

# JUST HOW MUCH IS TOO MUCH

Once scientists believed there was a safe exposure level, now they doubt any exposure is good.

by James A. Millstone

At the heart of the controversy over the effects of low level radiation lie two questions. First, whether or not there exists some safe level of radiation below which it is harmless (the "threshold level"), or whether any amount of radiation, no matter how small, is dangerous. Second, just how dangerous is ionizing radiation in absolute terms—that is, how many actual deaths would result from the exposure of a given population to a given amount of radiation?

During the first half of the atomic age (1942-1960) it was generally accepted by scientists that there existed a safe level of exposure to ionizing radiation. So long as a person did not exceed this threshold or safe level, it was believed, no harm would result. It was thought that any radiation damage that did occur would be immediately repaired by the body.

Complete repair is no longer believed possible; the degree to which the body is able to repair itself is not the focus of the scientific controversy.

Everyone agrees there is some repair, professor Karl Z. Morgan, health physicist at the Georgia Institute of Technology and the director of the Health Physics Division at the Oak Ridge National Laboratory for 29 years, told the House subcommittee, but "the diehards do not seem willing or able to accept the preponderance of evidence that there is never complete repair of radiation damage...since even at very low exposure there are many thousands of interactions of the radiation with cells in the human body. It is inconceivable that all the billions of irradiated and damaged cells would be repaired." And damaged cells are just the ones that develop into a malignancy over periods of five to 70 years. How this actually occurs is still an unsolved mystery.

Morgan went on to say that "one of the problems we face today is that many scientists had accepted the threshold hypothesis as law and had lived with this hypothesis so long that they became staid or petrified in their thinking, and now they cannot believe or accept the fact that the threshold hypothesis was wrong."

Since 1960 an overwhelming amount of data has been accumulated that shows there is no safe level of exposure to radiation. No dose of radiation can be so low that the risk of causing cancer is zero. There is no threshold.

Even if there were, agreement among the scientific community that any amount of radiation could cause cancer—that there is no threshold—there would still remain the question of what the actual risk is at very low levels of exposure.

At intermediate to high levels of exposure it is known that the risk of getting cancer follows a linear relationship to the dose. This "linear hypotheses" holds that the risk of cancer is directly proportional to the dose received.

For some time it had been gen-

erally thought that when the linear hypothesis is applied to low doses it greatly over-estimates the risk of cancer. The present level for maximum "permissible" occupational exposure, last set in 1956 at five rem (roentgen equivalent man) per year, is based on this assumption.

However, Dr. Morgan told the subcommittee, "I am amazed and appalled at the large number of scientists (mostly associated in some way with ERDA—now DOE) who in spite of an overwhelming amount of data supporting the linear hypothesis at low doses, are still saying we have no human exposure data at low doses and that there is a large factor of conservatism in this hypothesis when it is applied to low doses."

In fact, the study of Mancuso and co-workers, Drs. A. Stewart and G. Kneale, on the workers exposed to low-level radiation at the Hanford Atomic Facility, if correct, says that the linear hypothesis greatly *under-estimates* the risk of cancer—that it is *non-conservative*. According to Dr. Alice Stewart, professor of epidemiology at Birmingham University in England, their findings indicate that the present occupational standards should be lowered by a factor of ten to 20. This means a maximum permissible exposure of 0.25 to 0.5 rem/year, rather than the current five rem/year.

(This should be contrasted with James Liverman's opening statement to the subcommittee: "It is important to state at this time that the 1977 reevaluation of all available information on the effects of ionizing radiation has not indicated a need for any significant change in the currently used guidelines for the protection of the general public or workers in the nuclear industry.")

The implications of this data are quite dramatic. According to Morgan, "...[W]ere we to reduce the present MPE (maximum permissible exposure) by a factor of ten, I seriously doubt that many of our present nuclear power plants would find it feasible to continue in operation." This is due to the so-called "normal emissions" of radiation from nuclear power plants during their usual operation.

The nuclear industry is even having trouble keeping up with the current standards. At present there is a growing practice of "burning out" temporary employees hired to solve the problems of repair work in high radiation exposure areas. This can only be considered criminal.

Finally, even lowering the maximum permissible exposure dose by a factor of ten to 0.5 rem/year—also recommended by Dr. E. Radford, chairman of the Biological Effects of Ionizing Radiation Committee of the National Academy of Sciences—might not really solve anything at all. It may just lead to the hiring of more people, each to receive smaller doses, but with the net effect of causing more cancers.

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More than 160,000 military personnel have been exposed to nuclear blasts. The damage is only now beginning to show.

