

RADIATION DOSE ESTIMATES TO ADULTS AND CHILDREN FROM VARIOUS RADIOPHARMACEUTICALS

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The radiopharmaceuticals and nuclear medicine studies considered in this report are listed in the Table of Contents on page 2. The radiation dose estimates given in the dose tables are based on the assumptions and models given in Chapter 17, Radiation Dosimetry and Safety in: The Pediatric Nuclear Medicine Handbook (Hahn and Gilday, eds., in press).

The radiation dose equivalent estimates are given in mSv per MBq administered. The radiation dose equivalent calculations used the most recent values of quality factor (Q) given in ICRP 30 to convert absorbed doses in mGy to dose equivalents in mSv. Also, the effective dose equivalent for each pharmaceutical is given, based on the definition and tissue weighting factors (w_T) given in ICRP 30.

To convert dose equivalents in mSv/MBq to the traditional units of rem/mCi, multiply the values in the dose tables by the factor 3.7.

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RADIATION DOSE ESTIMATES FOR N-13 L-GLUTAMATE

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Heart Wall	0.18	0.091	0.050	0.032	0.020	0.016
Kidneys	0.058	0.023	0.013	0.0088	0.0062	0.0051
Liver	0.17	0.073	0.038	0.026	0.017	0.013
Ovaries	0.025	0.011	0.0060	0.0038	0.0025	0.0020
Pancreas	2.5	0.70	0.31	0.25	0.12	0.081
Bone Surfaces	0.017	0.0071	0.0036	0.0023	0.0015	0.0012
Red Marrow	0.019	0.0079	0.0044	0.0029	0.0019	0.0015
Testes	0.024	0.010	0.0055	0.0035	0.0020	0.0015
Urinary Bladder Wall	0.78	0.30	0.16	0.10	0.069	0.053
Effective Dose Equivalent	0.24	0.078	0.038	0.027	0.015	0.011

RADIATION DOSE ESTIMATES FOR Ga-67 CITRATE

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Adrenals	0.62	0.56	0.36	0.26	0.18	0.13
Lower Large Intestine Wall	1.1	0.54	0.61	0.43	0.26	0.20
Small Intestine	0.66	0.30	0.21	0.15	0.095	0.076
Upper Large Intestine Wall	0.78	0.36	0.35	0.24	0.15	0.12
Kidneys	1.2	0.48	0.28	0.19	0.14	0.11
Liver	1.3	0.58	0.32	0.22	0.15	0.11
Ovaries	0.84	0.37	0.22	0.15	0.099	0.079
Bone Surfaces	17	5.3	2.3	1.4	0.84	0.65
Red Marrow	4.2	1.4	0.68	0.38	0.23	0.21
Spleen	2.1	0.83	0.46	0.30	0.20	0.14
Testes	0.70	0.29	0.16	0.10	0.064	0.052
Effective Dose Equivalent	1.8	0.69	0.38	0.24	0.15	0.12

RADIATION DOSE ESTIMATES FOR INJECTIONS OF Kr-81m GAS FOR RIGHT HEART STUDIES

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Heart Wall	0.0021	0.0011	0.00060	0.00038	0.00025	0.00019
Lungs	0.00087	0.00032	0.00017	0.00011	0.000076	0.000051
Ovaries	0.0000047	0.0000019	0.00000097	0.00000038	0.0000016	0.00000012
Bone Surfaces	0.000020	0.000010	0.0000052	0.0000038	0.0000027	0.0000022
Red Marrow	0.000011	0.0000053	0.0000035	0.0000029	0.0000022	0.0000021
Testes	0.0000016	0.00000045	0.00000025	0.000000092	0.000000029	0.000000014
Effective Dose Equivalent	0.00025	0.00011	0.000063	0.000040	0.000027	0.000020

RADIATION DOSE ESTIMATES FOR INHALATION OF Kr-81m GAS

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Lungs	0.0037	0.0013	0.00067	0.00043	0.00030	0.00020
Ovaries	0.0000049	0.0000019	0.00000081	0.00000042	0.00000017	0.00000014
Bone Surfaces	0.000024	0.000012	0.0000063	0.0000041	0.0000030	0.0000023
Red Marrow	0.000014	0.0000066	0.0000042	0.0000032	0.0000024	0.0000021
Testes	0.0000014	0.00000056	0.00000013	0.000000087	0.000000022	0.000000010
Effective Dose Equivalent	0.00047	0.00017	0.000088	0.000057	0.000040	0.000027

RADIATION DOSE ESTIMATES FOR ORAL ADMINISTRATION OF Kr-81m IN SOLUTION

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Gallbladder Wall	0.00012	0.000039	0.000028	0.000018	0.0000085	0.0000054
Lower Large Intestine Wall	0.000022	0.0000098	0.0000058	0.0000032	0.0000020	0.0000016
Small Intestine	0.000039	0.000020	0.000012	0.0000077	0.0000047	0.0000037
Stomach Wall	0.0090	0.0027	0.0013	0.00078	0.00054	0.00041
Upper Large Intestine Wall	0.000050	0.000025	0.000015	0.0000096	0.0000058	0.0000047
Ovaries	0.000016	0.0000077	0.0000043	0.0000025	0.0000015	0.0000011
Bone Surfaces	0.000015	0.0000075	0.0000039	0.0000026	0.0000018	0.0000015
Red Marrow	0.0000081	0.0000042	0.0000029	0.0000022	0.0000016	0.0000014
Testes	0.0000050	0.0000017	0.00000049	0.00000038	0.000000088	0.000000076
Effective Dose Equivalent	0.00057	0.00018	0.000090	0.000054	0.000037	0.000028

