

Quiz: Radiation Dosimetry

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1. Marie Curie's Professor proudly carried in an inside pocket of his coat a glass vial containing the first sample of radium-226 ever produced; shortly thereafter, the first radiation burn was documented. This skin burn was caused by
 - a. The potent 4.8 MeV alpha particles emitted by this isotope
 - b. The gamma rays accompanying the alpha decay
 - c. Cerenkov Radiation
 - d. 0.005 keV X-rays

2. Irradiation of the juvenile thyroid has been associated with an increased risk of developing
 - a. thyroid carcinoma and parathyroid adenomas
 - b. hypothyroidism
 - c. hyperthyroidism
 - d. aplastic anemia

3. The ALARA Concept, implemented in the late 1970's, has contributed to
 - a. A reduction in the cost of radiopharmaceuticals
 - b. An overall reduction in dose to radiation workers.
 - c. Increased compliance with continuing education requirements
 - d. Increased availability of new radiopharmaceuticals

4. In any given year, a radiation worker may receive a *whole body dose* of
 - a. 0.5 R
 - b. 1 R
 - c. 5 R
 - d. 10 R
 - e. 50 R

5. In any given year, family members of a radiation worker may receive a *whole body dose* of
 - a. 0.1 R
 - b. 0.5 R
 - c. 5 R
 - d. 10 R
 - e. 50 R

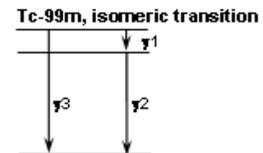
6. Effects recognized as being caused by ionizing radiation include all of the following except
- Induction of malignant melanoma
 - cataract induction
 - dermatitis and hair loss
 - carcinogenesis
 - genetic effects

7. For Tc-99m (decay scheme at right), there are approximately 20 contributors to the internal radiation dose. Included are all of the following except

Input data

Radiation	% abundance	Energy (MeV)
Gamma-1	98.6	0.0022
Gamma-2	98.6	0.1405
Gamma-3	1.4	0.1427

- gamma rays
- Auger and internal conversion electrons
- β - particles
- Characteristic X-rays



8. The mathematical equation for internal dosimetry includes all of the following except
- Fraction of all disintegrations producing the particles or photons being evaluated
 - Effective half-life
 - Energy of the particles or photons being evaluated
 - Size and shape of the organ