

DOES LOW-LEVEL RADIATION KILL?

Serious evidence is coming to light that "safe" doses of radiation cause high rates of cancer. Hundreds of thousands have been exposed, while the government has tried to suppress the information.

A series of congressional hearings over the last two months, little noticed by the major media, may spell eventual doom for the nuclear power industry.

Beginning Jan. 24 the House Commerce subcommittee on Health and the Environment, chaired by Rep. Paul Rogers (D-FL), has been conducting hearings on the health effects of low level radiation. In the process the committee has discovered what appears to be a sustained and systematic effort on the part of government agencies to sabotage studies and to cover up their results.

The evidence presented so far strongly indicates that low-level ionizing radiation is significantly more hazardous than previously admitted by government and industry, and that present levels of tolerable radiation may be 10 to 20 times too high. If this is true, the future of nuclear power may be in jeopardy and the government and nuclear industry may find themselves faced with thousands of lawsuits from military personnel and civilians or their families for radiation-induced illness and death.

Among the various aspects of low level radiation that the committee has examined are:

- The effects of radiation on GIs who were exposed in military tests from 1945 to 1962.

- The work of University of Pittsburgh researcher Dr. Thomas Mancuso on the effects of radiation on nuclear workers, and government efforts to suppress it.

- A study by Dr. Thomas Najarian, in conjunction with the *Boston Globe*, that examined the effects of low level radiation on workers at the Portsmouth Naval Shipyard.

- The work of Dr. Irwin Bross on the side effects of ordinary diagnostic X-rays.

The effects on GIs and the Mancuso study are examined elsewhere in this section. (See also IN THESE TIMES, Jan. 18 for more on the military's use of GIs in nuclear blasts.)

In the Portsmouth case Dr. Najarian discovered that shipyard employees exposed to radiation had a cancer death rate of more than twice the national average and nearly 80 percent higher than the rate for other shipyard workers who didn't work with radiation. At the same time exposed workers died of leukemia more than four times as often as the general population.

Najarian, a hematology fellow with the Veterans Administration Hospital in Boston, described the difficulties he had encountered from the Navy and the VA in completing his personal study to the House subcommittee Feb. 28.

He had become interested, he said, when one of his patients, a retired welder who had been diagnosed with leukemia, mentioned that some of his fellow workers had died at young ages. But when Najarian sought information from Navy officials at Portsmouth, he was turned down.

In October 1977, on his own, Najarian sent questionnaires to the families of 40 former shipyard workers whose names he had obtained. Four days later his immediate supervisor at the VA was called by officials in Washington and asked about Najarian's study. Najarian was told that he had to make it clear to all those he contacted that the VA was not supporting his work.

Najarian then sought out the *Boston Globe* for assistance. Some 100,000 death certificates were then examined and the names of 1,722 deceased shipyard workers and the various causes of their deaths were identified. *Globe* reporters then interviewed the families of 592 workers to determine if the men had been exposed to radiation at the shipyard.

According to the *Globe*, the two-month study revealed that:

- The cancer death rate for shipyard workers found exposed to radiation was 38.4 percent, compared to 21.7 percent for workers not exposed, and to 18 percent for the general population.

- The leukemia death rate for shipyard employees who worked in exposed areas was 450 percent higher than that for the general population. While less than 1 percent of the general population die from leukemia, four percent of exposed employees had died from the blood disease.

- Deaths from cancer of the lymph glands were 125 percent higher than the national rate and 60 percent higher than that for nonexposed workers.

Older workers are most seriously affected

According to the *Globe*, the most startling statistic emerged when deaths were grouped by age categories: between the ages of 60-69 nearly 60 percent of



The Hanford Atomic Facility (above) manufactured plutonium for the military. Its workers have suffered higher rates of cancer.

those workers whose jobs involved radiation exposure died of cancer. The rate for non-nuclear workers was 26.1 percent. The paper cited the long germination period for cancer as responsible for the high figure. The effects of radiation exposure in the '60s have only begun to show in the '70s.

The study also discovered that despite Navy assertions that safety precautions have been regularly improved over the years, the cancer rate has remained relatively constant for exposed workers.