## HUMAN GUINEA PIGS

Elementary safeguards for human life and health were thrown to the winds in the Pentagon's military testing program

by Tod Ensign and Michael Uhl

More than 160,000 men and women have been deliberately exposed to nuclear bomb blasts by the American military. Recent evidence strongly indicates that the Pentagon was grossly indifferent to the dangers involved in its use of military personnel in its nuclear testing program, and that this indifference has had serious consequences for the individuals involved.

Maj. Alan Skerker of the Army's Operations and Plans Nuclear Division presented a detailed post mortem on the military's use of troops at nuclear test sites to the House Commerce subcommittee on Health and the Environment Jan. 25. A systematic effort by the military to circumvent outside regulation and monitoring of its activities was revealed. So was an increasingly callous disregard for the lives of military personnel.

Army ground forces were first exposed to a nuclear blast at the Desert Rock I test on Nov. 1, 1951. At this blast 5,266 soldiers were stationed a minimum distance of seven miles from ground-zero. The Atomic Energy Commission, nominally in charge of ensuring the safety of the personnel, established a cumulative exposure limit of one "rad" (roentgen) per soldier. AEC monitors carrying survey meters marched at the head of each column of troops who entered the blast area after detonation, and each GI wore a film badge that recorded radiation exposure.

After Desert Rock I, private consultants hired by the Pentagon criticized this arrangement: "Under the restriction of the AEC, it was difficult to make the maneuver realistic. The use of weapons, opposition to a simulated enemy, and mock combat were absent. The troops moving across terrain in single file [led by AEC monitors] was not realistic..."

At this point in the hearings Maj. Skerker observed, "I presume this view was shared by others because at subsequent tests there [was] increased participation [in] military maneuvers... [also] radiation safety responsibilities [shifted] from the AEC

to troop unit commanders."

In the next series of nuclear tests involving large numbers of troops, Desert Rock IV, the permissible exposure level was increased to three "rads" and the troops were placed in trenches only four miles from ground-zero. Army chemical personnel replaced the AEC monitors and ground troops marched to within 500 feet of ground-zero after the blast, where they rendezvoused with airborne units who were dropped by parachute onto the blast site. Skerker's report stated that the Pentagon could find radiation exposure data for only a third of the 7,224 GIs who participated in this test.

### The Army is given total control

On June 1, 1952, during the last test blast of the Desert Rock IV series, the AEC delegated total control for radiation safety for all future blasts to the Army. A document published at that time said: "The Army was given complete responsibility for radiological safety of military personnel. Permission was given for troops to maneuver toward and around ground-zero without restriction as long as there was no interference with AEC instrumentation."

The Skerker report argued that the three rad limit used by the Pentagon was consistent with civilian radiation standards at the time. But critics point out that he didn't account for GIs who participated in more than one test. He also assumed that thorough decontamination of personnel and equipment was conducted after each blast. To date, the authors have interviewed three military participants, each of whom confirmed that no decontamination measures were taken with their units following the blasts.

In later test series precautions against radiation exposure appear to have become even more lax. For example:

- At the Desert Rock V "Nancy" blast on March 24, 1953, it was reported that "a wind shift blew the radioactive cloud over the trenches, which were two and a half miles from

site. There was heavy fallout in the maneuver area and an exposure of 14 rads was reported... The units were ordered out, but difficulty [was reported] in withdrawing the forces...." Only one film badge per platoon had been issued—due to the heavy lab workload!

- At a blast on April 18, 1953, code named "Badger," 2,729 Marines were exposed to six rads in their trenches a little more than two miles from ground-zero. However, as the Chief of Army Field Forces had raised the permissible radiation level to six rads for the Desert Rock V series, this was not considered an "over exposure."

- All radiation badge information from 15 blasts of the Desert Rock VI series in 1955 are missing.

The recent national publicity about GIs exposed during nuclear testing has apparently pushed the Pentagon into an intensified search for survivors. In a report issued simultaneously with the House hearing, the Pentagon proposed a "priority effort" to locate participants in a variety of test series. Until recently the Army had only one officer working part time to locate blast veterans from only one major blast. Due to congressional prodding, a special task force has now been organized to accelerate the search.

For the present the government appears to be limiting itself to an in-depth study of only one test, "Operation Smoky," (JTT, Jan. 18). But Maj. Skerker candidly observed: "Smoky is only a point of departure...we need others. The problem of determining if health risks are associated with participation in nuclear tests cannot be resolved by a study of Smoky alone."

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## Socialism in their *TIME*

To be on the cover of *Time* is to have "arrived." Socialism was on *Time*'s cover last week (March 13). But in this case, it's *Time* that has arrived—by coming to terms with the fact that "Socialism in its various manifestations is now the world's dominant political and economic ideology."

