

thoroughly study all nuclear safety and radioactive effluent control aspects of each project as an integral and essential part of the program. Similarly, in the planning and conduct of its waste management research and development program, the Commission has always considered the satisfactory treatment and permanent disposition of all waste materials as a prime requisite for all program activities. To assure the safe and successful development of advanced reactor and fuel reprocessing technology for the expanding nuclear power industry and in order to maintain the industry's safety record of the past 20 years, the AEC waste management program will continue to emphasize a "preventive" approach in these activities rather than a "curative" one.

Briefly stated, the "strategy" is to:

- (a) Identify, define and characterize potential problems,
 - (b) Investigate the phenomenology associated with the possible problems,
 - (c) Develop technology as required to properly cope with the problems,
- and
- (d) Apply the technology as engineered systems or processes, procedures, or other control mechanisms.

Question 2. "If there is an agreed upon life time exposure limit to ionizing radiation, how much is consumed by natural background, x-rays for health purposes, fallout, etc.? In other words, how much leeway do we have for additional radiation from nuclear power plant effluents, bomb testing, "plowshare" type emissions, etc.? How does this leeway decrease with the predicted future growth of nuclear power?"

Answer. No limit has ever been established for the maximum ionizing radiation dose a person should be allowed to receive in his life time. The Federal Radiation Council (FRC) in its first report, dated May 13, 1960, recommended radiation protection guides for the use of Federal agencies. These guides, which are generally consistent with the recommendations of the National Council on Radiation Protection and Measurements (NCRP) and the International Commission on Radiological Protection (ICRP), have been adopted by the Atomic Energy Commission in the development of its radiation protection standards.

The FRC guides are applicable only to man-made sources of radiation and are exclusive of the deliberate exposure of patients by medical doctors. The basic recommendation for general population exposure is that the yearly radiation exposure to the whole body of individuals in the general population should not exceed 0.5 rem. It was recognized that under certain conditions, such as widespread radioactive contamination of the environment, the only data available may be related to average contamination or exposure levels. Under these circumstances, it is necessary to make assumptions concerning the relationship between average and maximum doses. The FRC suggested the use of the arbitrary assumption that the majority of individuals do not vary from the average by a factor greater than three. Thus, it was recommended that a guide value of 0.17 rem be used for yearly whole body exposure of average population groups.

When the size of the population group under consideration is sufficiently large, consideration must be given to the genetically significant dose. The FRC endorses in principle the recommendations of the NCRP and ICRP concerning population genetic dose, and recommends the use of the Radiation Protection Guide of 5 rem in 30 years (exclusive of natural background and the purposeful exposure of patients by practitioners of the healing arts) for limiting the average genetically significant exposure of the total U.S. population. The use of 0.17 rem per year as a means for assuring that the individual whole body dose is not exceeded, is likely to assure that the gonadal exposure guide is not exceeded in the foreseeable future.

The following table is taken from FRC Report No. 1. Though this report is almost 8 years old, the dose estimates are substantially unchanged. The estimated per capital 30-year dose resulting from all weapons tests conducted through 1962 was 110 millirem. Atmospheric tests conducted since 1962 have not significantly increased this estimate.