According to the *Globe*, the Navy refused cooperation in completing the study. Requests under the Freedom of Information Act for the names of shipyard workers who have been exposed to radiation since nuclear repair work began in 1959, and later for information about which of the 1,722 deceased shipyard workers the *Globe* had identified had worked with radiation were denied. Upon completion of the study shipyard officials refused requests for interviews or comment.

nostic X-rays. He found that infants whose parents had been exposed to X-rays had a higher rate of genetic damage, and that X-rays nearly doubled the rate of leukemia in men.

In May 1977, two months after Bross presented his report, the government-subsidized National Cancer Institute elected to discontinue his grant.

The exposure standards for diagnostic radiation exposure are similar to those for nuclear workers. If these are, in fact, ten to 20 times too high, as has been suggested to the House subcommittee, significant changes in X-ray and nuclear technology would be required to lower exposures.

Bob Alvarez of the Environmental Policy Center in Washington, D.C., points out that diagnostic radiation is the most prevalent form of exposure in the U.S. today. "X-rays aren't bad," he says, "but the mindless use of radiation causing significant increases in leukemia, heart disease and genetic damage is."

Alvarez, who lobbied for the House hearings and who has been monitoring their progress, says that it is going to be a long, uphill fight to force the nuclear industry to abide by lower exposure standards. The alternative, he says, will be for the industry to increase its use of transient workers, who will work with radiation for only a short time before they are "burnt out." This, he says, will simply spread the cancer, making it less visible and less subject to examination.

One of the more curious aspects of the low level radiation controversy is the seeming lack of interest on the part of the major news media. Despite the explosive and potentially far-reaching character of the evidence presented to the House subcommittee, few reports have appeared in the press. Burke Zimmerman, a committee staff member, reports that little has gone out over the wires. The *New York Times* has covered a couple of hearings, but without reporting the details of the various studies that have been presented to the committee. The *Washington Post* has done better, giving the hearings regular coverage. The *Boston Globe*, of course, sponsored one of the studies, and the Pittsburgh papers have covered the hearings. But by and large little has gotten out to the public.

—Doyle Niemann

At the House subcommittee hearing Feb. 28, Adm. H.G. Rickover criticized the Najarian-*Globe* study. "I don't know if there is a problem at Portsmouth," Rickover said. "From the best scientific evidence we don't see a problem." He also criticized Najarian and other scientists who "just because they have the title doctor...[are] sounding off about things they don't know anything about."

Nonetheless, Rickover, contradicting previous Navy statements, did agree that there was a need for a nationwide analysis of workers' exposure to radiation at the Navy's six shipyards.

The effects of diagnostic x-rays

The work of Dr. Irwin Bross, director of biostatistics at Roswell Park Memorial Cancer Institute in Buffalo, N.Y., may have the most far-reaching consequences.

Bross spent nine years on a three-state survey documenting the side effects of ordinary diag-

UNCOVERING NUCLEAR CANCER

When the leading occupational health researcher working for the Atomic Energy Commission began to discover that "safe" radiation causes cancer, his troubles began.

by Richard Pollock

Dr. Thomas E. Mancuso was once a quiet, spectacled researcher at the University of Pittsburgh who squirreled himself in a hopelessly cluttered office and tried to translate statistics into meaningful information about the human condition. He was not prepared for the controversy that would embroil him in a national debate and catapult him into a public spotlight where his chief adversary would be his decade-and-a-half long sponsor, the United States government.

For 14 years Mancuso labored over the case histories of hundreds of thousands of men and women who at one time served in U.S. government nuclear weapons installations. His task was to sift through nearly a million fragmented files and determine if workers' chronic exposure to presumably "safe" levels of ionizing radiation had caused any deleterious health effects. For 12 years Mancuso continually received "negative" findings, which meant that the low levels of radiation seemed to have had no noticeable effect.

Then, in the thirteenth year of his study, he obtained the first glimmers of "positive" responses. When he encountered some brief statistical problems, he called in Dr. Alice Stewart, perhaps the world's leading radiation epidemiologist.

Stewart, the pioneer of radiation epidemiology at Oxford University, and her chief statistician George Kneale traveled to Pennsylvania and culled the mountains of files Mancuso had assembled.

The results: Low levels of radiation that were previously presumed to be safe had caused noticeably high incidences of cancer to the lung, pancreas and bone marrow among atomic workers. Their findings would have an incalculable impact upon occupational health for all nuclear workers, as well as for members of the general public who occasionally submit themselves to diagnostic X-rays.

In 1977 the Department of Energy suddenly terminated Dr. Mancuso's contract, ordered him to turn over his 14 years of data and transferred the project "in-house" to a national lab.

