Nuclear Blast effects

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Nuclear war Effects,

More gloomy Nuc forecasts Winter

Washington

IMMEDIATE casualties resulting from a nuclear war, the subsequent short- and long-term physiological effects, and the long-term consequences to ecosystems have probably all been underestimated by the predictions in current use. But estimates are subject to gross uncertainties that can only be reduced by more research on the "biological effects" of a nuclear war. Much should be done by the US and Soviet governments to fund such research and to inform the public of the effects. These are the main conclusions at this week's meeting of the Institute of Medicine (IoM) at the National Academy of Sciences.

According to Dr Theodore Postel of Stanford University, a hypothetical attack of 100 one-megaton bombs on 100 US urban centres would cause 36–56 million immediate deaths, two to four times the number predicted by government studies based on blast effects alone. A one-megaton nuclear weapon can produce a fireball with a temperature of about 100 million °C at the centre, causing many simultaneous fires over hundreds of kilometres and hurricane-force winds. This fiery environment, together with the toxic smoke and combustion of gases, renders obsolete the "blast scaling" method of estimating the effects of a nuclear explosion used by government agencies.

One startling prediction of Postel's new "conflagration" model is that a major attack on US strategic nuclear targets would result in 16–35 million deaths and 9–41 million casualties even before the effects of fallout and damage to environmental and social systems are considered. These figures, from Dr Frank von Hippel and colleagues of Princeton University, are the outcome of the first calculations to have used computerized wind, target and population data bases apart from government studies, which are mainly classified.

The effects of toxic chemicals caused, for example, by burning of industrial plastics, is likely to have severe local consequences. Lofting of nitrogen oxides into the stratosphere would deplete the ozone layer, leading to increased ultraviolet radiation. Gases such as ammonia and methane could accumulate in the heavily polluted troposphere during periods of darkness.

Dr Frank Press, president of the National Academy of Science, summed up the general mood when he said that the "profundity of the consequences of nuclear war are such that symposia such as this . . . (provide a) most valuable public service". Dr Herbert Abrams of Stanford University called for more information to be provided by the US government for public education and for a strengthening of screening tests to armed forces personnel because more than 5,000 personnel a year are removed from nuclear weapons handling duty because of drug abuse, alcoholism or psychological problems. The problem is likely also to be large in the Soviet Union, where alcoholism is a health problem of "epidemic proportions", he said.

The reluctance of the United States to consider the "biological" effects of nuclear war has been criticized by Dr Carl Sagan of Cornell University. Although the government in theory is providing $50 million over 5 years to investigate the physical effects, no money is spent on biological research. One of the first studies on the ecological effects of a nuclear winter-like environment on plants is planned by Lawrence Livermore National Laboratory and the University of Wisconsin. But Dr Lynn Anspaugh of the former institute stressed the need for considerable resources to produce and continuously update an interactive model.

Maxine Clarke

NPT + EFFECTS

Superfire threat in N-attack

GU 21.9.85

Washington: A nuclear attack could trigger "superfires" over vast areas, almost quadrupling casualties projected by the US government, according to a study released yesterday.

Dr Theodore Postol, of Stanford University, an arms control expert, said death estimates were that about 15 million people would die in urban areas if the US were attacked with 100 one-megaton nuclear bombs. A one-megaton bomb has the explosive power of one million tonnes of TNT.

However, Dr Postol, presenting his findings to the Institute of Medicine, said 36 to 56 million could die immediately from such an attack.

The US projections, he said, did not take into account the impact of "superfires." He outlined an attack in which nuclear bombs would be exploded in "air bursts" above big cities.

A one-megaton nuclear blast could produce temperatures of 100 million degrees Fahrenheit (40 million C) at its centre — four or five times that at the centre of the sun, and this could ignite simultaneous fires over vast areas, he said.

In Geneva, some 100 nations reviewing the 1968 nuclear Non-Proliferation Treaty were struggling last night to find a compromise on a call for a complete atomic test ban and on proposals to condemn Israel, sources said.

The final session of the conference had not opened five hours after it was due to start. The US was defending its position opposing a test ban

Stanford U

● A conference in Washington on the medical effects of nuclear war has been told that standard government studies of the effects of nuclear blasts on large urban areas are wrong. The studies underestimate the number of deaths caused by "superfires" and overestimate the number of injuries.

The claims were made by Theodore A. Postol, a physicist and senior research associate with the Center for International Security and Arms Control at Stanford University.

A hypothetical nuclear attack of 100 one-megaton bombs on 100 urban centres in the US would result in up to 56 million deaths—far more than the 14 to 15 million projected in standard estimates, Postol said.

Huge volumes of air near the blast would be heated and radiate out at hurricane force. "Air temperatures within the zone of fire could exceed that of boiling water." □

Medical effects New Scientist 26/9/85