



# THE SANTA FE NEW MEXICAN



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## Fouling the Nest

A New Mexican Special report on  
Los Alamos National Laboratory

## Lab workers at risk?

'You get exposed whether you want it or not'

Jerry Taylor thinks he's going to die of cancer.

Nearly 11 years ago, Taylor, 34, was badly contaminated with plutonium in an accident at Los Alamos National Laboratory's plutonium-processing facility.

"I feel I might die a lot younger because of this accident," he said in a telephone interview from his home in Keokuk, Iowa. "I'm shaking right now talking about it."

Taylor was fresh out of the Navy in October 1980 when he got a job at LANL as a technician, essentially an unskilled job. Just a few months later, on Good Friday, he got hurt.

Taylor was working with a nitric acid solution containing plutonium and americium, both radioactive elements. A knife slipped, slicing through his protective gloves and puncturing his hand. Plutonium, one of the deadliest elements known, was in his blood stream.

Doctors operated twice to remove some of the flesh of the wound and the contamination it contained. For a year, Taylor also was given a drug designed to encourage the body to excrete plutonium. The drug can have serious side effects, and no other worker at LANL has been given it for more than a few days.

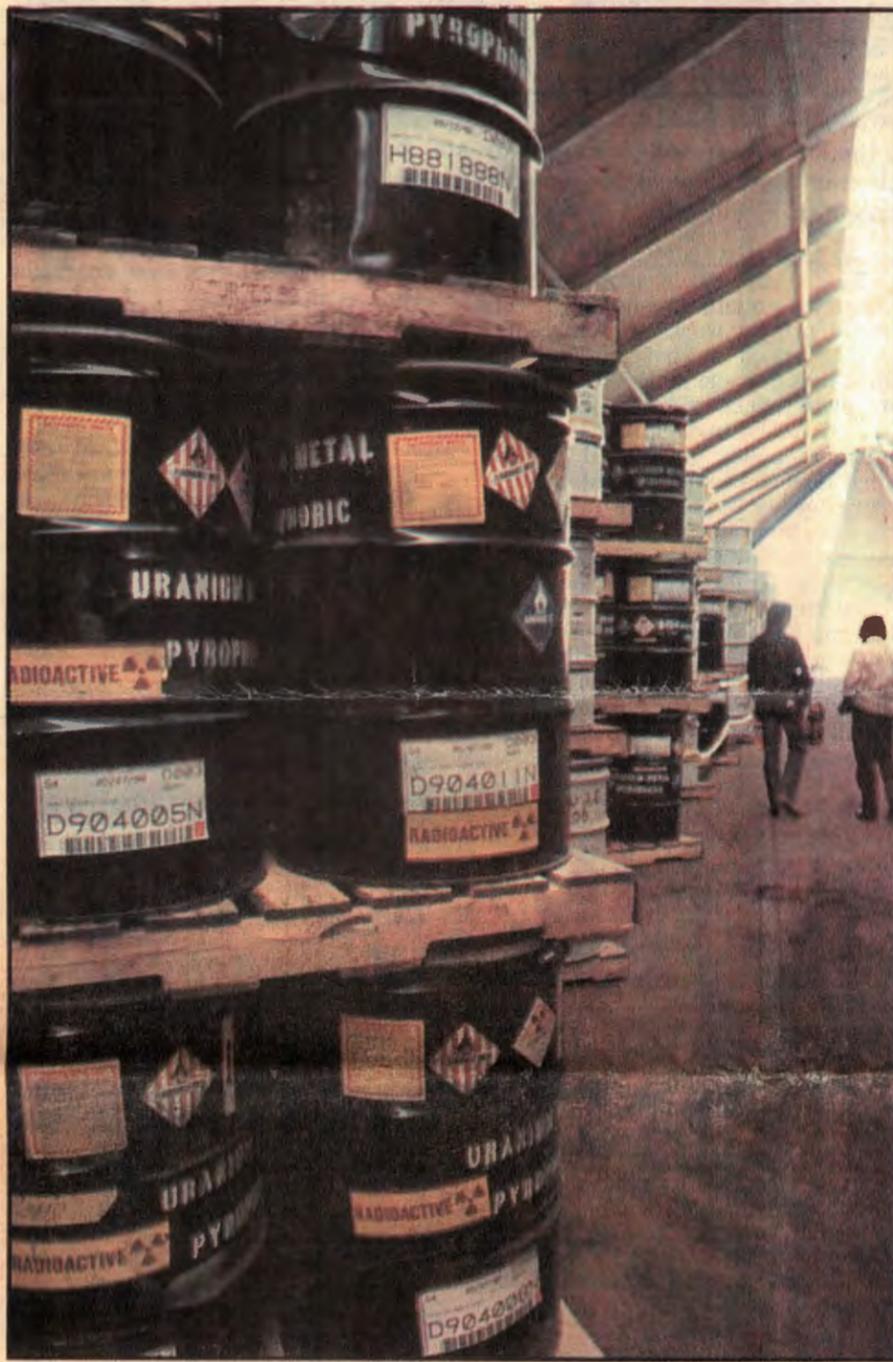
The surgery and the drug removed about 85 percent of the plutonium from Taylor's body, according to laboratory records. Taylor has had to live with the rest and the possibility it would cause cell damage. He said his last tests showed he had about five times as much plutonium in his body as is permissible under occupational rules.

Taylor, who eventually resigned from LANL, said he has suffered no apparent physical problems but there have been emotional ones.

When his wife became pregnant a few years ago, he began drinking a lot because of fears the plutonium had damaged his genetic material and that damage would be passed to the child.

"I didn't know how the child would turn out," Taylor said. "I was emo-

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Barrels of radioactively contaminated items await shipment to WIPP at the Los Alamos lab's Area G. Preparing the material can expose workers to hazardous material.

## Phobias or allergies?

Victims say illness stems from work with chemicals

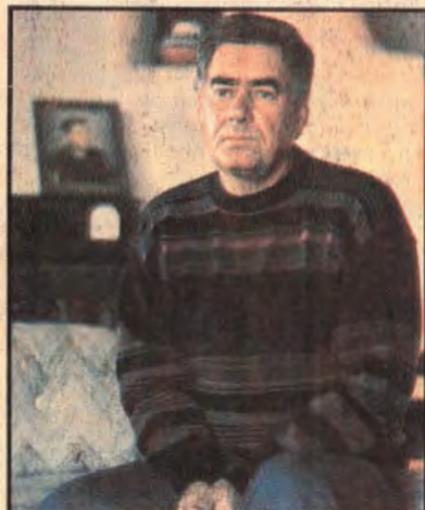
No one disputes that Ben Ortiz is sick; the disagreement is over the cause.

