

Super-Super H-Bomb Defies the Imagination

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WASHINGTON. — A vengeful debate about the history of the hydrogen bomb seems to be in the making. Yet the vast majority of the debaters still do not know the real nature of the weapon they are angrily discussing.

The Soviets know, of course. In fact the Soviet H-bomb with lithium-hydride core was the first version of the true super-terrible super-weapon ever tested. But as usual, we in this country have not been told what the Soviets know.

The essential point to grasp about the true Super-Super is its difference from the other weapons of the atomic family. The primitive earlier bombs did their work chiefly by blast and fire. They inflicted radiation casualties as well. But these hardly mattered, since the area exposed to lethal radiation was far less than the area exposed to lethal fire and blast.

The Super-Super is quite different. Its radiation effects altogether transcend its blast and fire effects. A five-megaton super-super will destroy a circular area of 300 square miles by fire and blast. But it will probably expose an area of 6,000 square miles to lethal radiation.

Such a bomb, in short, will not only wipe the city of Hartford, Conn., say, off the face of the earth by its fireball and percussions, it will also shower most of the state of Connecticut with radio-active particles sufficiently powerful to cause the death of anyone not sheltered from them.

In the first report on this matter of the so-called "fall-out" of the super-super, which appeared in this space, the nature of the radiation effects was wrongly described. The lethality was under-rated, because the Japanese fishermen and the Marshall Islanders who suffered from our H-bomb tests were too far from ground zero to feel the fall-out's full force.

The true effects of the super-super are now fairly clearly established, however. If exploded near ground level, it scoops out an enormous crater. The matter from this crater is pulverized, snatched up into the bomb cloud, and impregnated with violent radio-activity by the super-super's enormous release of free neutrons.

Being dust, this pulverized matter is immensely heavier than the atomic particles of the more primitive bomb-cloud. Hence it falls out locally, about two hours after the detonation of the super-super. The area affected depends upon the direction and strength of the prevailing winds in the upper atmosphere. In ordinary conditions, according to current Pentagon estimates, a roughly lozenge-shaped area about 50 miles wide and 120 miles long will be showered with death-dealing particles by the fall-out of a five megaton super-super.

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of a five-megaton super-super.

The degree of lethality of the fall-out depends upon two things: first, the elements that compose the original bomb crater, and second, the amount of shelter available to the inhabitants of the affected area.

Radio-sodium, for example, is an element with a radio-active half-life of 15 hours, which means that its radiation lasts long enough to be an extreme hazard and is also very violent. Radio-silicon has a much shorter half-life (but still too long) of two-and-a-half hours, and its radiation is even more violent. Radio-strontium, in contrast, has a long half-life of 28 days, but its lethality is much lower.

In any case, the ordinary city, which will of course be the normal site of the crater of a super-super, will provide an ample supply of lethally radio-active elements. For instance, much of the substance of a modern city is brick. Brick is largely composed of silicon, with some sodium and potassium, and brick dust will therefore be highly lethal.

With some variations from target to target, the intensity of radiation in the affected areas will probably remain above 500 Roentgens (the Army-standard lethal dose of radiation) for about two days. After that, the radio-activity of bomb fall-out will fall below the death-dealing point. But there will still be a short further period of radiation sufficiently strong to cause lesser but serious damage, such as loss of hair, radiation ulcers and sterility.

The inhabitants of the affected area will escape all these effects if they are able to get under shelter and stay there long enough.

On the other hand, one five-megaton super-super will not only kill the unsheltered human and animal population in an area of 6,000 square miles; it will also immobilize the sheltered survivors for more than two days. Two such bombs will put an area of 12,000 square miles out of action; and 100 super-supers could destroy most of our major cities and paralyze a large part of the productive area of the United States.