*Time*'s discovery is a recognition that socialism is superceding capitalism as a universal outlook in humanity's further evolution.

*Time*'s 8-page Special Report, "Socialism: Trials and Errors," may be disdained as a coarse mixture of fact and fiction, of American provincial pride and prejudice. But illuminations and realities often come dressed in distortion. Many important ones surface in *Time*'s treatment, among them the following:

- Warts and all, socialism has emerged throughout the world in a rich diversity of practice, experimentation, philosophy and ethics, while capitalism is becoming increasingly inflexible, especially under the impact of global "Americanization."

- Socialism is the secular inheritor of the Christian ethic (and that of other religions) aspiring toward egalitarianism in a society of people serving one another, while capitalism (as *Time* reports its leading intellects concede) offers little more than acquisitive materialism and the cash nexus. (The bourgeois Christians have become the "godless materialists.")

In power for only a few years or decades, socialism has manifestly not fulfilled its promise of equality. But capitalism, in power for generations or centuries, has renounced the promise altogether.

*Time*'s report is significant also for what it glosses over. It cites the statist qualities of early socialism, but neglects the statism of early capitalism, e.g., in Britain, Germany and Japan, and of mature capitalism everywhere from the U.S. to South Africa, the Philippines and Chile.

It also avoids the fact that only among socialist thinkers is there to be found a serious search for a non-statist path to a society that resolves the conflicting claims of development, liberty, and equality.

*Time* bluntly repeats the accepted capitalist wisdom that equality cannot be squared with liberty. That is the "prophecies and Moses" of capitalism.