RADIATION DOSE ESTIMATES FOR Tc-99m ALBUMIN MICROSOPHERES

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Lower Large Intestine Wall	0.12	0.050	0.027	0.017	0.010	0.0078
Small Intestine	0.042	0.020	0.012	0.0078	0.0050	0.0040
Upper Large Intestine Wall	0.13	0.056	0.031	0.019	0.012	0.0090
Kidneys	0.37	0.15	0.086	0.060	0.043	0.036
Lungs	0.92	0.35	0.18	0.12	0.086	0.058
Ovaries	0.037	0.018	0.010	0.0066	0.0044	0.0034
Bone Surfaces	0.057	0.028	0.015	0.010	0.0070	0.0056
Red Marrow	0.030	0.014	0.0088	0.0064	0.0045	0.0038
Testes	0.021	0.0094	0.0049	0.0031	0.0020	0.0015
Thyroid	0.18	0.13	0.070	0.033	0.021	0.014
Urinary Bladder Wall	0.12	0.052	0.028	0.019	0.013	0.010
Effective Dose Equivalent	0.20	0.080	0.043	0.020	0.014	0.010

RADIATION DOSE ESTIMATES FOR Tc-99m DISIDA

<u>Organ</u>	<u>Estimated Radiation Dose Equivalent (mSv/MBq)</u>					
	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Gallbladder Wall	1.9	0.89	0.26	0.15	0.12	0.10
Lower Large Intestine Wall	0.80	0.36	0.19	0.10	0.062	0.049
Small Intestine	0.14	0.080	0.10	0.073	0.045	0.036
Upper Large Intestine Wall	0.43	0.22	0.22	0.15	0.090	0.070
Liver	0.073	0.037	0.024	0.017	0.011	0.0087
Ovaries	0.076	0.045	0.040	0.029	0.020	0.016
Bone Surfaces	0.021	0.011	0.0083	0.0057	0.0041	0.0033
Red Marrow	0.0099	0.0063	0.0065	0.0053	0.0040	0.0034
Spleen	0.018	0.0096	0.0078	0.0051	0.0029	0.0022
Testes	0.015	0.0079	0.0057	0.0034	0.0024	0.0016
Urinary Bladder Wall	0.078	0.037	0.039	0.026	0.032	0.025
Effective Dose Equivalent	0.23	0.11	0.061	0.038	0.027	0.022

RADIATION DOSE ESTIMATES FOR Tc-99m DMSA

<u>Organ</u>	<u>Estimated Radiation Dose Equivalent (mSv/MBq)</u>					
	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Kidneys	2.0	0.78	0.45	0.31	0.23	0.19
Ovaries	0.037	0.018	0.010	0.0064	0.0046	0.0035
Bone Surfaces	0.052	0.026	0.014	0.0091	0.0062	0.0050
Red Marrow	0.029	0.015	0.0095	0.0070	0.0048	0.0041
Testes	0.020	0.0091	0.0050	0.0032	0.0024	0.0018
Urinary Bladder Wall	0.052	0.024	0.020	0.013	0.019	0.015
Effective Dose Equivalent	0.16	0.067	0.039	0.027	0.020	0.016

RADIATION DOSE ESTIMATES FOR INHALATION OF Tc-99m DTPA Aerosol (0.25 µm)

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Lower Large Intestine Wall	0.071	0.034	0.018	0.010	0.0079	0.0063
Small Intestine	0.028	0.014	0.011	0.0075	0.0052	0.0041
Upper Large Intestine Wall	0.044	0.022	0.018	0.011	0.0074	0.0057
Kidneys	0.050	0.021	0.012	0.0080	0.0054	0.0044
Lungs	0.23	0.089	0.047	0.030	0.021	0.015
Ovaries	0.031	0.016	0.0099	0.0064	0.0057	0.0045
Bone Surfaces	0.031	0.015	0.0083	0.0054	0.0038	0.0031
Red Marrow	0.019	0.0088	0.0053	0.0036	0.0025	0.0021
Testes	0.025	0.012	0.0069	0.0041	0.0036	0.0026
Thyroid	0.020	0.0095	0.0053	0.0032	0.0018	0.0014
Urinary Bladder Wall	0.34	0.14	0.078	0.049	0.064	0.050
Effective Dose Equivalent	0.075	0.032	0.018	0.012	0.010	0.0080

RADIATION DOSE ESTIMATES FOR Tc-99m DTPA Injection

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Kidneys	0.057	0.024	0.014	0.0095	0.0069	0.0057
Ovaries	0.026	0.012	0.0091	0.0061	0.0069	0.0055
Bone Surfaces	0.027	0.013	0.0075	0.0052	0.0040	0.0033
Red Marrow	0.019	0.0084	0.0050	0.0034	0.0027	0.0022
Testes	0.022	0.010	0.0077	0.0049	0.0052	0.0038
Urinary Bladder Wall	0.19	0.079	0.086	0.058	0.097	0.077
Effective Dose Equivalent	0.034	0.015	0.0120.0081	0.010	0.0082	

