

#### 7.4 Exposure Limits for Minors

The annual occupational dose limits for minors are 10 percent of the annual occupational limits specified for adult workers in Section 7.1 of this manual.

#### 7.5 When Dosimetry Is Required

The IEMA requires dosimetry for the following:

1. Adults likely to receive in one year a dose in excess of 10 percent of the occupational exposure limits from sources external to the body (Section 7.1).
2. Minors and declared pregnant women likely to receive in one year a dose in excess of 10 percent of the applicable limits from sources external to the body (Sections 7.3-7.4).
3. Individuals entering a high or very high radiation area.

DRS assigns dosimetry when certain quantities and radionuclides are used. Specifically, the use of  $>10$  mCi of P-32 requires the user to wear both an extremity (commonly referred to as a “ring”) and a whole-body dosimeter. At usage levels  $\leq 10$  mCi of P-32, dose assessments will be performed to evaluate the need for dosimetry. Dosimetry is not issued for individuals working with weak beta-emitting radionuclides such as H-3, C-14, P-33, and S-35.

DRS evaluates use of dosimetry for other radionuclides and quantities on a case-by-case basis.

#### 7.6 Bioassays

Bioassays, analyses, or evaluations of materials excreted or removed from the body are required to determine types, concentrations, quantities, or locations of personal uptake of radioactive materials. A baseline (before first use) bioassay and another within 24 to 72 hours following each use of the quantities specified is required. Common bioassays performed are:

- Thyroid bioassays are performed using a hand-held scintillation probe and survey meter;
- Tritium bioassays performed by condensing water from exhaled air followed by liquid scintillation counting if the activity in the sample.

DRS personnel perform bioassays at the following location if other arrangements are not made:

Environmental Health and Safety Building, 101 South Gregory Street, Urbana

Users of *unbound* radioactive iodine (typically I-125 or I-131) in quantities of  $\geq 1$  mCi on a bench top or in quantities  $\geq 10$  mCi in a fume hood require thyroid bioassays. These bioassays are performed on a walk-in basis during business hours unless previous arrangements are made. Tritium bioassays are required when a person uses  $>100$  mCi of H-3 without using a