

## PUBLIC HEALTH

# Bomb Tests Peril World

Scientists admit that no one knows what the "tolerable limit" for hydrogen and atomic weapons testing is. However, there are both immediate and long-range or genetic hazards.

► THE SETTING OFF of three H-bombs by the Russians in five days has brought the world closer to the brink of radioactive peril.

Just how much closer is anybody's guess, however.

This is the opinion of leading radiation experts interviewed by SCIENCE SERVICE.

A majority of the biologists and geneticists queried held fast to their belief that any amount of radioactivity dumped into the atmosphere from any source is potentially dangerous.

Others, on the other hand, feel that there is a tolerable limit for hydrogen and atomic weapons testing which, if not exceeded, will not overburden the atmosphere with lethal radioactive debris.

What is considered a tolerable limit, however, is an elusive figure.

When it is mentioned, it is put in megaton terms, a megaton equaling the explosive force of 1,000,000 tons of T.N.T. Each of the recent Russian H-bomb detonations, according to the Atomic Energy Commission, was of megaton range.

The figure most often heard is that the

world can stand a continuous rate of 10 megatons of fission per year. Scientists admit, however, that this is an arbitrary figure and no one knows what the limits really are.

Last August a committee of 12 of the Nation's leading scientists said:

"Pending a resolution of the differences and uncertainties it would appear that the consequences of further testing over the next several generations at the level of the past five years could constitute a hazard to the world's population. If the level of future testing rises, then the hazard could be greater and arrive sooner."

More recently, Drs. J. Laurence Kulp and Arthur R. Schulert of Columbia University's Lamont Geological Observatory and Dr. Walter R. Eckelmann, now at the Carter Research Laboratories, Tulsa, Okla., warned that the amount of cancer-causing strontium-90, an H-Bomb afterbirth product, in the bones of children will reach four times its present level even if there are no atomic tests in the future. (See SNL, Feb. 22, p. 117.)

If bomb tests continue at the recent rate,

they found, the level of strontium-90 in the bones of persons living in northeastern United States will reach 200 times the present level by the year 2100.

This would be twice that now thought to be the maximum permissible.

(For the general population the National Bureau of Standards has declared a maximum permissible concentration of strontium-90 to be one-tenth microcurie, or 100 strontium units a kilogram of body calcium.)

Calculating the amount of fallout that has been unleashed since atomic and hydrogen weapons have been detonated is a difficult task and involves many variables. But it has been shown, for example, that approximately one-third of the total global burden of fission products, both in the stratosphere and on the ground, was produced by a single explosion in the Castle series of American tests in 1954.

By the same token, it has been estimated by Dr. H. Bentley Glass of Johns Hopkins University, Baltimore, Md., that nuclear tests are spreading about 10,000,000 tons of radioactive material over the earth every year. Dr. Curtice L. Newcombe of the Navy Radiological Defense Laboratory, San Francisco, Calif., has estimated that about 50,000,000 tons have been released in United States tests to date.

How many millions more tons have been spewed aloft by the recent Russian tests are either not known or classified information.

It should be pointed out that Dr. Newcombe warned last fall that 70,000,000 tons is the theoretical safe limit.

The problems are involved, the scientists admit, but the consequences are clear and they take two directions:

1. The immediate hazards from radioactivity to those now living.
2. The long-term genetic hazards to millions still unborn.

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**PROBING SATELLITE NOSE CONE**—A technician uses an ultrasonic probe on the stainless steel nose cone of an Explorer satellite. This vibrator is used for final testing of the cone's wall thickness, indicated on the graph by streaks of light on the instrument panel in the back.

## TECHNOLOGY

## Second Breeder Reactor Being Built by AEC

► THIS COUNTRY'S second breeder reactor, a nuclear power plant that produces more fissionable material than is burned, is being built by Argonne National Laboratory for the Atomic Energy Commission.

To design and construct the facility at the AEC's National Reactor Testing Station, \$29,100,000 has been authorized. The reactor will be known as Experimental Breeder Reactor No. 2, or EBR-2.

Heat power rating of the reactor is 62,500 kilowatts and its net electrical output is set at 17,500 kilowatts. The breeder reactor offers the possibility of using economically and efficiently all natural uranium rather than only the fissionable uranium-235.

The EBR-2 reactor is scheduled for operation in 1960. EBR-1, which started operating in 1951, demonstrated the feasibility of breeding nuclear fuel in a reactor.

Science News Letter, March 15, 1958