RADIATION DOSE ESTIMATES FOR Tc-99m ECD

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Brain	0.018	0.0085	0.0063	0.0058	0.0055	0.0054
Gallbladder Wall	0.50	0.23	0.0070	0.040	0.031	0.027
Lower Large Intestine Wall	0.18	0.084	0.045	0.026	0.018	0.015
Small Intestine	0.046	0.025	0.027	0.019	0.013	0.010
Upper Large Intestine Wall	0.11	0.055	0.052	0.034	0.022	0.017
Heart Wall	0.017	0.0086	0.0051	0.0034	0.0023	0.0018
Kidneys	0.073	0.030	0.019	0.013	0.0093	0.0077
Liver	0.051	0.024	0.015	0.010	0.0069	0.0054
Lungs	0.026	0.011	0.0060	0.0040	0.0028	0.0020
Ovaries	0.036	0.019	0.016	0.011	0.0099	0.0078
Bone Surfaces	0.028	0.014	0.0082	0.0057	0.0044	0.0036
Red Marrow	0.018	0.0084	0.0056	0.0040	0.0031	0.0025
Testes	0.021	0.010	0.0074	0.0047	0.0048	0.0035
Urinary Bladder Wall	0.18	0.075	0.083	0.055	0.093	0.073
Effective Dose Equivalent	0.080	0.037	0.023	0.015	0.014	0.011

RADIATION DOSE ESTIMATES FOR Tc-99m HMPAO

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Brain	0.024	0.011	0.0081	0.0074	0.0070	0.0069
Gallbladder Wall	0.94	0.44	0.13	0.074	0.058	0.051
Lower Large Intestine Wall	0.23	0.11	0.055	0.031	0.020	0.015
Small Intestine	0.064	0.035	0.035	0.025	0.016	0.012
Upper Large Intestine Wall	0.14	0.074	0.069	0.045	0.028	0.022
Kidneys	0.35	0.14	0.084	0.058	0.042	0.035
Liver	0.14	0.065	0.038	0.027	0.018	0.014
Lungs	0.17	0.066	0.035	0.023	0.016	0.011
Ovaries	0.047	0.024	0.018	0.012	0.0089	0.0070
Bone Surfaces	0.044	0.022	0.012	0.0085	0.0060	0.0049
Red Marrow	0.026	0.013	0.0081	0.0059	0.0042	0.0035
Testes	0.022	0.010	0.0063	0.0038	0.0030	0.0023
Thyroid	0.38	0.28	0.15	0.067	0.044	0.027
Urinary Bladder Wall	0.082	0.037	0.036	0.024	0.035	0.028
Effective Dose Equivalent	0.16	0.076	0.038	0.024	0.018	0.014

RADIATION DOSE ESTIMATES FOR Tc-99m HEDP

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Kidneys	0.098	0.040	0.023	0.016	0.011	0.0093
Ovaries	0.034	0.017	0.010	0.0068	0.0047	0.0037
Bone Surfaces	0.85	0.27	0.11	0.069	0.043	0.033
Red Marrow	0.097	0.034	0.018	0.010	0.0065	0.0057
Testes	0.031	0.016	0.0086	0.0055	0.0034	0.0025
Urinary Bladder Wall	0.48	0.20	0.11	0.074	0.051	0.040
Effective Dose Equivalent	0.092	0.036	0.019	0.012	0.0084	0.0067

RADIATION DOSE ESTIMATES FOR Tc-99m HMDP

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Kidneys	0.065	0.027	0.015	0.010	0.0073	0.0060
Ovaries	0.033	0.016	0.0090	0.0060	0.0042	0.0033
Bone Surfaces	2.3	0.72	0.30	0.18	0.11	0.087
Red Marrow	0.24	0.082	0.040	0.023	0.014	0.013
Testes	0.027	0.013	0.0069	0.0044	0.0029	0.0022
Urinary Bladder Wall	0.25	0.11	0.059	0.040	0.027	0.021
Effective Dose Equivalent	0.14	0.049	0.024	0.015	0.0096	0.0078

RADIATION DOSE ESTIMATES FOR Tc-99m MAA

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Kidneys	0.038	0.018	0.011	0.0072	0.0048	0.0037
Liver	0.16	0.075	0.042	0.030	0.021	0.016
Lungs	1.0	0.40	0.21	0.14	0.098	0.067
Ovaries	0.023	0.011	0.0058	0.0036	0.0023	0.0018
Pancreas	0.057	0.029	0.017	0.011	0.0075	0.0056
Bone Surfaces	0.052	0.025	0.014	0.0090	0.0063	0.0050
Red Marrow	0.026	0.012	0.0074	0.0054	0.0038	0.0033
Testes	0.015	0.0070	0.0037	0.0023	0.0014	0.0011
Urinary Bladder Wall	0.12	0.050	0.028	0.018	0.012	0.0098
Effective Dose Equivalent	0.17	0.069	0.0380.025	0.018	0.013	

RADIATION DOSE ESTIMATES FOR Tc-99m MAG3

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Kidneys	0.041	0.016	0.0097	0.0067	0.0049	0.0041
Ovaries	0.013	0.0069	0.0083	0.0058	0.0085	0.0067
Bone Surfaces	0.0053	0.0027	0.0022	0.0015	0.0019	0.0015
Red Marrow	0.0027	0.0014	0.0015	0.0011	0.0015	0.0011
Testes	0.014	0.0078	0.0082	0.0054	0.0066	0.0046
Urinary Bladder Wall	0.37	0.15	0.17	0.11	0.17	0.14
Effective Dose Equivalent	0.032	0.014	0.015	0.010	0.015	0.012

RADIATION DOSE ESTIMATES FOR Tc-99m MDP

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Kidneys	0.092	0.037	0.021	0.014	0.010	0.0086
Ovaries	0.031	0.015	0.0088	0.0060	0.0042	0.0033
Bone Surfaces	1.6	0.49	0.21	0.12	0.076	0.059
Red Marrow	0.16	0.056	0.028	0.016	0.0099	0.0088
Testes	0.027	0.013	0.0073	0.0047	0.0030	0.0022
Urinary Bladder Wall	0.40	0.17	0.091	0.061	0.042	0.033
Effective Dose Equivalent	0.11	0.042	0.021	0.014	0.0089	0.0072

