

BHOPAL AND CHERNOBYL - A COMPARISON

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ABSTRACT

Mankind witnessed two catastrophic industrial accidents in this decade, one in the chemical plant at Bhopal due to release of the toxic gas methyl-iso-cyanate, and the other in the nuclear power plant at Chernobyl. For both the events the extent of damage has been well documented. This communication attempts to compare the consequences of the two types of accidents and to critically examine how legitimate such a comparison is?

A software programme developed for a personal computer to predict quickly the plume propagation and exposure levels in the event of an accidental radioactivity release in air has been utilised to create mock nuclear reactor conditions with release characteristics corresponding to Chernobyl but meteorological and demographic parameters simulating those of Bhopal. The consequences of this simulated accident have been compared with those of the Bhopal disaster. It turns out that although a Chernobyl-type accident at Bhopal would have affected a larger area than in the case of the actual spread of MIC, the immediate death toll would have been much smaller.

Delayed effects of Chernobyl may be estimated from the committed dose equivalent using accepted risk coefficients. The corresponding situation for MIC release consequences is quite unsatisfactory. Preliminary data obtained by surveys of the Indian Council of Medical Research reveal incidence of delayed effects (like abortions, stillbirths and chromosomal aberrations) which are normally associated with radiation. A tentative attempt has been made to correlate the damage in terms of equivalent radiation doses.