Ortiz's troubles include insomnia, depression, dizziness, nausea, memory loss, breathing difficulty and a feeling of being disoriented.

He can't tolerate the smell of his wife's perfume and nail polish, the smoke from cigarettes or the exhaust fumes from cars.

"I have no type of social life," said Ortiz, 53, of Nambé.

His physician, Jacqueline Krohn, said Ortiz's respiratory and neurological problems are the result of his 20 years of exposure to chemicals while working as a mechanical technician at Los Alamos National Laboratory.



### THE SERIES

Sunday: Overview and security

Monday: Cleanup

Tuesday: Public safety

Today: Worker safety

✓ Los Alamos laboratory doesn't do enough to protect its workers from exposure to radiation, critics say. Laboratory officials disagree and point to daily monitoring of employees.

✓ The Department of Energy, which owns the laboratory, has agreed to release some health data on workers

## Ground looms as efforts co

### New Mexican wire services

WASHINGTON — President Bush Tuesday threw cold water on the new Soviet peace plan, saying "it falls well short of what would be required" to end the Persian Gulf war.

His remarks — the first he has made in public on the secret proposal — appeared to dismiss what was seen as the last chance to avoid a brutal war on the ground to throw Iraq's occupying force out of Kuwait. Nevertheless, the diplomatic flurry the plan spawned seemed to put the start of an offensive on hold for at least another day, and there remained some signs that the United States was not rejecting it out of hand.

American helicopters and jets hammered Iraqi tanks, trucks and armored personnel carriers in what one pilot described Tuesday as a "turkey shoot," and U.S. military sources said the month-old air campaign is inflicting "horrendous casualties" on Saddam Hussein's forces.

Baghdad came under repeated bombardment overnight and French fighter-bombers pounded Hussein's artillery positions in Kuwait and Iraq as allied forces intensified their attempts to strip Iraqi troops of their will to fight in what many believe are the final hours before a massive, U.S.-led ground offensive.

In other developments:

■ A lone Iraqi Scud missile hit central Israel Tuesday night, but caused no injuries, military officials said. The targeted area includes the West Bank, but not Tel Aviv, where Scuds have caused their worst damage.

■ Although U.S. military officials had said Monday that two warships damaged by Iraqi mines remained "fully mission capable," the two vessels were pulled out of action Tuesday and sent to port for damage assessment.

■ In Washington, defense officials asserted that U.S. combat units were ready for the impending ground war. Lt. Gen. Tom Kelly, director of operations for the Joint Chiefs of Staff, said the diplomatic maneuvering in Washington, Moscow and Baghdad would have "no impact" on military activities.

"It would look bad to have a live thing on the table and go to a ground war," a White House official said of the Soviet proposal. Moreover, the State Department insisted that the United States was

## Yeltsin wants Gorbachev re

### The Washington Post

MOSCOW — President Boris Yeltsin of the Russian republic called Tuesday for the immediate resignation of Soviet President Mikhail Gorbachev and the transfer of power to the Federation Council, an executive body made up of the leaders of the 15 constituent republics.

Accusing Gorbachev of "deceiving" the people, Yeltsin said on nationwide television, "I warned in 1987 that Gorbachev has a tendency in his char-

tional rules.

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# Phobias or allergies?

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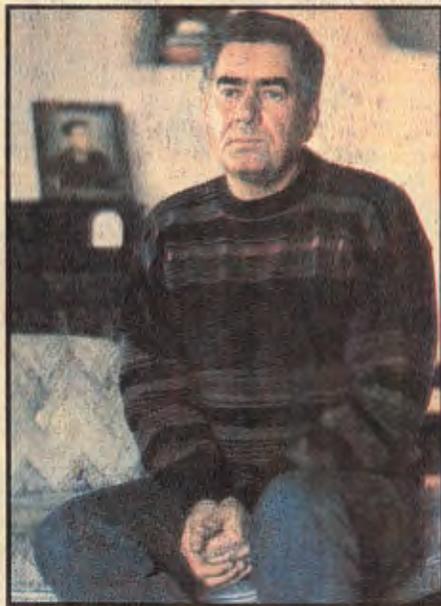
The diagnosis is known variously as multiple chemical sensitivities, environmental illness, total allergy syndrome or 20th-century illness.

Los Alamos National Laboratory — like the medical establishment in

Please see **ALLERGY**, Page A-3



Barrels of radioactively contaminated items await shipment to WIPP at the Los Alamos lab's Area G. Preparing the material can expose workers to hazardous material.



**BEN ORTIZ**

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### THE SERIES

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✓ The Department of Energy, which owns the laboratory, has agreed to release some health data on workers for studies, some of which began last year.

**Thursday:** Hot spots

**Friday:** Oversight

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Accusing Gorbachev of "deceiving" the people, Yeltsin said on nationwide television, "I warned in 1987 that Gorbachev has a tendency in his character toward absolute, personal power. Now he is leading the country to a dictatorship but giving it the pretty name of 'presidential rule.'"

Last September, Gorbachev and Yeltsin appeared ready to overcome their personal and political differences and form a "center-left" reformist coalition. But by mid-October Gorbachev had



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# WORKERS: Safety effort given push

Continued from Page A-1

tionally just nuts."

He said his wife suffered a miscarriage because of the stress that he put on the marriage. She became pregnant a second time and gave birth to a healthy boy.

Taylor said he tries not to think about the contamination accident but when he does: "I feel I will get cancer."

The contamination of Taylor was one of the most severe radiation accidents in recent years at Los Alamos National Laboratory, but there have been hundreds of others at the facility owned by the U.S. Department of Energy and operated by the University of California.

Some workers also are exposed to radiation on a routine basis, and the laboratory has been criticized by outside and internal investigators for not doing enough to protect its employees from the hazard.

"You get exposed whether you want it or not," said a worker at LANL's plutonium-processing facility.

Between October 1989 and November of last year, there were 11 contamination accidents serious enough to be reported to U.S. Energy Secretary James D. Watkins, according to Department of Energy records.

In 1989 and 1990, 20 workers at the lab were contaminated on the skin with radioactive materials, according to LANL. Another seven were found to have inhaled or otherwise ingested measurable amounts of plutonium.