RADIATION DOSE ESTIMATES FOR Tc-99m MIBI

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Gallbladder Wall	0.24	0.11	0.047	0.030	0.021	0.018
Lower Large Intestine Wall	0.58	0.27	0.14	0.078	0.047	0.037
Small Intestine	0.12	0.064	0.076	0.055	0.034	0.027
Upper Large Intestine Wall	0.32	0.16	0.16	0.10	0.064	0.050
Heart Wall	0.043	0.022	0.013	0.0084	0.0056	0.0044
Kidneys	0.17	0.071	0.044	0.030	0.022	0.018
Liver	0.045	0.023	0.015	0.010	0.0066	0.0051
Lungs	0.028	0.013	0.0071	0.0047	0.0033	0.0024
Ovaries	0.083	0.046	0.038	0.026	0.018	0.014
Bone Surfaces	0.052	0.026	0.015	0.010	0.0070	0.0058
Red Marrow	0.034	0.016	0.011	0.0079	0.0054	0.0045
Spleen	0.057	0.026	0.016	0.011	0.0070	0.0052
Testes	0.038	0.018	0.012	0.0076	0.0046	0.0035
Thyroid	0.082	0.056	0.030	0.014	0.0093	0.0061
Urinary Bladder Wall	0.19	0.084	0.10	0.068	0.047	0.037
Effective Dose Equivalent	0.13	0.061	0.045	0.029	0.019	0.015

RADIATION DOSE ESTIMATES FOR INJECTION OF Tc-99m PERTECHNETATE

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Lower Large Intestine Wall	0.41	0.17	0.089	0.056	0.034	0.027
Small Intestine	0.068	0.035	0.021	0.014	0.010	0.0082
Stomach Wall	0.20	0.069	0.037	0.023	0.016	0.013
Upper Large Intestine Wall	0.43	0.18	0.095	0.060	0.036	0.028
Ovaries	0.068	0.034	0.021	0.014	0.011	0.0086
Bone Surfaces	0.044	0.021	0.012	0.0081	0.0057	0.0048
Red Marrow	0.029	0.014	0.0082	0.0057	0.0040	0.0033
Testes	0.031	0.014	0.0086	0.0054	0.0043	0.0032
Thyroid	0.32	0.23	0.12	0.056	0.037	0.023
Urinary Bladder Wall	0.12	0.051	0.048	0.032	0.046	0.036
Effective Dose Equivalent	0.11	0.051	0.029	0.018	0.014	0.011

RADIATION DOSE ESTIMATES FOR INFUSION OF Tc-99m PERTECHNETATE*

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Kidneys	0.00042	0.00019	0.00011	0.000056	0.000026	0.000018
Ovaries	0.0036	0.0020	0.0013	0.00090	0.00062	0.00049
Bone Surfaces	0.00092	0.00048	0.00026	0.00018	0.00012	0.000094
Red Marrow	0.00034	0.00021	0.00017	0.00014	0.000094	0.000072
Testes	0.0043	0.0024	0.0013	0.00085	0.00048	0.00034
Urinary Bladder Wall	0.12	0.051	0.028	0.019	0.013	0.010
Effective Dose Equivalent	0.0095	0.0042	0.0024	0.0016	0.0011	0.00087

* Activity assumed to be constant in urinary bladder for 15 minutes.

RADIATION DOSE ESTIMATES FOR Tc-99m PPI

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Kidneys	0.068	0.028	0.016	0.011	0.0077	0.0064
Ovaries	0.037	0.018	0.010	0.0068	0.0047	0.0038
Bone Surfaces	1.7	0.54	0.23	0.14	0.085	0.0066
Red Marrow	0.19	0.065	0.032	0.019	0.012	0.010
Testes	0.031	0.015	0.0080	0.0052	0.0033	0.0026
Urinary Bladder Wall	0.29	0.12	0.066	0.045	0.031	0.024
Effective Dose Equivalent	0.12	0.044	0.022	0.014	0.0090	0.0073

RADIATION DOSE ESTIMATES FOR Tc-99m LABELED RED BLOOD CELLS (*in-vivo labeling*)

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Liver	0.063	0.030	0.017	0.012	0.0083	0.0064
Ovaries	0.051	0.024	0.013	0.0088	0.0060	0.0047
Bone Surfaces	0.065	0.031	0.017	0.012	0.0079	0.0066
Red Marrow	0.044	0.020	0.011	0.0075	0.0049	0.0041
Spleen	0.16	0.066	0.037	0.024	0.016	0.012
Testes	0.041	0.018	0.010	0.0063	0.0042	0.0033
Urinary Bladder Wall	0.17	0.073	0.040	0.027	0.019	0.015
Effective Dose Equivalent	0.082	0.037	0.020	0.014	0.0094	0.0072

RADIATION DOSE ESTIMATES FOR Tc-99m LABELED RED BLOOD CELLS (*in-vitro labeling*)

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Liver	0.060	0.029	0.016	0.012	0.0079	0.0061
Ovaries	0.049	0.023	0.013	0.0086	0.0060	0.0046
Bone Surfaces	0.060	0.029	0.016	0.011	0.0073	0.0061
Red Marrow	0.040	0.018	0.010	0.0069	0.0046	0.0038
Spleen	0.15	0.062	0.035	0.023	0.016	0.011
Testes	0.040	0.018	0.010	0.0064	0.0041	0.0033
Urinary Bladder Wall	0.25	0.11	0.058	0.039	0.027	0.021
Effective Dose Equivalent	0.084	0.037	0.021	0.014	0.0095	0.0073

