From
H S Virk

Probable Health Hazards from Nuclear Weapon Accidents in India and Pakistan

Zia Mian *et al*[1] have reported the estimated risk and health hazard effects if nuclear warheads deployment in South Asia, with particular reference to India and Pakistan. I believe this is the first quantitative study of its kind in the Indian subcontinent. The authors' motivation derives from the current scenario in India and Pakistan after testing of nuclear weapons in May 1998. Considering the political situation in the subcontinent, the author assumed that the dangerous situation may change for the worst in the not-too-distant future on the deployment of nuclear weapons.

Both India and Pakistan have developed a variety of ballistic missiles and they will be used for carrying nuclear weapons. These missiles are propelled by highly volatile hypergolic liquid propellants and hence the risk in deployment is always there even when there is no nuclear warfare. Using the famous 'wage model' for estimating the effects of a nuclear weapon

accident[2], the authors calculate the number of deaths due to cancer caused by dispersal of plutonium for the weapons. Any serious accident caused by detonation of propellant/fuel can convert the fissile material of the nuclear warhead into aerosol particles which disperse into the environment.

There is also a possibility that detonation of a highly explosive propellant/fuel in the pit may trigger in turn the detonation of the nuclear weapon. Such an explosion might be mistaken for a nuclear attack and lead to nuclear response. Thus there is always a danger that an accidental nuclear explosion may even trigger a nuclear war. The dispersal of plutonium aerosols, even without nuclear explosion, may cause 5000 cancer deaths in a metropolis like Delhi.

Considering all the facts and figures in this study, the scientists and political leaders of both India and Pakistan must enter into a dialogue for safe deployment of nuclear weapons. The best solution will be to store them far away from the missiles carrying potentially explosive fuel. To reduce the risk of a nuclear weapon being launched through error, panic or miscalculation, it is advisable to keep the nuclear weapons disassembled.

Considering the track record of arsenals in North India, the danger of accidental nuclear explosion or dispersal of plutonium aerosols is real. During last one year, there were three arsenal fires, causing widespread damage and considerable panic. Such accidents could be far more disastrous in case of ballistic missiles and nuclear warheads. Let us hope the concerned governments address this situation with due care and concern.

1. Zia Mian, Ramana, M V and Rajaraman, R : *Plutonium Dispersal and Health Hazards from Nuclear Weapon Accidents*, *Curr. Sci*, 2001, 80 **1275-84.**

2 Fetter, Steve and von Hippel, Frank : *Sci. Globa Security*, 1990, 2, **21-42.**

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From
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Finding Facts Figuratively

The word *fact* is derived from the Latin word *factum*[1] which originates from *facre*, ie, to do. Of the various meanings, we can accept it as something which has really occurred and is likely to be repeated under similar circumstances. The word *figure* is derived the Latin word *figura* meaning form, shape, represented or derived form, written character, ie, symbol, diagram or illustrations. The best way that facts can be represented by figures is by using *statistics*.

The word *statistics* has been derived form the Latin word *status* (a political state). In 1869, Adolphe Quetelet merged the methods of political economy, mathematics and government