Most of the affected employees worked at the laboratory's plutonium-processing facility or in the group that does analysis of special nuclear materials for the processing facility. Those workers total about 625.

Generally, radioactive particles can be scrubbed easily from the skin if they are detected. When inhaled or otherwise ingested, plutonium can damage cells and organs, possibly causing cancer, genetic defects and health problems.

The most common radiation risks faced by LANL workers are the



Charlie Villareal, a technical supervisor at the lab's Area 55, checks to see if he has contamination on his hands by placing them in an electronic monitor. In the background are Geiger counters used to check vehicles and personal belongings of anyone leaving the site.

about 20 if the population had a continuous lifetime exposure of one-tenth of a rem. The rates are slightly higher for a population of all women.

The committee cautions that excess cancers in such populations could be 50 percent or less of the estimates.

The committee's estimates are based in large part on the health effects of high doses of radiation suffered by survivors of the U.S. atomic bombing of Japan in World War II.

Some scientists say the committee overestimates the effects of low doses of radiation, but others say it

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Joseph Graf  
Group leader

low as reasonably achievable."

The ALARA concept, as it is known, essentially means that LANL should protect workers from radiation as much as possible without spending unreasonable amounts of money to reduce exposure.

ALARA has been an Energy Department policy since 1981, but in April 1989 and again in August of last year, Energy Department inspectors cited the laboratory for not having an adequate ALARA program.

Joseph Graf, group leader for radiation protection at Los Alamos, said the laboratory is about ready to start a formal ALARA program. ALARA has been a policy at the laboratory for years but its implementation has been "more informal," he said.

"We can cite the historic experience of the laboratory that the policy is in everyone's job jargon," Graf said. "People all over the lab have found ways to reduce their exposure."

Federal inspectors also criticized the lab for not training its employees to deal with radiation properly.

Graf said new procedures have been developed — although they are not yet in operation — to address the concern.

Although Graf said he agrees with

Among other things, the facility analyzes special nuclear materials, such as plutonium.

The investigators said 1989 and 1990 records showed as many as 25 cases of contamination of personnel or clothing each month at CMR.

Another team of Energy Department investigators in October 1989 criticized the contamination-control program at Technical Area 55, the lab's complex for processing plutonium and making triggers for research and test nuclear weapons.

The investigators also called for a review of processes and practices at TA-55 to reduce high worker exposure to radiation.

**'We worry about every (contamination case) we see. They're going to find (contaminated) people. They're looking hard all the time.'**

James Jackson  
Deputy director of lab

# Plutonium workers once got a freebie: cigarettes

Socorro Trujillo never will know for sure what killed her husband — but she blames Los Alamos National Laboratory.

Victor Trujillo, 48, of Pojoaque, died of lung cancer last May, two months after being diagnosed with the disease.

Trujillo worked for 17 years at LANL. At the time of his death, he was working at TA-55, the complex where plutonium is processed for use in nuclear weapons.

His job meant potential exposure to low doses of radiation and possible inhalation of radioactive plutonium, one of the deadliest elements known. Both low doses of radiation and inhaled plutonium are suspected of causing lung cancer.

Trujillo also smoked, though, and cigarettes are known to cause lung cancer. His wife says he didn't smoke at home. At work, he did. The cigarettes were free — courtesy of Los Alamos National Laboratory.

"It doesn't sound like they are very smart up there," Socorro Trujillo says. "It doesn't sound like they care about their employees."

For several years and possibly decades, the laboratory provided free cigarettes to plutonium workers because the employees can't take their own cigarettes into processing areas.

"It's a crazy thing to do," says Dr. David Coultas, a physician in the pulmonary division at the University of New Mexico medical school. "It just doesn't make any sense."

The practice of providing cigarettes ended in about 1987.

"It was a growing realization ... that smoking was bad," says Delbert Harbur, leader of the nuclear materials technology division at Los Alamos National Laboratory.

In hindsight, Harbur says, it was bad policy to provide the cigarettes.

The practice was ended nearly a quarter-century after the first U.S. surgeon general's report on the hazards of smoking.

In the earliest days of the Manhattan Project during World War II,

The most common radiation risks faced by LANL workers are the inhalation of small, unmeasurable amounts of radioactive particles and exposure to radiation emitted by radioactive substances.

The lab tracks the total radiation exposure of workers, and figures for 1990 show two received between 2 and 3 rems, 31 between 1 and 2 rems, and more than 1,000 received a measurable dose less than 1 rem.

A rem is a unit for measuring absorbed doses of radioactivity. The Energy Department exposure limit for a worker is 5 rems a year, but that ceiling is expected to drop to 2 rems within a year or so because of new studies on the possible effects of low doses of radiation.

Some studies have linked low doses with cancer in nuclear weapons workers, but those studies are considered inconclusive.

The National Research Council's Committee on the Biological Effects of Ionizing Radiations estimates the excess cancers that could occur in a population depending upon its exposure to low doses of radiation.

LANL employs about 7,000 people and if all were men and if all were exposed to one rem of radiation each year from age 18 to age 65, about 201 excess cancers could occur in that population, according to the committee's estimates.

Possible excess cancers drop to

underestimates.

In only the past year, medical researchers at Los Alamos have found what is believed to be the first identified cancer death in a lab worker exposed to radiation decades ago. Also, the cancer death last year of a military employee at the lab during World War II has been found to be related to his radiation exposure at the facility.

Such deaths are hard to identify because cancer deaths caused by radiation are masked by the normal occurrence of cancer among nuclear weapons workers.

Three other men at Los Alamos have been killed in accidents in which they were exposed to high doses of radiation. The last such accident occurred in 1958.

James Jackson, deputy director of LANL, described the laboratory's efforts to limit radioactive exposure to workers as "very good."

"We worry about every (contamination case) we see," he said. "They're going to find (contaminated) people. They're looking hard all the time."

Under Department of Energy regulations, Los Alamos National Laboratory is required to have a program to keep worker radiation exposure "as

concerns. Although Graf said he agrees with the Department of Energy that radiation training is important, "There are some features (of the criticisms) that I would say are not as important as the main training goal" of protecting workers.

As an example, Graf listed the criticism that the training program did not test its students.

"It's questionable how terribly important that is," he said.

And the instructors used by the laboratory are qualified "whether or not they have a piece of paper to prove it," he said.

Department of Energy investigators in August 1990 also found Los Alamos National Laboratory did not have an adequate contamination-control program at the Chemistry and Metallurgy Research Building.