Mancuso, now age 66, is fighting for the occupational health profession, of which he is one of the acknowledged founders. In 1942, as a medical doctor, he learned about occupational health problems—then called industrial hygiene—when the nation's Public Health Service dispatched him to the Michigan Division of Industrial Health to

oversee the factory environment in wartime production facilities.

For the remainder of the war Mancuso was sent from state to state as an inspector, and his reputation as an experienced industrial health researcher grew.

He founded the industrial health divisions for the states of Ohio and Oregon, and presided as chief of both divisions during his career. Mancuso also developed the nation's first occupational disease code, which today still stands as the foundation for the U.S. Occupational Safety and Health Administration.

In 1962 the National Cancer Institute awarded him the National Career Development Award for research he conducted on the long term biological effects of the chemical environment and for his studies on environmental cancer. Dr. Mancuso also received international recognition as the first researcher to link brain tumors to industrial chemicals during a study of rubber workers.

In 1964 the Atomic Energy Commission tapped him as their principal researcher on the long term effects of low-level ionizing radiation on the human body. They said they chose him because he was then the leading authority on environmental cancer.

The term "low-level radiation" relates to levels set by the now defunct National Council of Radiation Protection. It refers to doses that are "well below" the levels that would "likely result" in some form of disease. Low-level doses are dispensed all the time and can originate from medical or dental X-rays, from atomic power plants, nuclear-powered ships and fallout from nuclear weapons testing.

Dr. Mancuso's findings may now have forever shattered the myths about the "safety" of certain levels of radiation and he may himself have brought about a revolution in our handling of nuclear materials. But throughout it all, *IN THESE TIMES* found him quiet and modest—the quintessential researcher. Most important, he is eager to get the word out and demonstrates patience to all lay people who wish to learn about his discovery.

Dr. Mancuso, why did the U.S. government initiate this project in the first place?

Well, in 1964 a few representatives of the division of Biology and Medicine of the Atomic Energy Commission came to me and asked me whether I would consider doing a feasibility study to determine whether the record

systems were such where they could all be reorganized and developed so that eventually some meaningful information could be derived in order to move toward the direction of trying to find out if there were any biological effects of low level radiation.

At that time, in 1964, there were only a few people who were keenly interested in it. Actually I think you could count them on one hand; there were four people that were really very interested in this.

Does that mean, in fact, that in the mid-'60s we didn't have enough information or data to make an intelligent decision about the safety of atomic power plants?

Well, I think that's a very good question. What it means in effect is that no study had ever been done to determine

what the long-term biological effects were of workers exposed to radiation over long periods of time. And that is long-term effects measured in subsequent decades.

No study had ever been done of that type and whatever information was available in that particular time period was purely extrapolations, primarily from the atomic bomb victims in Japan ... mathematical extrapolations of extremely high doses of radiations. And of course we had extrapolations from certain types of small population groups who were given radiation while they were suffering from some other illness.

So in effect you could have called it a guess in those days as to what might be a safe level. They really did not know.

Briefly, then, what are your findings?

Well, our findings are that the levels of radiation in the so-called "safe" area definitely cause cancer, specific types of

cancer. And the findings show that levels much below the [safe] standards are carcinogenic. This means that low levels of radiation, much below what anyone had recognized before is a common contributing cause toward the development of cancers.

Could you describe the data base you utilized?

The study actually began in 1965 after I had done a feasibility study and had visited about 14 atomic energy facilities throughout the country. I said yes it could be done because the epidemiological method that I had devised—using the social security system—could help to trace people over decades no matter what state they died in.

The population for which funding was given by the agency was the Hanford population, which is located in Richland, Wash. And that represented 35,000 individuals. That included those who entered from 1944 on, and it included all those who separated from the facility.

This is what's extremely important. This is one of the ways it differed from any other study. No one had ever tested to determine what would happen to all of the individuals who left employment and then developed cancerous diseases ten, 20, 25 years later.

The other population group was the Oak Ridge population at the Oak Ridge facility in Tennessee. Now this meant, of course, going back to the original days [of the Manhattan Project] and getting all of the original contracts and reconstructing the entire employee list and all their radiation exposures, cumulatively and chronologically in time.

This is a very, very formidable task and anybody who had any illusions that this was there waiting for anybody to do is committing a grave mistake. That population

