

STATISTICAL STUDIES OF THE EFFECT OF LOW LEVEL RADIATION FROM NUCLEAR REACTORS ON HUMAN HEALTH

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1. Possible effects of nuclear reactors

Government policy with regard to the construction and operation of nuclear power plants is of great public concern, not only because of the possibility of a serious accident at one of these plants, but also because of the possibility that radioactive discharges from these plants during their routine operation may affect the health of nearby populations. In particular, because of the vulnerability of the human fetus, it is possible that exposure of a population to these discharges may be reflected in the infant mortality rate, the fetal death rate, the prematurity rate, and similar health indices of the population.

Since several nuclear reactors have been in operation in the United States for at least five years, and some for more than ten years, the relevant data for a statistical study of this problem are largely available in published records. A study of this type would necessarily be retrospective in nature and confined to short term effects of low level radiation. If these effects are discernible, then they should be reflected in certain relationships between the health indices mentioned above for a given population and various measures of radioactivity in the environment.

2. Populations to be considered

Annual infant and fetal mortality rates, as well as prematurity rates, are typically available on a county by county basis in the published vital statistics of each state. It is suggested for simplicity, therefore, that counties form the basic units of population to be considered. Thus, for a given reactor, annual health indices for the county containing the reactor and for nearby counties would be investigated over a period both before and after the reactor became critical for possible relations with measures of the total annual radioactive

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