



CENTRO MEDICO DE MAYAGUEZ
DEPARTAMENTO DE SALUD
MAYAGUEZ, PUERTO RICO



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U.S. Nuclear Regulatory Commission
Region II - Materials Safety Section
101 Marietta - ST
Atlanta, Georgia 30323

Gentlemen:

ATT: Mr. Wade Loo

Enclosed copy of tables used to approximately calculate
dose to fetus in the Mayaguez Medical Center case submitted
to you.

Let me know if further information is necessary.

Sincerely,

Daniel Torres, MS.
Physicist

Enclosures:

- (1) Book Reference
- (2) Tables

Table 3-5. Conceptus Dose Estimates from Radiopharmaceuticals

| Radiopharmaceutical | Conception Age (weeks) | Conceptus Organ | Dose Per Unit of Maternally Administered Activity (rad/mCi) | Footnotes |
|--|------------------------|-----------------|---|-----------|
| ^{99m} Tc DTPA | 1.5-6 | Whole body | 0.035 | a |
| ^{113m} In DTPA | 1.5-6 | Whole body | 0.035 | a |
| ^{99m} Tc gluconate | 1.5-6 | Whole body | 0.034 | a |
| ^{99m} Tc sodium pertechnetate | 1.5-6 | Whole body | 0.027 | a |
| ^{99m} Tc sodium pertechnetate | 1.5-6 | Whole body | 0.037 | b,c |
| ^{99m} Tc sodium pertechnetate | 1.5-6 | Whole body | 0.039 | b,d |
| ^{99m} Tc sodium pertechnetate | <8 | Whole body | 0.048-0.32 | e |
| ^{99m} Tc polyphosphate | 1.5-6 | Whole body | 0.025 | a |
| ^{99m} Tc sulfur colloid | 1.5-6 | Whole body | 0.007 | a,b |
| ¹²³ I sodium iodide | 1.5-6 | Whole body | 0.032 | b,i |
| ¹³¹ I sodium iodide | 1.5-6 | Whole body | 0.10 | b,j |
| ¹³¹ I sodium iodide | 1.5-6 | Whole body | 0.15 | k |
| ¹³¹ I sodium iodide | 7-9 | Whole body | 0.88 | k,h |
| ¹³¹ I sodium iodide | 11 | Whole body | 1.15 | g,i |
| ¹³¹ I sodium iodide | 12-13 | Whole body | 1.58 | g,i |
| ¹³¹ I sodium iodide | 20 | Whole body | 3.00 | g,i |
| ¹³¹ I sodium iodide | 11 | Thyroid | 715 | g,i |
| ¹³¹ I sodium iodide | 12-13 | Thyroid | 1338 | g,k |
| ¹³¹ I sodium iodide | 20 | Thyroid | 5900 | g,i |
| ¹²³ I sodium rose bengal | 1.5-6 | Whole body | 0.13 | b |
| ¹³¹ I sodium rose bengal | 1.5-6 | Whole body | 0.68 | b |
| ⁶⁷ Ga citrate | 1.5-6 | Whole body | 0.25 | a,i |
| ⁷⁵ Se methionine | 1.5-6 | Whole body | 3.8 | a |
| ⁵⁹ Fe citrate | 7-20 | Whole body | 38 | g,m |
| ⁵⁹ Fe citrate | 7-13 | Liver | 410 | g,n |
| ⁵⁹ Fe citrate | 20 | Liver | 330 | g,i |
| ⁵⁹ Fe citrate | 11 | Spleen | 61.2 | g,i |
| ⁵⁹ Fe citrate | 12-13 | Spleen | 140 | g,i |
| ⁵⁹ Fe citrate | 20 | Spleen | 186 | g,i |

^aHüsák and Wiedermann (1980), assumes no uptake of activity in embryo

^bSmith and Warner (1976), assumes activity distribution in embryo same as whole-body distribution in parent

^cResting population

^dNonfeeding population

^eWegst and co-workers (1984), accounts for placental uptake and transfer of radiopharmaceutical to embryo/fetus based on 15-day gestation rats

^fAssumes 15% uptake in maternal thyroid

^gDyer and Brill (1969), dose estimates from human aborti.

^hAverage value of 2 cases

ⁱValue of 1 case

^jAverage value of 5 cases

^kAverage value of 4 cases

^lWegst and co-workers (1975) suggest that fetal self-irradiation from gallium 67 is not significant compared to fetal dose from concentration in maternal organs and placenta

^mAverage value of 9 cases

ⁿAverage value of 8 cases

Reference: Exposure of the Pregnant Patient
to Diagnostic Radiations
A Guide to Medical Management.

Exposure of the Pregnant Patient to Diagnostic Radiations

A Guide to Medical Management

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