

Why the nuclear cloud

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which governments choose to ignore

has no silver lining

THE PRESENTATION and discussion of the effects of "nuclear winter" at The Royal Institution yesterday took place in a context far more advanced than the simplistic studies carried out in the late 70s which triggered international investigation.

Any attempt to con the public into believing that the studies which have led to the conclusions of these investigations are trivial, carried out by a small clique or hidden from scientific challenge, is not simply dangerous and misleading but stinks of the dirty-tricks brigade. Yet this seems to be happening.

"Nuclear winter" is a complex hypothesis that cannot be tested except by a massive nuclear exchange. The term itself is now no more than a media tag, for scientists engaged in the international attempt to calculate the worldwide effects of such an exchange dropped the term rather more than three years ago because it oversimplifies the picture and gives false emphasis to climatic effects.

Starvation, the disruption of energy transport systems and distribution of other resources, together with secondary effects such as massive epidemics, and the disruption of biological systems, are all now seen to be of at least equal importance to radiation effects and to climatic changes which would be wrought by dust and carbon particles.

The first studies were necessarily simple, and were published more as platform for discussion and research than as any statement of reality. The topic needed research, for the major powers, rattling their nuclear armouries, had either concealed or given no thought to the global effects of any major nuclear exchange.

These studies — notably one known as TTAPS after the initials of its authors — identified the sensitivity of climate to the injection of massive amounts of dust and carbon particles, and hence coined the term "nuclear winter."

Precisely because the early simulations and assessments were very simple and subject to valid criticisms, an international analysis on a huge scale was initiated by the International Council Of Scientific Unions. It took three years, involved 300 scientists at the highest level from virtually all the major countries of the world, and was backed by specialist working groups in several countries examining particular aspects of physical effects on climate and other basic cycles, with

additional expert groups unravelling biological and environmental effects.

This was done through the Scientific Committee On Problems Of The Environment (Scope) which is just about as independent a scientific body as it is possible to conceive. The chairman of the steering committee was Sir Frederick Warner, who is neither pinkie nor green.

Results were published in two substantial volumes a year ago and they form the baseline from which current research and debate springs. The first volume made it clear that the term "nuclear winter" was not scientifically acceptable.

"We have chosen to avoid the use of the term because it does not, in a strict scientific sense, portray the range, complexity and dependencies of the potential global consequences of a nuclear war. By this choice, we are not suggesting that the environmental effects of a major nuclear exchange would be inconsequential. On the contrary, we find that they would be substantial and significant."

But the volumes also made it clear that there were very significant gaps in knowledge of the interactions of multiple weapon bursts with the local environment and, at a far more complex level, between the physical and the

ultimate biological effects. After three years of study involving top-level expertise from East and West, they reported a seminal but disturbing conclusion.

"The combinations of possible environmental perturbations are so large and the varieties of systems are so numerous and complex that it would be an impossible task to look into all the ways in which those perturbations might result in impact. Further, the disruptions and dislocations of a nuclear war would be of a magnitude for which there is no precedent. Our present interdependent, highly organised society has never experienced anything approaching the annihilation of people, structures, resources and disruption of communications that would accompany a major exchange, even if severe climatic disturbances were not to follow."

In fact the Scope studies, based on moderate rather than extreme assumptions, found that major climatic and environmental changes could occur over a period of months. The consequences through loss of agricultural yields, even for one season, would be immense. That this finding is sensitive to the time of year at which an exchange occurs and to the amount of material injected

into the upper atmosphere, seems less important than its validation, in part, of the earliest fears.

Maybe the most important aspect of the Scope study, however, and one which was discussed at some length at The Royal Institution, is that in presenting the available evidence and current criticisms, it identified a series of areas in which more investigation is essential before a full picture of the effects of a nuclear exchange could be drawn with any accuracy. This remains the current situation.

One critical area to which the study points which remains neglected by governments and the nuclear industry is the problem arising from the fallout of huge amounts of radioactivity when nuclear power stations — valid targets in war — are vapourised by nuclear weapons.

This probability, discussed five years ago at the Groningen Conference on nuclear war in Europe, has been swept under the carpet. Yet it would seem that the continents would be swamped in fallout whose radiation levels would approach or exceed a lethal dose in all but a few unpredictable regions. This, amazingly, is not taken into account currently.

Even without this factor, the clear consensus of the world scientific community is that many of the most serious global and climatic effects considered in early analyses are sufficiently probable to be a matter of major concern. "Any disposition to ignore the widespread environmental effects of nuclear war would be a fundamental disservice to civilisation," says Scope.

The message is urgent, valid and important. To attempt to diminish it by attacking studies that have long been superseded is not just silly, but suspect.

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