### Our project team:

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and

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Design

They cited "a very large number of personnel contamination incidents, area contamination incidents and failed glove incidents on a regular basis."

Lab officials say they have developed plans to address the shortcomings cited by the Department of Energy investigators at the CMR Building and TA-55.

LANL, however, has been criticized in the past for not moving quickly enough to solve problems.

Congress' General Accounting Office said last year that 67 of 124 health and safety problems identified by the Energy Department at Los Alamos in 1986 had not yet been corrected.

A report by Energy Department investigators last August also said work had not been completed on several recommendations made during previous investigations.

Some employees at the lab have said their superiors retaliated against them after the workers expressed concerns about safety problems.

Citing retaliation and racial harassment, four workers at the Chemistry and Metallurgy Research Building successfully sued the lab in 1984, winning a settlement totaling \$500,000.

In the earliest days of the Manhattan Project during World War II, researchers were concerned about possible lung cancers among nuclear workers caused by inhaled plutonium.

One of Victor Trujillo's fellow workers, who spoke on condition of anonymity, says the free cigarettes were a "good gesture" at the time, but he agrees now they were a mistake.

Because the workers couldn't smoke on the job, "when we went on break, we smoked more than our share," the employee says.

Another of Trujillo's fellow workers, again speaking on condition of anonymity, says he quit smoking for 10 years, then started again while at TA-55.

Those kinds of possible cases — where a worker began to smoke or took up smoking again because of the free cigarettes — are the most troubling aspects of the policy, says Coultas of UNM.

Dana Christensen, deputy leader of the nuclear materials technology division, says there are no studies that show a smoker is at an increased risk for lung cancer if he works in a plutonium facility.

In fact, there is at least one such study.

The study was published in 1975 by Dr. John W. Gofman, former director of the Biomedical Research Division at LANL's sister lab, Lawrence Livermore National Laboratory in California.

The study says that cigarette smoking causes damage to the respiratory system, and that results in plutonium particles being retained for long periods and increasing the risk of cancer.

The study was mentioned in an environmental impact assessment of Los Alamos in 1979 published by the Department of Energy. The department, however, said the study had been rejected by other scientists and scientific organizations.

Scientists still are trying to determine if low doses of radiation and inhaled plutonium can cause cancer in humans.

James McInroy is head of a program at LANL that analyzes tissue from dead plutonium workers.

McInroy says that while plutonium has been shown to be an effective carcinogen in laboratory animals, no links have been made with lung cancer in humans. He says a link hasn't been ruled out either.

While scientists continue to study the effects of plutonium, Socorro Trujillo is trying to deal with the uncertainties about the death of her husband of 27 years.

"Some days you just have to live with it, but it's hard," she says. "You have to go on."

# Radiation: When do low-level doses cause illness?

For nearly a century, since the discovery of the X-ray, scientists have known that large doses of ionizing radiation can cause health damage.

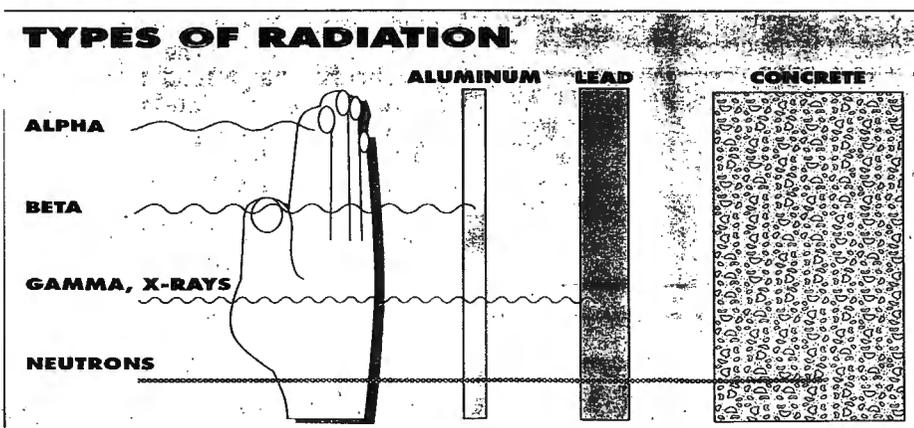
The debate that still rages is about whether low doses can lead to cancer, genetic defects, developmental abnormalities and degenerative diseases.

One conclusion can be drawn: Federal exposure limits for workers and the public are being lowered as scientists learn more about how even low doses of radiation might affect humans.

The question of low-dose effects is important for workers at Los Alamos National Laboratory and the people living nearby because their exposure to low doses of radiation is increased by lab operations.

Like people elsewhere in the world, lab workers and Los Alamos-area residents receive low doses of radiation from such sources as the sun, the naturally occurring gas radon, X-rays and fallout from nuclear weapons tests. The annual whole-body dose of radiation for Los Alamos residents from these sources is estimated to be about 390 millirems a year.

A rem is a unit for measuring radioactivity. A millirem is 1/1,000th of a rem. So, 389 millirems is about



four-tenths of a rem.

Under U.S. Department of Energy regulations, workers at LANL can receive an additional whole-body dose of radiation each year of up to five rems, or more than 12 times what they would receive if they didn't work at the laboratory.

A resident of Los Alamos can receive a whole-body dose of up to 10 millirems a year from LANL. That limit is set by the U.S. Environmental Protection Agency and only increases by a fraction what a person in Los Alamos would receive if LANL didn't exist.

Generally, a low dose of radiation is considered to be fewer than 10 rems, even though the federal gov-

ernment has set the acceptable level at 5 rems a year, a figure the Energy Department is likely to drop to 2.

Theories about the health effects of low doses of radiation abound, including one that low doses actually might be good for humans and another that a large number of cancers might be caused by low doses.

There is such a wide spectrum of opinion because of the difficulties in trying to determine with certainty whether low doses of radiation cause health problems.

The health effects, if any, suffered by the general population because of low doses of radiation are masked by the normal occurrence of cancer and

other disorders. For example, one in four people contracts cancer.

Nuclear workers are exposed to greater doses than the general population, but so far the studies of the workers have been limited in number and scope. Some studies have shown some possible excess cancers, but the scientific community considers the evidence of possible health effects inconclusive.

The Department of Energy and the Environmental Protection Agency set exposure limits for nuclear workers and the public based on the recommendations of the International Commission on Radiological Protection and its U.S. sister body, the National Council on Radiation Protection.

