o Environmental Impact Statement Analysis

Dose Methodologies

Principal Investigators: M. A. Mueller, D. L. Strenge and B. A. Napier

Standardized sections and methodologies are being developed for use in environmental impact statements (EIS) for activities to be conducted on the Hanford Reservation. Five areas for standardization have been identified: routine operations dose methodologies, accident dose methodology, Hanford Site description, health effects methodology, and socioeconomic environment for Hanford waste management activities. Routine and accident dose methodologies were completed this year.

A computer program to calculate radiation doses from accidental releases of radioactive materials at Hanford was developed for the accident dose methodology. The program is based on existing models and subroutines. Radiation doses are calculated for both the individual and the population exposed to a plume of atmospheric contamination. A semi-infinite cloud model is used for air submersion, and inhalation doses are calculated using dose factors from the DACRIN computer code. The new program, entitled HADOC, has been programmed in ASCII FORTRAN on the

UNIVAC 1100/44 computer, and has been tested and documented (Strenge 1980).

Computer programs for calculating radiation doses to the public from routine releases of radionuclides from the Hanford Site have been standardized. The inhalation dose program DACRIN was converted in order to use the same data libraries as the ingestion pathway codes ARRRG, FOOD, and PABLM. The data libraries were updated based on the most current literature.

A report describing each of the programs recommended for use in EIS analyses at Hanford has been prepared (Napier 1980). The report includes the rationale for the use of each program, required input data, definition of resulting output, and code limitations. These programs will be maintained on the BCSR UNIVAC 1100/44, which is available for use by all Hanford contractors. All programs are written in ASCII FORTRAN suitable for easy adaption to offsite computer systems.