radiation monitor around the clock, and observed by two remote television cameras. His meals were brought in from a nearby hospital and he was given a telephone, dubbed "Mac's hot line," so that he could talk to his wife and friends.

By December, antibiotic and cortisone treatments had helped McCluskey to regain his sight and his radiation level was low enough so that he could go home to Prosser, Wash., for Christmas. Since last month he has been an outpatient at the EDF. He still takes zinc DTPA every day, and his face is still irritated from the acid and radiation burns. But he has not suf-

fered radiation sickness and blood tests have shown no evidence of the anticipated bone marrow damage. Currently, McCluskey is looking forward to retirement and the outcome of a \$975,000 claim against the Energy Research and Development Administration.

—MATT CLARK with PETER S. GREENBERG in Richland, Wash.

Mammography Report

Mammography has proved enormously valuable in helping doctors detect breast cancer. But because this special X-ray procedure may itself cause breast cancer many years later, some physicians believe that younger women, who develop relatively few cases of cancer, should not have mammograms as a routine screening measure. Now, there is new evidence that mammography may also be a rather ineffective method of even detecting breast cancer in younger women.

In a group of 106 patients who developed breast cancer before the age of 45, only two tumors were detected by a routine mammogram in the absence of any symptoms, reported Dr. Gerson Lesnick in last week's *Journal of the American Medical Association*. The others were found by the women themselves or by a physician. When 50 of these patients were subsequently given mammograms, said Lesnick, who is a clinical professor of surgery at New York's Mount Sinai School of Medicine, there were 33 false negative results, leading some women to delay surgery.

Mammography may offer little benefit to most women under 45. But there are exceptions. Those who have not been pregnant before 30, or have a family history of cancer or have had a previous breast malignancy are advised to have regular mammograms. In addition, mammography is of undisputed importance in screening women over 50, among whom three-quarters of all breast cancers occur.