In making their recommendations, the ICRP and NCRP consider the findings of the National Research Council's Committee on the Biological Effects of Ionizing Radiations.

That is where the scientific dispute comes in. Some scientists believe the BEIR Committee overestimates risk from low doses, while others believe it underestimates.

In December 1989, the BEIR Committee adjusted its estimates, saying the risk of cancer from low doses of radiation might be three to four times higher than previously estimated by the committee.



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# Dramatic radiation deaths have captured headlines

In a memorable scene from *Fat Man and Little Boy*, the Paul Newman movie about Los Alamos National Laboratory during the Manhattan Project, a young scientist dies a slow, painful death after an accidental radiation exposure.

That scene is based on three such incidents in the history of the lab.

Although long-term exposure to radiation actually might present a greater threat to lab employees, there have been more dramatic accidents — with more immediately visible results — at Los Alamos.

A 1986 study by the lab lists 29 on-the-job deaths between 1945 and 1979, 16 from industrial accidents other than car and airplane crashes. Three were caused by exposures to large doses of deadly radiation.

Although the film's version takes place during the Manhattan Project's drive to invent the atomic bomb, all the real-life incidents happened later.

The first case occurred on Aug. 21, 1945, a few weeks after the atomic bombing of Japan. It involved a junior scientist named Harry Daglian who was conducting a "criticality experiment," in which scientists bring together uranium or plutonium to determine at what point the mass becomes critical and creates a nuclear chain reaction.

Scientists compared criticality experiments to "tickling the tail of a sleeping dragon."

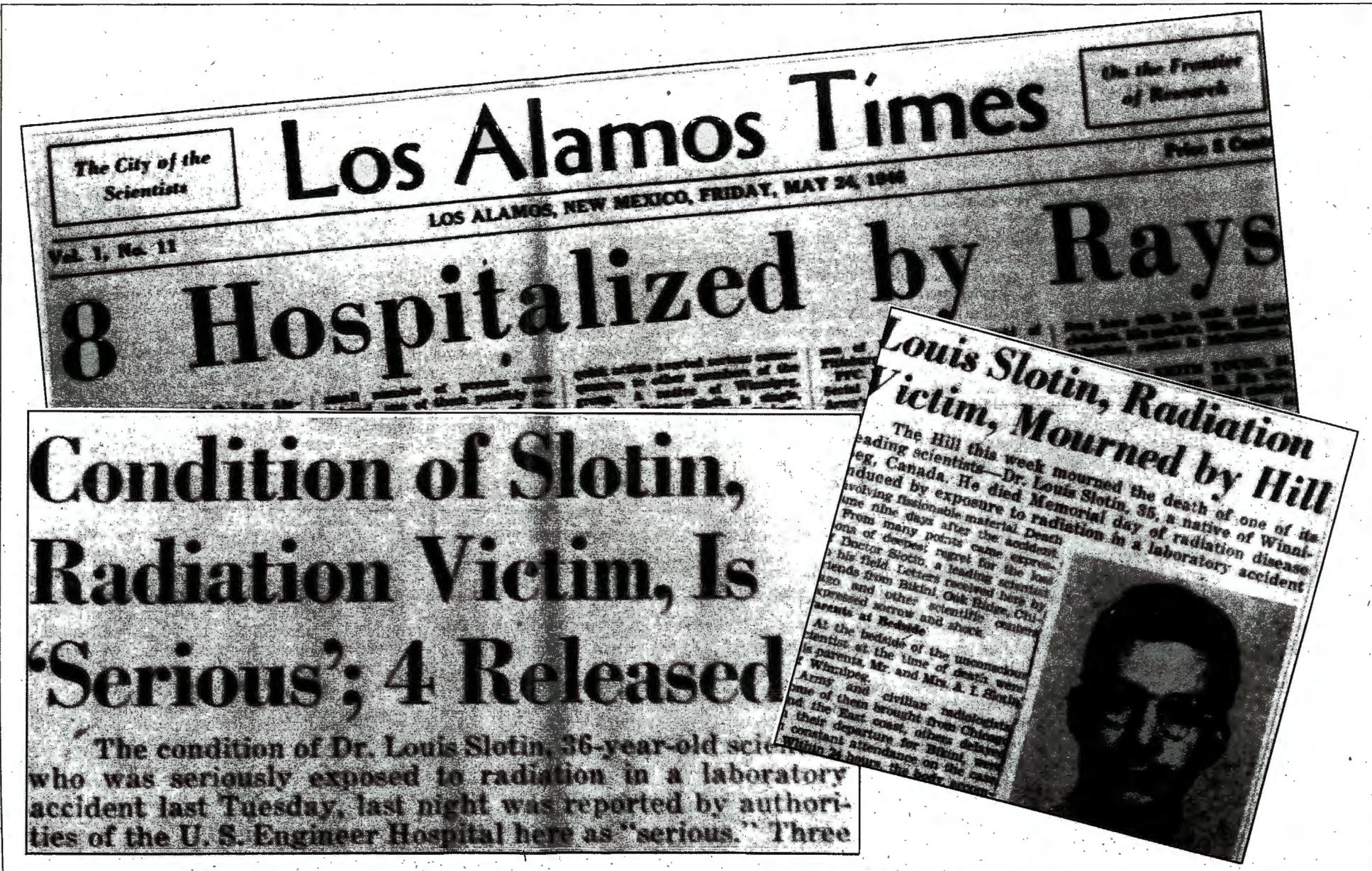
Daglian's dragon awoke with a roar. While he was building a small wall of uranium bricks around two plutonium hemispheres, a brick slipped from his hand, sending the assembly supercritical and exposing him to a massive dose of radiation.

The book *City of Fire*, a general history of Los Alamos by New Mexican James W. Kunetka, describes what happened next: "Very shortly second degree burns developed on his body where the radiation had been most intense, on his hands and abdomen. A fever developed and after two weeks the burns blistered and he lost his hair."

Daglian was dead 25 days after the accident.

His family received the maximum payment of \$10,000 from the "welfare fund," a secret insurance fund set up at the demand of early atomic workers.

The next man to be killed in a criticality accident was Louis Slotin, who had served in the Abraham



The Los Alamos Times of 1946 carried news of Louis Slotin's accident and death.

Near the end of the work day on Dec. 30, 1958, a lab technician named Cecil Kelly was conducting an operation in which small amounts of plutonium were recovered from liquid waste stored in a large tank.

Laboratory officials believed that it was impossible for enough plutonium to be present to create a critical chain reaction.