RADIATION DOSE ESTIMATES FOR Tc-99m LABELED HEAT DENATURED RED BLOOD CELLS

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Liver	0.034	0.017	0.010	0.0064	0.0037	0.0025
Ovaries	0.029	0.012	0.0070	0.0038	0.0022	0.0016
Bone Surfaces	0.052	0.025	0.013	0.0083	0.0056	0.0043
Red Marrow	0.023	0.011	0.0070	0.0052	0.0035	0.0028
Spleen	9.9	3.8	2.1	1.4	0.92	0.65
Testes	0.010	0.0042	0.0019	0.0011	0.00062	0.00047
Urinary Bladder Wall	0.018	0.0070	0.0035	0.0021	0.0012	0.00075
Effective Dose Equivalent	0.65	0.26	0.15	0.097	0.064	0.046

RADIATION DOSE ESTIMATES FOR Tc-99m SULFUR COLLOID - NORMAL PATIENTS

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Liver	0.88	0.41	0.23	0.16	0.11	0.086
Ovaries	0.028	0.013	0.0068	0.0040	0.0022	0.0016
Bone Surfaces	0.065	0.029	0.014	0.0095	0.0066	0.0051
Red Marrow	0.10	0.036	0.019	0.011	0.0075	0.0068
Spleen	0.80	0.31	0.18	0.12	0.076	0.053
Testes	0.0072	0.0030	0.0013	0.00064	0.00032	0.00022
Effective Dose Equivalent	0.15	0.069	0.039	0.026	0.018	0.014

RADIATION DOSE ESTIMATES FOR Tc-99m SULFUR COLLOID
INTERMEDIATE-TO-ADVANCED DIFFUSE PARENCHYMAL LIVER DISEASE

<u>Organ</u>	<u>Estimated Radiation Dose Equivalent (mSv/MBq)</u>					
	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Liver	0.35	0.16	0.090	0.064	0.044	0.034
Ovaries	0.030	0.014	0.0089	0.0060	0.0040	0.0032
Bone Surfaces	0.16	0.061	0.030	0.019	0.013	0.010
Red Marrow	0.46	0.15	0.073	0.041	0.026	0.024
Spleen	3.3	1.3	0.72	0.47	0.31	0.22
Testes	0.013	0.0054	0.0030	0.0018	0.0011	0.00083
Effective Dose Equivalent	0.32	0.12	0.069	0.045	0.030	0.022

RADIATION DOSE ESTIMATES FOR ORAL ADMINISTRATION OF Tc-99m SULFUR COLLOID

<u>Organ</u>	<u>Estimated Radiation Dose Equivalent (mSv/MBq)</u>					
	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Lower Large Intestine Wall	1.4	0.64	0.31	0.17	0.10	0.080
Small Intestine	0.22	0.13	0.16	0.12	0.073	0.058
Stomach Wall	0.29	0.10	0.10	0.062	0.045	0.034
Upper Large Intestine Wall	0.74	0.38	0.37	0.24	0.15	0.12
Ovaries	0.12	0.073	0.064	0.045	0.031	0.024
Bone Surfaces	0.022	0.013	0.010	0.0073	0.0052	0.0041
Red Marrow	0.0094	0.0072	0.0087	0.0074	0.0055	0.0046
Testes	0.018	0.0096	0.0063	0.0037	0.0019	0.0012
Effective Dose Equivalent	0.20	0.098	0.0077	0.050	0.032	0.025

RADIATION DOSE ESTIMATES FOR Tc-99m LABELED WHITE BLOOD CELLS*

<u>Organ</u>	<u>Estimated Radiation Dose Equivalent (mSv/MBq)</u>					
	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Liver	0.27	0.13	0.071	0.051	0.035	0.027
Ovaries	0.028	0.014	0.0095	0.0068	0.0049	0.0038
Bone Surfaces	0.23	0.083	0.040	0.025	0.017	0.013
Red Marrow	0.72	0.23	0.11	0.062	0.039	0.036
Spleen	2.8	1.1	0.60	0.39	0.26	0.18
Testes	0.012	0.0052	0.0030	0.0019	0.0012	0.00084
Urinary Bladder Wall	0.018	0.0091	0.0058	0.0039	0.0024	0.0018
Effective Dose Equivalent	0.31	0.12	0.065	0.042	0.028	0.021

* Assuming no 100% labeling efficiency and no label loss. Combine with Tc-99m pertechnetate dosimetry for specific products.

RADIATION DOSE ESTIMATES FOR In-111 LABELED PLATELETS

<u>Organ</u>	<u>Estimated Radiation Dose Equivalent (mSv/MBq)</u>					
	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Liver	5.5	2.6	1.5	1.1	0.72	0.56
Ovaries	1.6	0.76	0.42	0.27	0.18	0.14
Bone Surfaces	2.6	1.1	0.55	0.36	0.24	0.20
Red Marrow	2.7	1.0	0.55	0.34	0.23	0.20
Spleen	72	29	17	11	7.3	5.2
Testes	1.1	0.49	0.27	0.17	0.11	0.090
Urinary Bladder Wall	2.0	0.89	0.51	0.33	0.23	0.18
Effective Dose Equivalent	6.5	2.7	1.6	1.0	0.69	0.52

RADIATION DOSE ESTIMATES FOR In-111 LABELED RED BLOOD CELLS

<u>Organ</u>	<u>Estimated Radiation Dose Equivalent (mSv/MBq)</u>					
	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Liver	1.8	0.84	0.47	0.34	0.22	0.17
Ovaries	2.1	0.96	0.53	0.34	0.23	0.19
Bone Surfaces	2.5	1.1	0.59	0.39	0.26	0.22
Red Marrow	1.8	0.74	0.41	0.27	0.18	0.15
Spleen	10	4.1	2.4	1.6	1.1	0.76
Testes	1.6	0.70	0.39	0.25	0.17	0.14
Urinary Bladder Wall	1.9	0.84	0.48	0.32	0.23	0.17
Effective Dose Equivalent	2.4	1.1	0.59	0.39	0.26	0.20

