Appendix F

Occupational Dose Limits, Annual Limits of Intake

PERMISSIBLE EXPOSURE LEVELS

A. Dose Limits

Dose limits are established by the Nuclear Regulatory Commission (NRC) and are the legal requirements which must be met for work with radioisotopes. These limits are given in Table 11-1 and are based on the recommendations of nationally and internationally recognized committees such as the National Council on Radiation Protection (NCRP) and the International Committee on Radiation Protection (ICRP). The present limits were adopted by the NRC in 1991 and the values given in Table 11-1 are taken from 10CFR Part 20.1201. For occupational workers the basic whole body limit requires the Total Effective Dose Equivalent (TEDE) be less than 5 rems per year. The TEDE is the sum of the Deep Dose Equivalent (the dose from external radiation) and the Committed Effective Dose Equivalent (the dose from internally deposited radionuclides). In addition to the TEDE limit there is a limit of 50 rems per year to individual organs, skin and extremities. The eye has a special limit of 15 rem per year. There is also a special limit for declared pregnant workers of 0.5 rem to the fetus for the duration of the pregnancy and of 0.1 rem for members of the general public

The NRC also requires that doses be kept "as low as reasonably achievable" (ALARA). The limits are set as maxima which must not be exceeded but the goal is to keep doses as far below these limits as is practical.

TABLE 11-1
Dose Limits per Year

Radiation Workers:	**Dose**
Total Effective Dose Equivalent (TEDE)	5 rem
Dose Equivalent to the Eye	15 rem
Shallow Dose Equivalent to skin, extremities	50 rem
TEDE to any other individual organ	50 rem
TEDE to embryo/fetus of declared pregnant woman	0.5 rem
Minors	Ten percent of worker limit
Members of the Public	0.1 rem

B. Dose Limits for Prenatal Exposure

The fetus is more sensitive to radiation damage than the adult; therefore, the Nuclear Regulatory Commission requires that radiation exposure to the fetus be limited to less than 0.5 rem during the nine months of development for a declared pregnant woman. The Regulatory Guide 8.13 discusses the possible health risks to children of women who are exposed to radiation during pregnancy. This section should be read by all female radiation workers. The Institute is committed to keeping the dose below 0.5 rem for those who declare their pregnancy.

Female radiation workers who become pregnant or who are anticipating pregnancy are encouraged to discuss their radiation exposure situation with the Radiation Safety Officer and supervisor, especially if it is likely that an abdominal exposure of up to 0.5 rem over a nine-month period could be received.

C. Dose Determination

The Total Effective Dose Equivalent (TEDE) is calculated by adding the dose determined from the badge dosimeter (external deep dose equivalent) to that of determined from urine and thyroid bioassay procedures (internal committed effective dose equivalent). If monitoring is required, it is very important that monitoring badges be returned promptly and that urine or thyroid assay schedules be followed. If any badges are lost or if an assay schedule can not be met, the Radiation Safety Office must be informed and a form completed for an estimate of the dose.