They were wrong. Somehow, plutonium-rich solids ended up in the tank.

When Kelly hit a switch causing an automatic pump to begin stirring the mixture, there was a bright flash of light and Kelly fell to the ground.



## Decades after their exposures, two men succumb to cancers

In only the past year, medical researchers at Los Alamos National Laboratory have found what are believed to be the first identified cancer deaths of laboratory workers caused by exposure to radiation decades ago.

The deaths were those of Jay E. Hammel of Los Alamos, a physicist at the lab, and a second man who was

nosis — showed that one or two thyroid cancer deaths were possible among the Los Alamos workers, Voelz said.

Hammel's family said the physicist was given no warning that he could develop cancer.

"Dad felt it could have been handled in a better way," said his daughter, Leslie Hammel-Turk of Santa Fe.

Alamos as head of the critical assemblies group.

On May 21, 1946, Slotin was conducting a criticality experiment in which he brought two hemispheres of plutonium together slowly, using a screwdriver to keep the two halves apart.

The screwdriver slipped, sending the mass supercritical.

Although Slotin quickly knocked the two hemispheres apart, saving the lives of seven others in the room, it was too late for him. He already had received a dose of 1,000 rads — 200 times more radiation in a second than today's nuclear workers are allowed to receive in a year. The other seven were hit with lesser doses; some became sick, but all recovered.

Slotin died nine days later. His family received the standard \$10,000.

The third radiation accident was the worst in the lab's history.

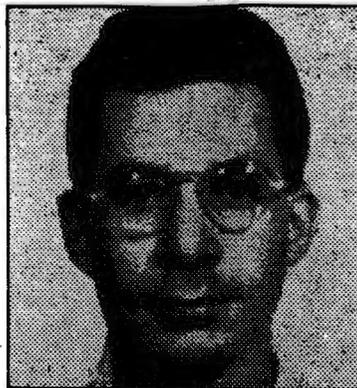
suffered severe abdominal pain, chills and vomiting before dying 35 hours later.

In non-nuclear accidents at the laboratory, a smoke bomb explosion killed one man in 1946, four laborers were killed in 1959 by an explosion while unloading materials for routine scrap burning, and a man died in 1978, possibly because of oxygen deprivation while performing routine maintenance on an accelerator.

Records of the U.S. Department of Energy, which owns Los Alamos National Laboratory, show about two dozen accidents involving radioactivity occurred from October 1989 to November 1990 that were serious enough to be reported to Energy Secretary James D. Watkins.

In nine of those incidents, lab employees received a measurable dose of radiation but an amount less than the Energy Department's annual exposure limits.

Harry Daglian, pictured above at Trinity Site in 1945, died when a criticality experiment went out of control. Louis Slotin, below, was killed in 1946 in another such experiment.



not been released.

Hammel, 69, died of thyroid cancer July 19.

His cancer likely was caused by his exposure to radiation during nuclear bomb tests in 1956 in the Marshall Islands in the West Pacific Ocean, said Dr. George Voelz, former long-time chief of epidemiology at Los Alamos National Laboratory.

Hammel was one of several hundred workers from the lab on the islands for the tests. He apparently was exposed twice to significant levels of radiation, Voelz said.

The first was a trip to near ground zero, the point of detonation of a bomb, the researcher said. In the second exposure, he and several hundred others were caught in a heavy rainstorm that was contaminated with fallout from a test.

A dose reconstruction of the rainstorm — done since Hammel's diag-

His health had been tracked for decades as a part of a study of plutonium workers from the Manhattan Project.

The man died last year of bone cancer, an uncommon disease. The body's bone structure attracts plutonium.

That case offers the first evidence of human bone cancer occurring after exposure to plutonium, one of the deadliest elements known. The metallic element is used in making nuclear bombs.

Excess cancers due to radiation exposure are difficult to identify in nuclear weapons workers because they are masked by the normal occurrence of cancer. One in four people contracts cancer.

Also, because of the long latency periods for some cancers caused by exposure, some cases only now are showing up.

# ALLERGY: Victims blame exposure to chemicals for sensitivity

Continued from Page A-1

general — doesn't recognize the diagnosis of multiple chemical sensitivities.

Those authorities don't dispute the people are sick, but they blame the troubles on the physical manifestations of anxiety and fear — not on exposure to chemicals.

"You've got a phobia, not an allergy," said Dr. William Greendyke, chief of occupational medicine at Los Alamos National Laboratory. "These people are prisoners of their psyches."

The diagnosis of multiple chemical sensitivities is a relatively new one.

Some physicians believe that single or multiple exposures to certain chemicals can cause supersensitivity to a broad range of thousands of common chemicals, foods, molds and even electromagnetic waves, the sort given off by, for example, heating pads and television sets.

According to these doctors, multiple chemical sensitivity results when a patient's total body load of chemical, biological, psychological and physical stress reaches a certain threshold at which point very low levels of added exposure trigger illness.

The tasks of daily living can be difficult, with even the slightest whiff of chemicals in the outside air, home furnishings, food or clothing making patients sick.

Ortiz said he was forced to take a medical leave from Los Alamos National Laboratory in 1988. He returned to work later that year in

another job where his exposure to chemicals was reduced, but the symptoms persisted.

He requested another job, but the lab said it could not find another position and terminated Ortiz in 1989 on medical grounds. He now has a

**'You've got a phobia, not an allergy. These people are prisoners of their psyches.'**

**William Greendyke**

Chief, occupational medicine

LANL

workers' compensation claim pending.

"The lab thinks it can quiet you down by telling you that you are crazy," Ortiz said. "But I'm not the only one who is sick."

David Salazar, 54, of Hernandez took an early retirement from the lab this year after more than 20 years at the facility.

A machinist, he also was exposed to chemicals. He got sick in May 1989 and his symptoms are similar to those of Ortiz.

"I'm only sleeping 2 or 2 1/2 hours a night," Salazar said. "I'm tired all the time."

Another lab worker, Ruth Fuyat,

also said she developed multiple chemical sensitivities. Her claim for workers' compensation benefits is pending before the state Appeals Court. The ruling could set a precedent in New Mexico for future rulings on such claims for workers' compensation.

Krohn said that over the past seven years, she has treated six to 10 lab workers with chemical troubles.

"There have been illnesses missed and people unfairly labeled as having psychologic and psychiatric problems," the physician said.