RADIATION DOSE ESTIMATES FOR In-111 LABELED WBC's

<u>Organ</u>	<u>Estimated Radiation Dose Equivalent (mSv/MBq)</u>					
	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Liver	8.7	4.1	2.3	1.7	1.2	0.90
Ovaries	0.98	0.49	0.32	0.23	0.16	0.13
Bone Surfaces	6.7	2.4	1.2	0.74	0.49	0.38
Red Marrow	18	5.9	2.9	1.7	1.1	0.98
Spleen	81	32	19	12	8.2	5.9
Testes	0.42	0.18	0.10	0.067	0.042	0.030
Effective Dose Equivalent	8.9	3.5	2.0	1.3	0.87	0.67

RADIATION DOSE ESTIMATES FOR In-114m/In-114 PLATELETS

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Liver	240	98	49	33	21	15
Ovaries	8.3	3.1	1.6	0.93	0.54	0.42
Bone Surfaces	43	14	5.9	3.5	2.1	1.6
Red Marrow	170	52	25	13	7.6	7.1
Spleen	4800	1700	900	560	360	240
Testes	8.0	3.0	1.5	0.88	0.51	0.40
Urinary Bladder Wall	23	8.7	4.4	2.8	1.8	1.3
Effective Dose Equivalent	330	120	62	38	24	17

RADIATION DOSE ESTIMATES FOR In-114m/In-114 LABELED RED BLOOD CELLS

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Liver	880	370	180	120	77	56
Ovaries	110	42	21	12	7.4	5.7
Bone Surfaces	330	110	47	28	17	13
Red Marrow	1200	360	170	90	52	49
Spleen	12000	4200	2200	1400	860	580
Testes	110	42	20	12	7.2	5.5
Urinary Bladder Wall	110	42	21	12	7.2	5.6
Effective Dose Equivalent	980	350	180	110	69	49

RADIATION DOSE ESTIMATES FOR In-114m/In-114 LABELED WBC's

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Liver	1900	780	390	260	160	120
Ovaries	30	12	6.1	3.8	2.3	1.8
Bone Surfaces	1800	540	220	130	81	62
Red Marrow	7700	2400	1100	590	340	320
Spleen	25000	8900	4700	2900	1800	1200
Testes	28	10	5.2	3.1	1.8	1.4
Effective Dose Equivalent	2600	900	460	270	170	120

RADIATION DOSE ESTIMATES FOR I-123 SODIUM IODIDE

<u>Organ</u>	<u>Estimated Radiation Dose Equivalent (mSv/MBq)</u>					
	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Lower Large Intestine Wall	0.095	0.043	0.026	0.017	0.014	0.011
Small Intestine	0.54	0.22	0.12	0.072	0.043	0.033
Stomach Wall	0.97	0.32	0.17	0.10	0.071	0.055
Upper Large Intestine Wall	0.14	0.066	0.040	0.026	0.017	0.014
Liver	0.068	0.031	0.017	0.011	0.0066	0.0049
Ovaries	0.11	0.052	0.031	0.020	0.015	0.012
Bone Surfaces	0.11	0.047	0.026	0.017	0.012	0.0098
Red Marrow	0.055	0.024	0.014	0.0097	0.0070	0.0058
Testes	0.051	0.022	0.014	0.0082	0.0069	0.0051
Thyroid	47	34	18	8.4	5.5	3.4
Thymus	0.16	0.070	0.029	0.015	0.0081	0.0056
Urinary Bladder Wall	0.28	0.12	0.12	0.078	0.12	0.096
Effective Dose Equivalent	1.6	1.1	0.59	0.28	0.19	0.12

RADIATION DOSE ESTIMATES FOR I-123 HIPURAN

<u>Organ</u>	<u>Estimated Radiation Dose Equivalent (mSv/MBq)</u>					
	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Kidneys	0.10	0.040	0.024	0.016	0.012	0.010
Ovaries	0.023	0.012	0.013	0.0087	0.013	0.010
Bone Surfaces	0.011	0.0044	0.0033	0.0021	0.0026	0.0020
Red Marrow	0.0044	0.0021	0.0021	0.0016	0.0022	0.017
Testes	0.028	0.014	0.014	0.0085	0.010	0.0070
Urinary Bladder Wall	0.72	0.30	0.35	0.23	0.38	0.30
Effective Dose Equivalent	0.064	0.027	0.030	0.020	0.030	0.024

RADIATION DOSE ESTIMATES FOR I-123 mIBG

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Adrenals	0.11	0.066	0.042	0.030	0.021	0.016
Liver	0.79	0.36	0.20	0.14	0.095	0.073
Ovaries	0.10	0.046	0.026	0.017	0.013	0.010
Bone Surfaces	0.16	0.066	0.034	0.022	0.015	0.012
Red Marrow	0.081	0.035	0.020	0.013	0.0087	0.0072
Spleen	0.30	0.12	0.068	0.045	0.029	0.021
Testes	0.077	0.032	0.019	0.012	0.0092	0.0070
Thyroid	0.063	0.033	0.018	0.010	0.0064	0.0048
Urinary Bladder Wall	0.28	0.12	0.12	0.077	0.12	0.094
Effective Dose Equivalent	0.17	0.076	0.045	0.030	0.025	0.019