*Time*'s cover shows the word Socialism

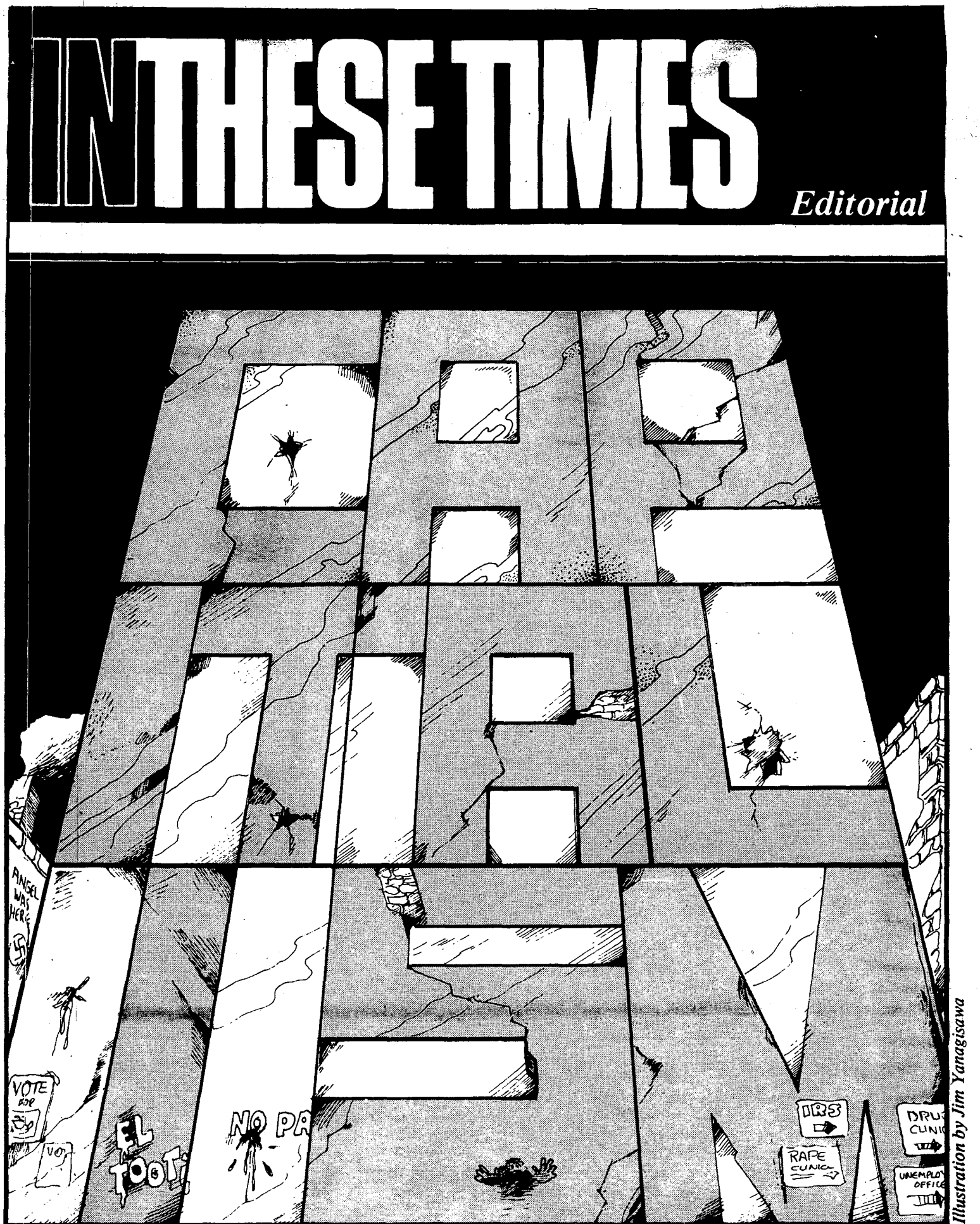


Illustration by Jim Yanagisawa

in a way that suggests people learning through trial and error, assembling and re-assembling the building blocks of a childhood journey to greater knowledge and proficiency. There are disarray and broken blocks, but there are also hope and challenge and creative possibility.

A Capitalism cover might resemble ruins going to seed, overrun by weeds of inflation, unemployment, cynicism and exhausted possibilities beyond the repair of all the king's wizards and their technological magic.

One significant omission in *Time*'s re-

port more nearly reflects than evades the reality: No prominent American socialist appears among the photographs of socialist leaders or is mentioned in the text. If *Time* can put socialism on its cover, is it not time for us socialists to put socialism on the American political map? ■

## The miners' challenge to business as usual

The Carter administration, the corporate mine owners and the media—as usual—are determined to confine to the narrowest ground the attention finally being paid to the miners' grievances. They are carefully avoiding public debate over whether business as usual is consistent with workers' human rights and a sound energy system.

But the miners' strike has nevertheless forced basic questions to the surface. An aroused public awareness of coal industry conditions makes this a good time to raise the kinds of questions the Carter administration and the corporations would prefer not to discuss.

First, the strike illustrates how the national labor law embodies a class bias in favor of capital against labor.

The labor law reform bill now before Congress seeks to redress the balance in the sphere of labor organizing, but other changes are in order. For example, to strengthen management's incentive to place a higher value on workers' needs, the law should require that corporate executives (not only the workers) lose salary and benefit payments during a strike. Also, under Taft-Hartley, workers are

forbidden to engage in secondary boycotts to aid other workers on strike. But corporations are not forbidden (as they are in other industrial countries) to engage in secondary lay-offs, as some steel companies did and as others have threatened to do. The law leaves capitalists but not workers free to engage in such acts of class solidarity.

Similarly, protection of public health and safety is the ostensible justification for invoking Taft-Hartley to force striking miners back to work. But the same reasoning supports enjoining capital strikes (corporate withdrawal of capital that reduces jobs or closes plants). A capital strike, or the threat of one, is a potent weapon against workers' efforts for better conditions. And it places the public health and safety in no less jeopardy than a labor strike.

A second basic question is whether the public interest is best served by the private ownership of energy resources. A steady, reliable supply of coal requires a healthy and safe work force, which corporate ownership—unprodged by bitter, protracted strikes—has never been willing to provide, the less so now that many of the mines

have come under conglomerate ownership.

Many miners have expressed less fear of "working for the government" than for the companies. Working for a government subservient to corporate interests, however, may not be the best alternative. But the miners' attitude raises the question of public ownership and control, and points the way to sharpening debate on the issue. A federated system of miner-community owned mines under congressional charter with a parallel federated public banking network, would be an effective alternative to the existing corporate regime. It could also be applied to ownership of other energy resources. It would make the workers' well-being, instead of private profit grabbing the priority basis of production for public need, and in so doing be the best guarantee of reliable supply at reasonable prices.

Third, in demanding full health care and adequate pensions, the miners are standing up for what ought to be every American's birthright. Until full health care and adequate pensions are accorded all Americans the miners are right in seeking to provide for them through the price

of coal. But in so doing they help all the rest of us to see that it would make more sense, and yield lower-cost coal, to spread the financing over the entire economy through a comprehensive public health care system and a universal public pension system in place of the existing inadequate hodge-podge of social security and private insurance. Universal public health and pension systems would make it unnecessary for miners (or other workers) to strike for such elementary human rights, and would cheapen the price of coal (and other goods). It would be one less obstacle to steady production and dependable supply.

None of this is to say that the immediate issues in the miners' strike are "less important" than the broader issues involved. It is rather to acknowledge the debt owed the miners for helping us, with their courage and militancy, to see more clearly some of the deeper questions currently facing American society, in addition to the debt owed the miners for the crucial role they played in past times in helping millions of other workers to organize for better conditions and a fuller human dignity. ■