Although the laboratory doesn't recognize the diagnosis of multiple chemical sensitivities, it does acknowledge cases where there is physical evidence of solvent damage in a worker's body or extreme solvent exposure in the work place.

Last year, 52 workers complained to LANL's occupational medicine staff of symptoms of solvent exposure, but only 13 were diagnosed with a solvent problem, according to figures supplied by the lab.

Josephine Rohr, an Albuquerque lawyer, represents Ortiz in his bid for workers' compensation benefits. She said she has more than 200 other clients, mostly from Albuquerque, suffering from multiple chemical sensitivities.

Rohr said the medical establishment is slow to recognize such new diagnoses.

"Doctors are very conservative people, and scientists in general are very doubting people," she said. "It's not malice on their part. It's the nature of the beast."

Rohr said multiple chemical sensitivities does have a psychological component but that the psychological troubles are the result of the disease, not its cause.

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Also, in the case of lab workers, air samples from their workplaces don't show levels of chemical fumes that would cause ill health, he said.

That lack of evidence has led to the conclusion that the health problems are the manifestations of psychological troubles. Greendyke said, though he can't discount the possibility that the diagnosis of multiple chemical sensitivities might be recognized after further research.

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multiple chemical sensitivities could have financial implications for employers because of a likely increase in workers' compensation payments and other insurance claims.

Greendyke said economics don't play a role in LANL's position on the diagnosis.

"Actually it costs more to prove our case than to go ahead and pay" the benefits for a claim of multiple chemical sensitivities, he said. "Nobody's ever squeezed me on dollars for any reason."

Some studies of people diagnosed with multiple chemical sensitivities have been conducted, but they have been inconclusive.

One study by the New Jersey Department of Health supported the diagnosis, but another by the University of Washington linked sufferers to psychological problems.

At Los Alamos National Laboratory and other facilities in the nation's weapons complex, studies on worker health have focused for the most part on the effects of radiation, not chemical exposure.

"There is more intense concern about radiation because of the R word," Greendyke said.

For example, he said, the group responsible for protecting workers from radiation has 150 employees compared to 50 in the group overseeing industrial hygiene.

The physician agreed with a 1989 finding by the National Research Council that in the weapons complex, more consideration should be given to chemical exposure in health study programs.

The next man to be killed in a criticality accident was Louis Slotin, who had served in the Abraham Lincoln Brigade in the Spanish Civil War before getting his doctoral degree and going to work at Los Alamos as head of the critical assemblies group.

On May 21, 1946, Slotin was conducting a criticality experiment in which he brought two hemispheres of plutonium together slowly, using a screwdriver to keep the two halves apart.

The screwdriver slipped, sending the mass supercritical.

Although Slotin quickly knocked the two hemispheres apart, saving the lives of seven others in the room, it was too late for him. He already had received a dose of 1,000 rads — 200 times more radiation in a second than today's nuclear workers are allowed to receive in a year. The other seven were hit with lesser doses; some became sick, but all recovered.

Slotin died nine days later. His family received the standard \$10,000.

The third radiation accident was the worst in the lab's history.

automatic paddle to begin stirring the mixture, there was a bright flash of light and Kelly fell to the ground.

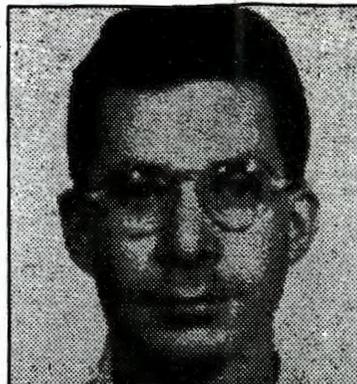
He received a dose of 12,000 rads to his abdomen and an average dose to his whole body of about 4,500. He suffered severe abdominal pain, chills and vomiting before dying 35 hours later.

In non-nuclear accidents at the laboratory, a smoke bomb explosion killed one man in 1946, four laborers were killed in 1959 by an explosion while unloading materials for routine scrap burning, and a man died in 1978, possibly because of oxygen deprivation while performing routine maintenance on an accelerator.

Records of the U.S. Department of Energy, which owns Los Alamos National Laboratory, show about two dozen accidents involving radioactivity occurred from October 1989 to November 1990 that were serious enough to be reported to Energy Secretary James D. Watkins.

In nine of those incidents, lab employees received a measurable dose of radiation but an amount less than the Energy Department's annual exposure limits.

**Harry Daglian, pictured above at Trinity Site in 1945, died when a criticality experiment went out of control. Louis Slotin, below, was killed in 1946 in another such experiment.**



Hammel of Los Alamos, a physicist at the lab, and a second man who was a Manhattan Project military employee at the lab during World War II. The name of the second man has not been released.

Hammel, 69, died of thyroid cancer July 19.

His cancer likely was caused by his exposure to radiation during nuclear bomb tests in 1956 in the Marshall Islands in the West Pacific Ocean, said Dr. George Voelz, former long-time chief of epidemiology at Los Alamos National Laboratory.

Hammel was one of several hundred workers from the lab on the islands for the tests. He apparently was exposed twice to significant levels of radiation, Voelz said.

The first was a trip to near ground zero, the point of detonation of a bomb, the researcher said. In the second exposure, he and several hundred others were caught in a heavy rainstorm that was contaminated with fallout from a test.

A dose reconstruction of the rainstorm — done since Hammel's diag-

daughter, Leslie Hammel-Turk of Santa Fe.

The second cancer death was that of a man who ingested plutonium. His health had been tracked for decades as a part of a study of plutonium workers from the Manhattan Project.

The man died last year of bone cancer, an uncommon disease. The body's bone structure attracts plutonium.

That case offers the first evidence of human bone cancer occurring after exposure to plutonium, one of the deadliest elements known. The metallic element is used in making nuclear bombs.

Excess cancers due to radiation exposure are difficult to identify in nuclear weapons workers because they are masked by the normal occurrence of cancer. One in four people contracts cancer.

Also, because of the long latency periods for some cancers caused by exposure, some cases only now are showing up.

# ALLERGY: Victims blame exposure to chemicals for sensitivity

Continued from Page A-1

general — doesn't recognize the diagnosis of multiple chemical sensitivities.

Those authorities don't dispute the people are sick, but they blame the troubles on the physical manifestations of anxiety and fear — not on exposure to chemicals.

"You've got a phobia, not an allergy," said Dr. William Greendyke, chief of occupational medicine at Los Alamos National Laboratory. "These people are prisoners of their psyches."