RADIATION DOSE ESTIMATES FOR I-125 SODIUM IODIDE

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Lower Large Intestine Wall	0.18	0.070	0.036	0.021	0.014	0.011
Small Intestine	0.73	0.29	0.14	0.086	0.049	0.037
Stomach Wall	1.4	0.43	0.21	0.12	0.084	0.064
Upper Large Intestine Wall	0.30	0.12	0.060	0.035	0.020	0.015
Liver	1.2	0.49	0.26	0.18	0.11	0.086
Ovaries	0.21	0.083	0.042	0.024	0.015	0.011
Bone Surfaces	1.6	0.51	0.26	0.16	0.11	0.099
Red Marrow	0.33	0.11	0.051	0.031	0.021	0.017
Testes	0.12	0.044	0.023	0.014	0.0088	0.0065
Thyroid	2800	2100	1100	510	340	210
Thymus	6.5	2.4	0.63	0.16	0.042	0.024
Urinary Bladder Wall	0.40	0.16	0.15	0.097	0.15	0.12
Effective Dose Equivalent	87	63	34	16	10	6.4

RADIATION DOSE ESTIMATES FOR I-125 mIBG

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Adrenals	0.37	0.22	0.13	0.092	0.060	0.042
Liver	2.8	1.2	0.66	0.45	0.29	0.22
Ovaries	0.31	0.12	0.060	0.035	0.021	0.0016
Bone Surfaces	0.76	0.27	0.12	0.073	0.043	0.032
Red Marrow	0.24	0.091	0.044	0.026	0.016	0.012
Spleen	2.5	0.97	0.54	0.35	0.23	0.16
Testes	0.24	0.092	0.047	0.028	0.018	0.014
Thyroid	0.67	0.44	0.23	0.11	0.071	0.046
Urinary Bladder Wall	0.53	0.22	0.19	0.12	0.18	0.14
Effective Dose Equivalent	0.66	0.27	0.14	0.093	0.066	0.049

RADIATION DOSE ESTIMATES FOR I-131 SODIUM IODIDE

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Lower Large Intestine Wall	0.51	0.21	0.12	0.074	0.054	0.044
Small Intestine	4.5	1.8	0.90	0.54	0.31	0.24
Stomach Wall	7.8	2.4	1.2	0.68	0.47	0.36
Upper Large Intestine Wall	0.66	0.29	0.16	0.10	0.065	0.052
Liver	1.5	0.66	0.34	0.22	0.14	0.11
Ovaries	0.56	0.24	0.13	0.084	0.060	0.048
Bone Surfaces	0.79	0.37	0.23	0.16	0.12	0.10
Red Marrow	0.71	0.32	0.19	0.13	0.097	0.083
Testes	0.38	0.15	0.082	0.050	0.036	0.028
Thyroid	5300	3900	2000	880	570	340
Thymus	4.0	1.8	0.78	0.38	0.18	0.12
Urinary Bladder Wall	2.1	0.81	0.80	0.51	0.80	0.62
Effective Dose Equivalent	160	120	61	27	17	10

RADIATION DOSE ESTIMATES FOR I-131 HIPURAN

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Kidneys	0.54	0.20	0.11	0.076	0.054	0.045
Ovaries	0.047	0.023	0.026	0.018	0.030	0.023
Bone Surfaces	0.016	0.0072	0.0052	0.0035	0.0045	0.0036
Red Marrow	0.015	0.0069	0.0061	0.0045	0.0062	0.0048
Testes	0.056	0.026	0.029	0.019	0.025	0.017
Urinary Bladder Wall	3.9	1.5	1.7	1.1	1.8	1.4
Effective Dose Equivalent	0.30	0.12	0.12	0.080	0.13	0.10

RADIATION DOSE ESTIMATES FOR I-131 mIBG

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Adrenals	0.90	0.88	0.58	0.42	0.29	0.20
Liver	10	4.5	2.4	1.6	1.0	0.78
Ovaries	0.97	0.41	0.22	0.14	0.094	0.074
Bone Surfaces	0.90	0.37	0.19	0.12	0.081	0.064
Red Marrow	1.0	0.41	0.22	0.14	0.089	0.073
Spleen	10	3.9	2.1	1.3	0.85	0.58
Testes	0.84	0.33	0.18	0.11	0.075	0.058
Thyroid	1.3	0.89	0.47	0.22	0.14	0.090
Urinary Bladder Wall	2.7	1.1	1.0	0.65	0.99	0.77
Effective Dose Equivalent	2.3	0.95	0.54	0.35	0.26	0.20

RADIATION DOSE ESTIMATES FOR INHALATION OF Xe-127 GAS

a) Single inhalation, 30 s breathhold

<u>Organ</u>	<u>Estimated Radiation Dose Equivalent (mSv/MBq)</u>					
	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Lungs	0.0052	0.0020	0.0011	0.00072	0.00052	0.00036
Ovaries	0.0014	0.00063	0.00034	0.00022	0.00015	0.00012
Bone Surfaces	0.0020	0.00085	0.00044	0.00029	0.00019	0.00015
Red Marrow	0.0012	0.00052	0.00029	0.00019	0.00013	0.00010
Testes	0.0011	0.00046	0.00025	0.00016	0.00011	0.000087
Effective Dose Equivalent	0.0018	0.00078	0.00042	0.00028	0.00019	0.00014

b) Five minute rebreathing

<u>Organ</u>	<u>Estimated Radiation Dose Equivalent (mSv/MBq)</u>					
	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Lungs	0.010	0.0045	0.0024	0.0016	0.0011	0.00082
Ovaries	0.0097	0.0044	0.0024	0.0016	0.0010	0.00083
Bone Surfaces	0.013	0.0056	0.0029	0.0019	0.0013	0.0010
Red Marrow	0.0081	0.0035	0.0020	0.0013	0.00083	0.00069
Testes	0.0076	0.0033	0.0018	0.0011	0.00076	0.00062
Effective Dose Equivalent	0.0092	0.0040	0.0022	0.0014	0.00096	0.00076

c) Ten minute rebreathing

<u>Organ</u>	<u>Estimated Radiation Dose Equivalent (mSv/MBq)</u>					
	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Lungs	0.013	0.0059	0.0031	0.0021	0.0015	0.0011
Ovaries	0.016	0.0071	0.0039	0.0025	0.0017	0.0014
Bone Surfaces	0.021	0.0090	0.0047	0.0031	0.0020	0.0016
Red Marrow	0.013	0.0057	0.0032	0.0021	0.0013	0.0011
Testes	0.012	0.0053	0.0029	0.0018	0.0012	0.0010
Effective Dose Equivalent	0.014	0.0064	0.0035	0.0023	0.0015	0.0012

RADIATION DOSE ESTIMATES FOR INHALATION OF Xe-133 GAS

a) Single inhalation, 30 s breathhold

<u>Organ</u>	<u>Estimated Radiation Dose Equivalent (mSv/MBq)</u>					
	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Lungs	0.016	0.0056	0.0028	0.0018	0.0012	0.00082
Ovaries	0.0019	0.00073	0.00036	0.00022	0.00013	0.00010
Bone Surfaces	0.0023	0.00088	0.00043	0.00026	0.00016	0.00012
Red Marrow	0.0023	0.00086	0.00043	0.00025	0.00015	0.00012
Testes	0.0018	0.00069	0.00034	0.00020	0.00012	0.000095
Effective Dose Equivalent	0.0036	0.0013	0.00067	0.00042	0.00027	0.00019

b) Five minute rebreathing

<u>Organ</u>	<u>Estimated Radiation Dose Equivalent (mSv/MBq)</u>					
	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Lungs	0.021	0.0076	0.0038	0.0024	0.0017	0.0011
Ovaries	0.013	0.0051	0.0025	0.0015	0.00090	0.00070
Bone Surfaces	0.016	0.0059	0.0029	0.0018	0.0011	0.00082
Red Marrow	0.016	0.0059	0.0030	0.0018	0.0010	0.00083
Testes	0.013	0.0048	0.0024	0.0014	0.00085	0.00066
Effective Dose Equivalent	0.014	0.0054	0.0027	0.0016	0.0010	0.00076

c) Ten minute rebreathing

<u>Organ</u>	<u>Estimated Radiation Dose Equivalent (mSv/MBq)</u>					
	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Lungs	0.022	0.0080	0.0040	0.0026	0.0018	0.0012
Ovaries	0.022	0.0084	0.0042	0.0025	0.0015	0.0012
Bone Surfaces	0.026	0.0098	0.0048	0.0030	0.0018	0.0014
Red Marrow	0.026	0.0098	0.0049	0.0029	0.0017	0.0014
Testes	0.021	0.0080	0.0039	0.0024	0.0014	0.0011
Effective Dose Equivalent	0.022	0.0084	0.0042	0.0026	0.0016	0.0012

RADIATION DOSE ESTIMATES FOR INJECTIONS OF Xe-133 FOR RIGHT HEART STUDIES

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Heart Wall	0.021	0.011	0.0059	0.0036	0.0023	0.0018
Lungs	0.14	0.049	0.024	0.016	0.011	0.0071
Ovaries	0.000098	0.000036	0.000017	0.0000089	0.0000058	0.0000037
Bone Surfaces	0.00095	0.00037	0.00017	0.000096	0.000057	0.000043
Red Marrow	0.00022	0.000091	0.000049	0.000033	0.000022	0.000019
Testes	0.000069	0.000025	0.000012	0.0000072	0.0000042	0.0000032
Effective Dose Equivalent	0.018	0.0067	0.0034	0.0021	0.0015	0.00099

RADIATION DOSE ESTIMATES FOR Tl-201 Chloride*

Estimated Radiation Dose Equivalent (mSv/MBq)

<u>Organ</u>	<u>Newborn</u>	<u>1-year Old</u>	<u>5-year Old</u>	<u>10-year Old</u>	<u>15-year Old</u>	<u>Adult</u>
Brain	0.24	0.10	0.075	0.064	0.058	0.057
Lower Large Intestine Wall	5.9	2.4	1.2	0.73	0.43	0.33
Small Intestine	8.0	3.2	1.6	0.99	0.57	0.44
Stomach	3.5	1.2	0.58	0.35	0.24	0.18
Upper Large Intestine Wall	5.4	2.2	1.2	0.71	0.42	0.32
Heart Wall	3.0	1.5	0.86	0.54	0.34	0.27
Kidneys	5.3	2.0	1.1	0.77	0.54	0.45
Liver	1.2	0.54	0.29	0.19	0.12	0.093
Ovaries	1.2	0.53	0.29	0.19	0.12	0.095
Bone Surfaces	1.2	0.53	0.26	0.17	0.11	0.085
Red Marrow	0.76	0.31	0.16	0.10	0.064	0.052
Spleen	2.8	1.1	0.59	0.38	0.24	0.17
Testes	34	24	18	15	1.9	0.80
Thyroid	9.2	6.6	3.5	1.5	0.99	0.61
Urinary Bladder Wall	0.61	0.30	0.15	0.097	0.068	0.049
Effective Dose Equivalent	11	6.9	4.9	4.1	0.68	0.34

* At typical administered activities (50-100 MBq), the values in this table for testes in the younger patients should be interpreted as absorbed dose, not dose equivalent, and the effective dose equivalent should be disregarded.