The diagnosis of multiple chemical sensitivities is a relatively new one.

Some physicians believe that single or multiple exposures to certain chemicals can cause supersensitivity to a broad range of thousands of common chemicals, foods, molds and even electromagnetic waves, the sort given off by, for example, heating pads and television sets.

According to these doctors, multiple chemical sensitivity results when a patient's total body load of chemical, biological, psychological and physical stress reaches a certain threshold at which point very low levels of added exposure trigger illness.

The tasks of daily living can be difficult, with even the slightest whiff of chemicals in the outside air, home furnishings, food or clothing making patients sick.

Ortiz said she was forced to take a medical leave from Los Alamos National Laboratory in 1988. He

another job where his exposure to chemicals was reduced, but the symptoms persisted.

He requested another job, but the lab said it could not find another position and terminated Ortiz in 1989 on medical grounds. He now has a

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# Fouling the Nest

A New Mexican Special Report on Los Alamos National Laboratory

# DOE gives up control of worker health studies

For nearly 50 years, the U.S. Department of Energy, the agency that makes nuclear weapons, also was in charge of studying the effects of radiation on weapons workers.

The setup was compared to having the tobacco industry in charge of lung cancer research or notorious bank robber Willie Sutton as supervisor of the banking industry.

Over the past year, however, reforms have been made in the arrangement, including:

- The Energy Department for the first time began making the health and occupational records of weapons workers available to independent researchers.

- The department began a program to computerize the records and make them available to researchers at a central repository.

- The department transferred to the Department of Health and Human Services its program of studying the effects of radiation on weapons workers.

The steps taken by the Department of Energy already have stirred additional research. And that research could help solve the riddle of whether low doses of radiation can cause cancer in nuclear weapons workers such as those at Los Alamos National Laboratory.

The reforms followed more than a decade of pressure from members of Congress, worker unions, independent researchers and others. They said the department's efforts were flawed and changes would increase public confidence in the research.

The pressure resulted in part from allegations by government researchers that the Energy Department and its predecessor, the Energy Research and Development Administration

(ERDA), had attempted to suppress findings linking radiation and cancer in some workers.

Researcher Thomas Mancuso, an epidemiologist at the University of Pittsburgh, charged that he was dismissed by the ERDA in 1976 after he and two other scientists found radiation was causing cancer in some workers at the Hanford nuclear reservation near Richland, Wash.

Dr. Gregg Wilkinson, chief of epidemiology at the Department of Energy's Los Alamos National Laboratory, also has charged that his superiors in 1986 tried to prevent publication of a study linking radiation and cancer in workers at the Rocky Flats, Colo., weapons plant.

The Wilkinson study was published, and LANL officials have denied any harassment of the researcher. Wilkinson resigned his position at the lab in 1987.

Critics of the Department of Energy say intimidation of researchers was just one way that the department retarded health studies of workers to avoid any curtailment in the production of nuclear weapons.

They say the government's studies also have been limited in scope and number and poorly designed. About three dozens studies have been published since the program began in 1964.

Even Energy Secretary James D. Watkins, who took office in January 1989, has described the research program as understaffed, underfunded and underused.

He said that when he took control of the department, only one full-time professional was assigned permanently to oversee the agency's \$26.6 million epidemiological program.

Dr. Alice Stewart, a noted British

## Low-level link or not? Studies differ

Since the beginning of a program to study the health of nuclear-weapon workers in 1964, the federal government has paid for about three dozen such studies.

Some of the studies have found no links between exposure to low doses of radiation and cancer in workers, but others have found possible connections. Thumbnail sketches of those studies:

- A continuing study of about two dozen Manhattan Project workers who ingested plutonium found one worker contracted — and died of — bone cancer, an uncommon disease. Researchers think the cancer was caused by plutonium.

- A study of workers at the Hanford plant in the state of Washington found an excess number of tumors of the bone marrow and cancer of the pancreas.

- A study of workers at the Rocky Flats plant near Denver found a high rate of brain tumors.

- A study of workers at Los Alamos National Laboratory found a high rate of cancer of the rectum and colon, but researchers said the excess was better explained by socioeconomic than occupational factors.

- A study of workers at Lawrence Livermore Laboratory in California found a high rate of skin cancer.

- A study of the offspring of some parents at the Hanford plant found a relation between birth defects and parents with radiation exposure.

- A study of workers at Los Alamos found possible increased risks for several types of cancer.

researcher in the field of radiation science, said the federal government had a motive for its actions.

"I think the reason for it was this enormous sort of combination of war, ministry of war and the ministry of energy all saying, 'You're trying to say we can't go after nuclear energy,'" Stewart said in a recent interview on public television.

Watkins initially refused to give up the department's research into nuclear weapons workers, saying it was critical that the agency retain control so that any health troubles could be identified before production had to be curtailed.

After a committee appointed by Watkins recommended he surrender

the programs, the secretary did so.

In December, the department transferred to the Department of Health and Human Services the program for studying the effects of radiation on 600,000 people who have worked in the nuclear weapons industry. The Centers for Disease Control will do the research.

The transfer was done through an administrative procedure, not by law, as proposed by the prominent medical group Physicians for Social Responsibility.

"It's reversible and our position is this ought to be a statutory change," said Dr. H. Jack Geiger, co-director of the group's Task Force on Nuclear Weapons Production and Public

Health. "While it is an improvement for (the Centers for Disease Control) to be doing the worker epidemiology, the (Energy Department) continues to control the budget. Any scientist knows if you control the budget, you control the work."

In another reform last summer, the Department of Energy began turning over to the Three Mile Island Public Health Fund the records of 200,000 workers in the nuclear weapons complex, including employees at Los Alamos National Laboratory.

Although 600,000 people have worked in the complex, the data on only one-third of them have been compiled for analysis. TMI Public Health Fund fought three years for the data.

The worker records are considered the world's best raw data on the effects of low doses of radiation. Some Department of Energy studies have linked low doses with cancer, but the results have been inconclusive.

Stewart is analyzing the data and results could be released later this year. Her work could advance the knowledge of the effects of low doses of radiation.

"I am not presumptuous to think this will solve the question once and for all," said Daniel Berger, lawyer for the TMI Public Health Fund in Philadelphia. The fund, a medical-surveillance group, was set up as part of litigation following the 1979 near-meltdown at the TMI nuclear power plant.

The central repository being set up by the Department of Energy for independent researchers to examine worker health records will include data on all 600,000 employees in the weapons complex.